

# **PHILIPPINE BIDDING DOCUMENTS**

**Mass Production, Supply, and Delivery of Science and Mathematics Equipment Packages to Public Elementary for Grades 1 to 3 & Grades 4 to 6, Public Junior High Schools for Grades 7 to 10, and Public Senior High Schools for Grades 11 to 12 (CORE & STEM)**

**(EARLY PROCUREMENT ACTIVITY)**

**Government of the Republic of the Philippines**



**Bureau of Education Assessment - Education Assessment  
Division (BEA-EAD)**

**November 2023**

**2024-BLR4(002)-BVI-CB-003**

**Sixth Edition**

**October 2020**

# Table of Contents

<b>Glossary of Acronyms, Terms, and Abbreviations....</b>	<b>Error! Bookmark not defined.</b>	
<b>Section I. Invitation to Bid.....</b>	<b>Error! Bookmark not defined.</b>	
<b>Section II. Instructions to Bidders.....</b>	<b>Error! Bookmark not defined.</b>	
1. Scope of Bid .....	<b>Error! Bookmark not defined.</b>	
2. Funding Information.....	<b>Error! Bookmark not defined.</b>	
3. Bidding Requirements .....	<b>Error! Bookmark not defined.</b>	
4. Corrupt, Fraudulent, Collusive, and Coercive Practices .....	<b>Error! Bookmark not defined.</b>	
5. Eligible Bidders .....	<b>Error! Bookmark not defined.</b>	
6. Origin of Goods.....	<b>Error! Bookmark not defined.</b>	
7. Subcontracts .....	<b>Error! Bookmark not defined.</b>	
8. Pre-Bid Conference .....	<b>Error! Bookmark not defined.</b>	
9. Clarification and Amendment of Bidding Documents .....	<b>Error! Bookmark not defined.</b>	
10. Documents comprising the Bid: Eligibility and Technical Components	<b>Error! Bookmark not defined.</b>	<b>not defined.</b>
11. Documents comprising the Bid: Financial Component.....	<b>Error! Bookmark not defined.</b>	
12. Bid Prices.....	<b>Error! Bookmark not defined.</b>	
13. Bid and Payment Currencies .....	<b>Error! Bookmark not defined.</b>	
14. Bid Security .....	<b>Error! Bookmark not defined.</b>	
15. Sealing and Marking of Bids .....	<b>Error! Bookmark not defined.</b>	
16. Deadline for Submission of Bids.....	<b>Error! Bookmark not defined.</b>	
17. Opening and Preliminary Examination of Bids.....	<b>Error! Bookmark not defined.</b>	
18. Domestic Preference.....	<b>Error! Bookmark not defined.</b>	
19. Detailed Evaluation and Comparison of Bids .....	<b>Error! Bookmark not defined.</b>	
20. Post-Qualification.....	<b>Error! Bookmark not defined.</b>	
21. Signing of the Contract .....	<b>Error! Bookmark not defined.</b>	
<b>Section III. Bid Data Sheet .....</b>	<b>Error! Bookmark not defined.</b>	
<b>Section IV. General Conditions of Contract.....</b>	<b>Error! Bookmark not defined.</b>	
1. Scope of Contract .....	<b>Error! Bookmark not defined.</b>	
2. Advance Payment and Terms of Payment.....	<b>Error! Bookmark not defined.</b>	
3. Performance Security .....	<b>Error! Bookmark not defined.</b>	
4. Inspection and Tests .....	<b>Error! Bookmark not defined.</b>	
5. Warranty .....	<b>Error! Bookmark not defined.</b>	
6. Liability of the Supplier.....	<b>Error! Bookmark not defined.</b>	
<b>Section V. Special Conditions of Contract.....</b>	<b>Error! Bookmark not defined.</b>	
<b>Section VI. Schedule of Requirements .....</b>	<b>Error! Bookmark not defined.</b>	
<b>Section VII. Technical Specifications .....</b>	<b>Error! Bookmark not defined.</b>	

## ***Glossary of Acronyms, Terms, and Abbreviations***

**ABC** – Approved Budget for the Contract.

**BAC** – Bids and Awards Committee.

**Bid** – A signed offer or proposal to undertake a contract submitted by a bidder in response to and in consonance with the requirements of the bidding documents. Also referred to as *Proposal* and *Tender*. (2016 revised IRR, Section 5[c])

**Bidder** – Refers to a contractor, manufacturer, supplier, distributor and/or consultant who submits a bid in response to the requirements of the Bidding Documents. (2016 revised IRR, Section 5[d])

**Bidding Documents** – The documents issued by the Procuring Entity as the bases for bids, furnishing all information necessary for a prospective bidder to prepare a bid for the Goods, Infrastructure Projects, and/or Consulting Services required by the Procuring Entity. (2016 revised IRR, Section 5[e])

**BIR** – Bureau of Internal Revenue.

**BSP** – Bangko Sentral ng Pilipinas.

**Consulting Services** – Refer to services for Infrastructure Projects and other types of projects or activities of the GOP requiring adequate external technical and professional expertise that are beyond the capability and/or capacity of the GOP to undertake such as, but not limited to: (i) advisory and review services; (ii) pre- investment or feasibility studies; (iii) design; (iv) construction supervision; (v) management and related services; and (vi) other technical services or special studies. (2016 revised IRR, Section 5[i])

**CDA** - Cooperative Development Authority.

**Contract** – Refers to the agreement entered into between the Procuring Entity and the Supplier or Manufacturer or Distributor or Service Provider for procurement of Goods and Services; Contractor for Procurement of Infrastructure Projects; or Consultant or Consulting Firm for Procurement of Consulting Services; as the case may be, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.

**CIF** – Cost Insurance and Freight.

**CIP** – Carriage and Insurance Paid.

**CPI** – Consumer Price Index.

**DDP** – Refers to the quoted price of the Goods, which means “delivered duty paid.”

**DTI** – Department of Trade and Industry.

**EXW** – Ex works.

**FCA** – “Free Carrier” shipping point.

**FOB** – “Free on Board” shipping point.

**Foreign-funded Procurement or Foreign-Assisted Project**– Refers to procurement whose funding source is from a foreign government, foreign or international financing institution as specified in the Treaty or International or Executive Agreement. (2016 revised IRR, Section 5[b]).

**Framework Agreement** – Refers to a written agreement between a procuring entity and a supplier or service provider that identifies the terms and conditions, under which specific purchases, otherwise known as “Call-Offs,” are made for the duration of the agreement. It is in the nature of an option contract between the procuring entity and the bidder(s) granting the procuring entity the option to either place an order for any of the goods or services identified in the Framework Agreement List or not buy at all, within a minimum period of one (1) year to a maximum period of three (3) years. (GPPB Resolution No. 27-2019)

**GFI** – Government Financial Institution.

**GOCC** – Government-owned and/or –controlled corporation.

**Goods** – Refer to all items, supplies, materials and general support services, except Consulting Services and Infrastructure Projects, which may be needed in the transaction of public businesses or in the pursuit of any government undertaking, project or activity, whether in the nature of equipment, furniture, stationery, materials for construction, or personal property of any kind, including non-personal or contractual services such as the repair and maintenance of equipment and furniture, as well as trucking, hauling, janitorial, security, and related or analogous services, as well as procurement of materials and supplies provided by the Procuring Entity for such services. The term “related” or “analogous services” shall include, but is not limited to, lease or purchase of office space, media advertisements, health maintenance services, and other services essential to the operation of the Procuring Entity. (2016 revised IRR, Section 5[r])

**GOP** – Government of the Philippines.

**GPPB** – Government Procurement Policy Board.

**INCOTERMS** – International Commercial Terms.

**Infrastructure Projects** – Include the construction, improvement, rehabilitation, demolition, repair, restoration or maintenance of roads and bridges, railways, airports, seaports, communication facilities, civil works components of information technology projects, irrigation, flood control and drainage, water supply, sanitation, sewerage and solid waste management systems, shore protection, energy/power and electrification facilities, national buildings, school buildings, hospital buildings, and other related construction projects of the government. Also referred to as *civil works or works*. (2016 revised IRR, Section 5[u])

**LGUs** – Local Government Units.

**NFCC** – Net Financial Contracting Capacity.

**NGA** – National Government Agency.

**PhilGEPS** - Philippine Government Electronic Procurement System.

**Procurement Project** – refers to a specific or identified procurement covering goods, infrastructure project or consulting services. A Procurement Project shall be described, detailed, and scheduled in the Project Procurement Management Plan prepared by the agency which shall be consolidated in the procuring entity's Annual Procurement Plan. (GPPB Circular No. 06-2019 dated 17 July 2019)

**PSA** – Philippine Statistics Authority.

**SEC** – Securities and Exchange Commission.

**SLCC** – Single Largest Completed Contract.

**Supplier** – refers to a citizen, or any corporate body or commercial company duly organized and registered under the laws where it is established, habitually established in business and engaged in the manufacture or sale of the merchandise or performance of the general services covered by his bid. (Item 3.8 of GPPB Resolution No. 13-2019, dated 23 May 2019). Supplier as used in these Bidding Documents may likewise refer to a distributor, manufacturer, contractor, or consultant.

**UN** – United Nations.

## ***Section I. Invitation to Bid***



Republic of the Philippines  
 Department of Education  
 PROCUREMENT MANAGEMENT SERVICE

\*\*\*\*\*

**Bids and Awards Committee VI**

**PROJECT NO. 2024-BLR4(002)-BVI-CB-003**

**INVITATION TO BID**

FOR THE

**Mass Production, Supply, and Delivery of Science and Mathematics Equipment Packages to Public Elementary for Grades 1 to 3 & Grades 4 to 6, Public Junior High Schools for Grades 7 to 10, and Public Senior High Schools for Grades 11 to 12 (CORE & STEM)**

**(Early Procurement Activity)**

1. The **Department of Education (DepEd)**, based on the **FY 2024 National Expenditures Program (NEP)** and shall be funded upon the approval and effectivity of the **FY 2024 General Appropriations Act (GAA)**, intends to apply the sum of **Philippine Pesos Two Billion, Seventy-Three Million, Twenty-Four Thousand, Four Hundred Forty-Four and 04/100 (Php2,073,024,444.04)** being the total Approved Budget for the Contract (ABC) to payment under the contract for the above project, broken down as follows:

<b>Lot No.</b>	<b>Description</b>	<b>Items</b>	<b>Approved ABC (in Php)</b>
<b>I. Mass Production Items</b>			
1	Developed Basic Scikit	41 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>146,887,225.77</b>
2	Developed Science and Mathematics Equipment (Elementary, Junior High School, and Senior High School)	11 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>199,415,461.33</b>
3	Developed Storage Cabinets	1 item specified in Section VII (Technical Specifications) of this Bidding Documents	<b>164,123,399.75</b>
<b>II. Market Items</b>			
4	Chemicals	16 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>14,695,348.21</b>

5	Glassware and Lab Tools	30 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>87,632,867.16</b>
6	Science Devices, Instruments, and Measuring Tools - Matter	15 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>237,719,335.42</b>
7	Science Devices, Instruments, and Measuring Tools – Earth & Space and Living Things	23 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>250,108,848.79</b>
8	Mathematical Manipulatives	19 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>282,167,773.45</b>
9	Mathematical Tools and Instrument	14 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>185,034,568.90</b>
10	Models: Earth and Other Heavenly Bodies	11 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>133,430,560.95</b>
11	Models: The Human Anatomy	10 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>108,367,272.90</b>
12	Models: Other Biological Structures and Species	9 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>32,467,754.76</b>
13	Models: Molecular Geometry	6 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>62,985,467.16</b>
14	Force, Motion, and Energy Kits	48 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>167,988,559.49</b>
<b>Total ABC Amount</b>			<b>2,073,024,444.04</b>

Bids received in excess of the ABC for the project shall be automatically rejected at bid opening.

- The **DepEd**, through the **Bids and Awards Committee (BAC) VI**, now invites bids for the **Early Procurement Activity (EPA)** of the above project in accordance with the guidelines stipulated in the **Government Procurement Policy Board (GPPB) Circular No. 06-2019**.<sup>1</sup>

<sup>1</sup> Issued through GPPB Resolution No. 14-2019 dated July 17, 2019



Expected completion of deliveries of the goods/services of the project is indicated in **Section VI. Schedule of Requirements** of this Bidding Documents.

Bidders should have completed, within a period of **ten (10) years** immediately preceding the deadline for submission of bids, Single Largest Completed Contract (SLCC) similar to the contracts to be bid and the values of which are adjusted by the Bidders to current prices using the Philippine Statistics Authority (PSA)'s Consumer Price Index (CPI). The SLCC must be **at least fifty percent (50%)** of the ABC of the package to be bid for; **OR at least two (2) similar contracts** and the total of the aggregated contract amount should be equivalent to **at least fifty percent (50%)** of the ABC of the package to be bid for; and the largest of these similar contracts must be equivalent to **at least twenty-five percent (25%)** of the ABC of the package to be bid.

3. Bidding will be conducted through open competitive bidding procedures using a nondiscretionary “*pass/fail*” criterion as specified in the 2016 revised IRR of RA No. 9184.

Bidding is restricted to Filipino citizens/sole proprietorships, partnerships, or organizations with at least sixty percent (60%) interest or outstanding capital stock belonging to citizens of the Philippines, and to citizens or organizations of a country the laws or regulations of which grant similar rights or privileges to Filipino citizens, pursuant to RA No. 5183.

4. Prospective Bidders may obtain further information from **DepEd Procurement Management Service** at **Telephone Nos. 8636-6542 or 8633- 9343** and inspect the Bidding Documents at the address given below from **Monday to Friday from 8:00 a.m. to 5:00 p.m.**
5. For those who are interested to purchase the Bidding Documents, two (2) options are made available, to wit:
  - a. A complete set of Bidding Documents may be acquired by interested Bidders from the **DepEd Procurement Management Service, Room M-511, 5th Floor, Mabini Building, DepEd Central Office Complex, Meralco Avenue, Pasig City**, upon accomplishing a bidder's information sheet and payment of a non-refundable fee for the Bidding Documents to the **DepEd Cashier**.

Payment in checks should be made payable to **DECS OSEC Trust**.

- b. Interested Bidders may signify their intent to purchase the Bidding Documents through email at [depedcentral.bacsecretariat@deped.gov.ph](mailto:depedcentral.bacsecretariat@deped.gov.ph) by accomplishing a Bidder's Information Sheet (***Attached as Annex “A” in the Bidding Documents***). Upon receipt of the Bidder's Information Sheet, the BAC Secretariat Division will send through email the details of the DECS OSEC Trust Fund Account for payment. Upon payment, Bidders may send through email the proof of payment before the deadline for submission of bids. Upon receipt of proof of payment, the BAC Secretariat will send the electronic copy of the Bidding Documents.

Amount of Bidding Documents shall be **as follows**:

<b>Lot No.</b>	<b>Amount (in Php)</b>
1	5,314.24
2	7,214.66
3	5,937.82

4	531.66
5	3,170.47
6	8,600.45
7	9,048.69
8	10,208.55
9	6,694.37
10	4,827.39
11	3,920.62
12	1,174.65
13	2,278.75
14	6,077.66
<b>Total Bidding Documents Fee</b>	<b>75,000.00</b>

6. The **DepEd** will hold a Pre-Bid Conference for this Project on **December 7, 2023, 9:30 a.m.** at the **Office of the Undersecretary for Procurement Conference Room, Ground Floor, Bonifacio Building, DepEd Complex, Meralco Avenue, Pasig City**, which shall be open to prospective bidders.
7. Bids must be duly received by the BAC Secretariat on or before **9:00 a.m. of December 19, 2023** at the **Office of the Undersecretary for Procurement Conference Room, Ground Floor, Bonifacio Building, DepEd Complex, Meralco Avenue, Pasig City**.

**Late bids shall not be accepted.**

8. All Bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in **ITB** Clause 14.
9. Bid opening shall be on **December 19, 2023, 9:30 a.m. at Office of the Undersecretary for Procurement Conference Room, Ground Floor, Bonifacio Building, DepEd Complex, Meralco Avenue, Pasig City**. Bids will be opened in the presence of the bidders' representatives who choose to attend the activity.

Only **two (2) representatives** per bidder will be allowed to enter inside the venue.

**For the purpose of constituting a quorum**, both the physical and virtual presence of the BAC members shall be considered pursuant to GPPB Resolution No. 09-2020.

10. **Bidders are hereby informed that if the allocated amounts for the mentioned projects are withdrawn or if the authorized amount in the GAA is lower than the contract amounts, the DepEd shall not proceed with the award for any of these projects.** Additionally, the DepEd retains the right to reject any and all bids, declare a failure of bidding, or not award the contract at any time before the contract award in accordance with Sections 35.6 and 41 of the 2016 revised IRR of RA No. 9184, without incurring any liability to the affected bidder or bidders.
11. For further information, please refer to:

**PAULA JANINE L. MANUEL**  
Technical Assistant II

Procurement Management Service - BAC Secretariat Division  
Rm. M-511, 5th Floor, Mabini Bldg.  
DepEd Complex, Meralco Avenue, Pasig City  
Telephone Nos. 8636-6542 or 8633-9343  
Email address: [depedcentral.bacsecretariat@deped.gov.ph](mailto:depedcentral.bacsecretariat@deped.gov.ph)

12. You may visit the following websites:

For downloading of Bidding Documents: <https://notices.philgeps.gov.ph/>  
<https://www.deped.gov.ph/>

*Date of Issuance of Bidding Documents: **November 30, 2023***

**(Sgd.)**

**Atty. RESTY C. OSIAS**  
*Director IV and Chairperson*

***Section II. Instructions to Bidders***

## 1. **Scope of Bid**

The **DepEd**, through its **Bureau of Learning Resources-Cebu**, wishes to receive Bids for the **EPA of the Mass Production, Supply, and Delivery of Science and Mathematics Equipment Packages to Public Elementary for Grades 1 to 3 & Grades 4 to 6, Public Junior High Schools for Grades 7 to 10, and Public Senior High Schools for Grades 11 to 12 (CORE & STEM)**, with project identification number **2024-BLR4(002)-BVI-CB-003**.

The Procurement Project (referred to herein as “Project”) is composed of **fourteen (14) lots** as described in **Section I. (Invitation to Bid), Section VI. (Schedule of Requirements)**, and **Section VII. (Technical Specifications)**.

## 2. **Funding Information**

2.1. The GOP, based on the FY 2024 NEP, in the amount of **Philippine Pesos Two Billion, Seventy-Three Million, Twenty-Four Thousand, Four Hundred Forty-Four and 04/100 (Php2,073,024,444.04)**.

2.2. The source of funding is based on the FY 2024 National Expenditure Program but the **funding shall only take effect upon the approval and effectivity of the FY 2024 GAA**. In accordance with **GPPB Circular No. 06-2019**, agencies may only proceed with the issuance of the Notice of Award upon approval or enactment of their respective appropriations and issuance of budget authorization document and based on the amount authorized therein.

## 3. **Bidding Requirements**

The Bidding for the Projects shall be governed by all the provisions of RA No. 9184 and its 2016 revised IRR, including its Generic Procurement Manuals and associated policies, rules and regulations as the primary source thereof, while the herein clauses shall serve as the secondary source thereof.

Any amendments made to the IRR and other GPPB issuances shall be applicable only to the ongoing posting, advertisement, or **IB** by the BAC through the issuance of a supplemental or bid bulletin.

The Bidder, by the act of submitting its Bid, shall be deemed to have verified and accepted the general requirements of this Project, including other factors that may affect the cost, duration and execution or implementation of the contract, project, or work and examine all instructions, forms, terms, and project requirements in the Bidding Documents.

## 4. **Corrupt, Fraudulent, Collusive, and Coercive Practices**

The Procuring Entity, as well as the Bidders and Suppliers, shall observe the highest standard of ethics during the procurement and execution of the contract. They or through an agent shall not engage in corrupt, fraudulent, collusive, coercive, and obstructive practices defined under Annex “I” of the 2016 revised IRR of RA No. 9184 or other integrity violations in competing for the Project.

## 5. Eligible Bidders

5.1. Only Bids of Bidders found to be legally, technically, and financially capable will be evaluated.

5.2. Foreign ownership exceeding those allowed under the rules may participate pursuant to:

- i. When a Treaty or International or Executive Agreement as provided in Section 4 of the RA No. 9184 and its 2016 revised IRR allow foreign bidders to participate;
- ii. Citizens, corporations, or associations of a country, included in the list issued by the GPPB, the laws or regulations of which grant reciprocal rights or privileges to citizens, corporations, or associations of the Philippines;
- iii. When the Goods sought to be procured are not available from local suppliers; or
- iv. When there is a need to prevent situations that defeat competition or restrain trade.

5.3. Pursuant to Section 23.4.1.3 of the 2016 revised IRR of RA No.9184, the Bidder should have an SLCC that is **at least one (1)** contract similar to the Project to be bid and the value of which is adjusted by the Bidders to current prices using the PSA's CPI, must be **at least fifty (50%)** of the ABC of the lot bid for; OR **at least two (2) similar contracts**, the aggregate amount of which should be equivalent to **at least fifty percent (50%)** of the ABC of the bid for and the largest of these similar contracts must be equivalent to **at least twenty-five percent (25%) of the ABC** as required.

5.4. The Bidders shall comply with the eligibility criteria under Section 23.4.1 of the 2016 IRR of RA No. 9184.

## 6. Origin of Goods

There is no restriction on the origin of goods other than those prohibited by a decision of the UN Security Council taken under Chapter VII of the Charter of the UN, subject to Domestic Preference requirements under **ITB** Clause 18.

## 7. Subcontracts

7.1. The Bidder may subcontract portions of the Projects to the extent allowed by the Procuring Entity as stated herein, but in no case more than twenty percent (20%) of the Projects.

The Procuring Entity has prescribed that:

- a. Subcontracting is not allowed.

## 8. Pre-Bid Conference

The Procuring Entity will hold a pre-bid conference for this Project on the specified date and time and either at its physical address and/or through videoconferencing/webcasting as indicated in **paragraph 6** of the **IB**.

## 9. Clarification and Amendment of Bidding Documents

Prospective bidders may request for clarification on and/or interpretation of any part of the Bidding Documents. Such requests must be in writing and received by the Procuring Entity, either at its given address or through electronic mail indicated in the **IB**, at least ten (10) calendar days before the deadline set for the submission and receipt of Bids.

## 10. Documents comprising the Bid: Eligibility and Technical Components

10.1. The first envelope shall contain the eligibility and technical documents of the Bid as specified in **Section VIII (Checklist of Technical and Financial Documents)**.

10.2. The Bidder's SLCC as indicated in **ITB** Clause 5.3 should have been completed within a period of **ten (10) years** prior to the deadline for the submission and receipt of bids.

10.3. If the eligibility requirements or statements, the bids, and all other documents for submission to the BAC are in foreign language other than English, it must be accompanied by a translation in English, which shall be authenticated by the appropriate Philippine foreign service establishment, post, or the equivalent office having jurisdiction over the foreign bidder's affairs in the Philippines. Similar to the required authentication above, for Contracting Parties to the Apostille Convention, only the translated documents shall be authenticated through an apostille pursuant to GPPB Resolution No. 13-2019 dated 23 May 2019. The English translation shall govern, for purposes of interpretation of the bid.

## 11. Documents comprising the Bid: Financial Component

11.1. The second bid envelope shall contain the financial documents for the Bid as specified in **Section VIII (Checklist of Technical and Financial Documents)**.

11.2. If the Bidder claims preference as a Domestic Bidder or Domestic Entity, a certification issued by DTI shall be provided by the Bidder in accordance with Section 43.1.3 of the 2016 revised IRR of RA No. 9184.

11.3. Any bid exceeding the ABC indicated in paragraph 1 of the **IB** shall not be accepted.

11.4. For Foreign-funded Procurement, a ceiling may be applied to bid prices provided the conditions are met under Section 31.2 of the 2016 revised IRR of RA No. 9184.

## 12. Bid Prices

12.1. Prices indicated on the Price Schedule shall be entered separately in the following manner:

- a. For Goods offered from within the Procuring Entity's country:
  - i. The price of the Goods quoted EXW (ex-works, ex-factory, ex-warehouse, ex-showroom, or off-the-shelf, as applicable);
  - ii. The cost of all customs duties and sales and other taxes already paid or payable;
  - iii. The cost of transportation, insurance, and other costs incidental to delivery of the Goods to their final destination; and
  - iv. The price of other (incidental) services, if any, listed in the **BDS**.
- b. For Goods offered from abroad:
  - i. Unless otherwise stated in the **BDS**, the price of the Goods shall be quoted delivered duty paid (DDP) with the place of destination in the Philippines as specified in the **BDS**. In quoting the price, the Bidder shall be free to use transportation through carriers registered in any eligible country. Similarly, the Bidder may obtain insurance services from any eligible source country.
  - ii. The price of other (incidental) services, if any, as listed in **Section VII (Technical Specifications)**.

## 13. Bid and Payment Currencies

13.1. For Goods that the Bidder will supply from outside the Philippines, the bid prices may be quoted in the local currency or tradeable currency accepted by the BSP at the discretion of the Bidder. However, for purposes of bid evaluation, Bids denominated in foreign currencies, shall be converted to Philippine currency based on the exchange rate as published in the BSP reference rate bulletin on the day of the bid opening.

13.2. Payment of the contract price shall be made in:

- a. Philippine Pesos.

## 14. Bid Security

14.1. The Bidder shall submit a Bid Securing Declaration or any form of Bid Security in the amount indicated in the **BDS**, which shall not be less than the percentage of the ABC in accordance with the schedule in the **BDS**.



14.2. The Bid and bid security shall be valid for one hundred twenty **(120) calendar days** reckoned from the date of the opening of bids. Any Bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.

- a. In the case of EPA, the Procuring Entity may request the bidders to extend the validity of their bid securities beyond one hundred twenty (120) calendar days, prior to their expiration, if the funding source for the Procurement Project has yet to be approved and made effective.

A change in the form of the bid security is allowed if this is made prior to the expiration of the bid validity sought to be extended.

**If the bidder refuses to extend the bid validity, the Procuring Entity shall reject the bid submitted by said bidder.**

## **15. Sealing and Marking of Bids**

Each Bidder shall submit one copy of the first and second components of its Bid.

The Procuring Entity may request additional hard copies of the Bid and/or electronic copies. However, failure of the Bidders to comply with the said request shall not be a ground for disqualification.

## **16. Deadline for Submission of Bids**

16.1. The Bidders shall submit on the specified date and time at its physical address indicated in paragraph 7 of the **IB**.

## **17. Opening and Preliminary Examination of Bids**

17.1. The BAC shall open the Bids in public at the time, on the date, and at the place specified in paragraph 9 of the **IB**. The Bidders' representatives who are present shall sign a register evidencing their attendance. In case videoconferencing, webcasting or other similar technologies will be used, attendance of participants shall likewise be recorded by the BAC Secretariat.

In case the Bids cannot be opened as scheduled due to justifiable reasons, the rescheduling requirements under Section 29 of the 2016 revised IRR of RA No. 9184 shall prevail.

17.2. The preliminary examination of bids shall be governed by Section 30 of the 2016 revised IRR of RA No. 9184.

## **18. Domestic Preference**

18.1. The Procuring Entity will grant a margin of preference for the purpose of comparison of Bids in accordance with Section 43.1.2 of the 2016 revised IRR of RA No. 9184.

## **19. Detailed Evaluation and Comparison of Bids**

- 19.1. The Procuring Entity's BAC shall immediately conduct a detailed evaluation of all Bids rated "*passed*," using non-discretionary pass/fail criteria. The BAC shall consider the conditions in the evaluation of Bids under Section 32.2 of the 2016 revised IRR of RA No. 9184.
- 19.2. If the Project allows partial bids, bidders may submit a proposal on any of the packages, and evaluation will be undertaken on a per package basis, as the case maybe. In this case, the Bid Security as required by **ITB** Clause 14 shall be submitted for each package separately.
- 19.3. The descriptions of the packages shall be indicated in **Section VII (Technical Specifications)**, although the ABCs of these packages are indicated in the **BDS** for purposes of the NFCC computation pursuant to Section 23.4.2.6 of the 2016 revised IRR of RA No. 9184. The NFCC must be sufficient for the total of the ABC for all the packages participated in by the prospective Bidder.
- 19.4. The Projects shall be awarded as separate contracts per package.
- 19.5. Except for bidders submitting a committed Line of Credit from a Universal or Commercial Bank in lieu of its NFCC computation, all Bids must include the NFCC computation pursuant to Section 23.4.1.4 of the 2016 revised IRR of RA No. 9184, which must be sufficient for the total of the ABC for the packages participated in by the prospective Bidder. For bidders submitting the committed Line of Credit, it must be at least equal to ten percent (10%) of the ABC for the line item participated in by the prospective Bidder.

## **20. Post-Qualification**

- 20.1. Within a non-extendible period of five (5) calendar days from receipt by the Bidder of the notice from the BAC that it submitted the Lowest Calculated Bid, the Bidder shall submit its latest income and business tax returns filed and paid through the BIR Electronic Filing and Payment System (eFPS) and other appropriate licenses and permits required by law and stated in the **BDS**.

## **21. Signing of the Contract**

- 21.1. The documents required in Section 37.2 of the 2016 revised IRR of RA No. 9184 shall form part of the Contract. Additional Contract documents are indicated in the **BDS**.

## ***Section III. Bid Data Sheet***

# Bid Data Sheet

ITB Clause	
2	<p>The source of funding is based on the FY 2024 National Expenditure Program but the <b>funding shall only take effect upon the approval and effectivity of the FY 2024 GAA.</b></p> <p>In accordance with <b>GPPB Circular No. 06-2019</b>, agencies may only proceed with the issuance of the Notice of Award upon approval or enactment of their respective appropriations and issuance of budget authorization document and based on the amount authorized therein. Thus, <b>if the allocated amounts for the mentioned projects are withdrawn or if the authorized amount in the GAA is lower than the contract amounts, the DepEd shall not proceed with the award for any of these projects.</b></p>
5.3	<p>For this purpose, contracts similar to the projects shall be:</p> <p style="padding-left: 40px;">a. For Mass Production Items (LOT 3: DEVELOPED STORAGE CABINETS): "Manufacture and Supply and Delivery of Metal Product"</p> <p style="padding-left: 40px;">For Market Items (LOTS 1, 2, 4 to 14): "Supply and Delivery of Science and/or Mathematics Equipment"</p> <p style="padding-left: 40px;">b. completed within <b>ten (10) years</b> immediately prior to the deadline for the submission and receipt of bids.</p>
7.1b	<p><b>Subcontract</b></p> <p>Subcontracting shall not be allowed.</p>
9	<p>Request for clarifications for an interpretation must be in writing and submitted at least ten (10) calendar days before the deadline set for the submission and receipt of bids.</p> <p>The Procuring Entity's address is:</p> <p style="padding-left: 40px;"><b>Dir. Resty C. Osias</b> Bids and Awards Committee (BAC) VI c/o Procurement Management Service-BAC Secretariat Division Rm. M-511, 5th Floor, Mabini Bldg. DepEd Complex, Meralco Avenue, Pasig City Telephone Nos. 8636-6542 or 8633-9343 Email address: <b>depedcentral.bacsecretariat@deped.gov.ph</b></p> <p>Consistent with Section 22.5.3 of the revised IRR of RA No. 9184, posting on the PhilGEPS and the Procuring Entity's website of any supplemental/ bid bulletin shall be considered sufficient notice to all bidders or parties concerned.</p>

10	<p><b>Documents comprising the Bid: Technical Component</b></p> <p>The first bid envelope shall contain the technical documents as specified in Section VIII (Checklist of Technical and Financial Documents)</p> <p>Original copies of the Class “A” Eligibility Legal Documents, such as the SEC, DTI, or the CDA registration certificate and the Mayor’s Permit, may not be submitted on the date and the time of the bid submission. However, the bidder must be able to present such original copies during post-qualification on demand by the BAC or its authorized representative(s) for validation.</p>																																																																			
11	<p><b>Documents comprising the Bid: Financial Component</b></p> <p>The second bid envelope shall contain the financial documents for the Bid, and the Bid Form and Price Schedule <b>shall be per lot</b> as prescribed in the forms provided herein.</p>																																																																			
	<p>Post-qualification documents may also be submitted during the bidding but this does not disqualify bidders who will not submit post-qualification documents during bid submission.</p>																																																																			
12	<p>The price of the Goods shall be quoted (<b>Designated Public Elementary, Junior High, and Senior High Schools</b>) or the applicable International Commercial Terms (INCOTERMS) for this Project.</p> <p>Bid prices should be written in <b>two (2) decimal places only</b>. Bid prices that are written in more than two (2) decimal places shall be rounded off.</p> <p><b>Results of bid evaluation that will exceed the ABC shall be a ground for rejection of the bid(s).</b></p>																																																																			
14.1	<p>The bid security shall be in the form of a Bid Securing Declaration, or any of the following forms and amounts indicated as follows:</p> <table border="1"> <thead> <tr> <th rowspan="2">Lot No.</th> <th colspan="3">Bid Security Form &amp; Amount</th> <th rowspan="2">Bid Securing Declaration (no percentage required)</th> </tr> <tr> <th>Cost Breakdown of the ABC</th> <th>2% of ABC (if Bid Security is in Cash, Cashier’s/Manager’s check, Bank Draft/Guarantee or Irrevocable Letter of Credit)</th> <th>5% of ABC (if Bid Security is in Surety Bond)</th> </tr> </thead> <tbody> <tr> <td colspan="5"><b>I. Mass Production Items</b></td> </tr> <tr> <td>1</td> <td>146,887,225.77</td> <td>2,937,744.52</td> <td>7,344,361.29</td> <td rowspan="12"></td> </tr> <tr> <td>2</td> <td>199,415,461.33</td> <td>3,988,309.23</td> <td>9,970,773.07</td> </tr> <tr> <td>3</td> <td>164,123,399.75</td> <td>3,282,468.00</td> <td>8,206,169.99</td> </tr> <tr> <td colspan="5"><b>II. Market Items</b></td> </tr> <tr> <td>4</td> <td>14,695,348.21</td> <td>293,906.96</td> <td>734,767.41</td> </tr> <tr> <td>5</td> <td>87,632,867.16</td> <td>1,752,657.34</td> <td>4,381,643.36</td> </tr> <tr> <td>6</td> <td>237,719,335.42</td> <td>4,754,386.71</td> <td>11,885,966.77</td> </tr> <tr> <td>7</td> <td>250,108,848.79</td> <td>5,002,176.98</td> <td>12,505,442.44</td> </tr> <tr> <td>8</td> <td>282,167,773.45</td> <td>5,643,355.47</td> <td>14,108,388.67</td> </tr> <tr> <td>9</td> <td>185,034,568.90</td> <td>3,700,691.38</td> <td>9,251,728.45</td> </tr> <tr> <td>10</td> <td>133,430,560.95</td> <td>2,668,611.22</td> <td>6,671,528.05</td> </tr> <tr> <td>11</td> <td>108,367,272.90</td> <td>2,167,345.46</td> <td>5,418,363.65</td> </tr> <tr> <td>12</td> <td>32,467,754.76</td> <td>649,355.10</td> <td>1,623,387.74</td> </tr> </tbody> </table>	Lot No.	Bid Security Form & Amount			Bid Securing Declaration (no percentage required)	Cost Breakdown of the ABC	2% of ABC (if Bid Security is in Cash, Cashier’s/Manager’s check, Bank Draft/Guarantee or Irrevocable Letter of Credit)	5% of ABC (if Bid Security is in Surety Bond)	<b>I. Mass Production Items</b>					1	146,887,225.77	2,937,744.52	7,344,361.29		2	199,415,461.33	3,988,309.23	9,970,773.07	3	164,123,399.75	3,282,468.00	8,206,169.99	<b>II. Market Items</b>					4	14,695,348.21	293,906.96	734,767.41	5	87,632,867.16	1,752,657.34	4,381,643.36	6	237,719,335.42	4,754,386.71	11,885,966.77	7	250,108,848.79	5,002,176.98	12,505,442.44	8	282,167,773.45	5,643,355.47	14,108,388.67	9	185,034,568.90	3,700,691.38	9,251,728.45	10	133,430,560.95	2,668,611.22	6,671,528.05	11	108,367,272.90	2,167,345.46	5,418,363.65	12	32,467,754.76	649,355.10	1,623,387.74
Lot No.	Bid Security Form & Amount			Bid Securing Declaration (no percentage required)																																																																
	Cost Breakdown of the ABC	2% of ABC (if Bid Security is in Cash, Cashier’s/Manager’s check, Bank Draft/Guarantee or Irrevocable Letter of Credit)	5% of ABC (if Bid Security is in Surety Bond)																																																																	
<b>I. Mass Production Items</b>																																																																				
1	146,887,225.77	2,937,744.52	7,344,361.29																																																																	
2	199,415,461.33	3,988,309.23	9,970,773.07																																																																	
3	164,123,399.75	3,282,468.00	8,206,169.99																																																																	
<b>II. Market Items</b>																																																																				
4	14,695,348.21	293,906.96	734,767.41																																																																	
5	87,632,867.16	1,752,657.34	4,381,643.36																																																																	
6	237,719,335.42	4,754,386.71	11,885,966.77																																																																	
7	250,108,848.79	5,002,176.98	12,505,442.44																																																																	
8	282,167,773.45	5,643,355.47	14,108,388.67																																																																	
9	185,034,568.90	3,700,691.38	9,251,728.45																																																																	
10	133,430,560.95	2,668,611.22	6,671,528.05																																																																	
11	108,367,272.90	2,167,345.46	5,418,363.65																																																																	
12	32,467,754.76	649,355.10	1,623,387.74																																																																	

	<table border="1"> <tr> <td>13</td> <td>62,985,467.16</td> <td>1,259,709.34</td> <td>3,149,273.36</td> </tr> <tr> <td>14</td> <td>167,988,559.49</td> <td>3,359,771.19</td> <td>8,399,427.97</td> </tr> <tr> <td>Total</td> <td><b>2,073,024,444.04</b></td> <td><b>41,460,488.88</b></td> <td><b>103,651,222.20</b></td> </tr> </table>	13	62,985,467.16	1,259,709.34	3,149,273.36	14	167,988,559.49	3,359,771.19	8,399,427.97	Total	<b>2,073,024,444.04</b>	<b>41,460,488.88</b>	<b>103,651,222.20</b>
13	62,985,467.16	1,259,709.34	3,149,273.36										
14	167,988,559.49	3,359,771.19	8,399,427.97										
Total	<b>2,073,024,444.04</b>	<b>41,460,488.88</b>	<b>103,651,222.20</b>										
14.2	<p>In the case of <b>EPA</b>, the Procuring Entity may request the bidders to extend the validity of their bid securities beyond one hundred twenty (120) calendar days, prior to their expiration, if the funding source for the Procurement Project has yet to be approved and made effective.</p> <p>A change in the form of the bid security is allowed if this is made prior to the expiration of the bid validity sought to be extended.</p> <p><b>If the bidder refuses to extend the bid validity, the Procuring Entity shall reject the bid submitted by said bidder.</b></p>												
15	<p>Prospective bidders shall enclose their original eligibility and technical documents in a <b>sealed envelope</b> marked as <b>“ORIGINAL – TECHNICAL PROPOSAL.”</b></p> <p>Copies thereof shall be similarly sealed in envelopes marked as <b>“COPY NO. 1 – TECHNICAL PROPOSAL”</b> and <b>“COPY NO. 2 – TECHNICAL PROPOSAL.”</b></p> <p>In addition, the USB Flash Drive containing the soft copy of the original eligibility and technical documents shall be marked as <b>“USB Flash Drive.”</b> The said envelopes containing the original and the copies, and the flash drive shall then be enclosed in one single envelope marked as <b>“TECHNICAL PROPOSAL”</b>.</p> <p>On the other hand, the original financial documents shall be enclosed in <b>another sealed envelope</b> marked as <b>“ORIGINAL – FINANCIAL PROPOSAL.”</b> Copies thereof shall be similarly sealed in envelopes marked as <b>“COPY NO. 1 – FINANCIAL PROPOSAL”</b> and <b>“COPY NO. 2 – FINANCIAL PROPOSAL.”</b> The USB Flash Drive containing the soft copy of the original financial documents shall be marked as <b>“USB Flash Drive.”</b> The said envelopes containing the original and the copies, and the flash drive shall then be enclosed in one single envelope marked as <b>“FINANCIAL PROPOSAL.”</b> Further, the envelopes marked as <b>“TECHNICAL PROPOSAL”</b> and <b>“FINANCIAL PROPOSAL”</b> shall be enclosed and/or sealed in an outer envelope marked as <b>“MOTHER ENVELOPE.”</b> (See <i>Illustration 1 of this Bidding Documents</i>).</p>												

To facilitate the receipt and classification of bid envelopes, **mother envelope shall be RED, the inner envelope containing Technical Proposal shall be Blue, the inner envelope containing Financial Proposal shall be Green,** and the **Post-Qualification Documents** shall be **Brown.**

Post-qualification documents may be submitted during the bidding but this does not disqualify bidders who will not submit post-qualification documents during bid submission.

**Note: Each Bidder shall submit three (3) paper copies (one (1) original and two (2) copies) of its bid and two (2) USB Flash Drive electronic copies (one Technical Component and one Financial Component). The E-copy of the Price Schedule must be in the form of Excel and PDF.**

**Unsealed or unmarked bid envelopes, shall be rejected.** However, bid envelopes that are not properly sealed and marked as required in the Bidding Documents, shall be accepted, provided that the bidder or its duly authorized representative shall acknowledge such condition of the bid as submitted. The BAC shall assume no responsibility for the misplacement of the contents of the improperly sealed or marked bid, or for its premature opening.

**Online submission of bids is not allowed.**

19.3

The Project shall be awarded by **lot**, detailed as follows:

Lot No.	Description	Items	Approved ABC (in Php)
<b>I. Mass Production Items</b>			
1	Developed Basic Scikit	41 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>146,887,225.77</b>
2	Developed Science and Mathematics Equipment (Elementary, Junior High School, and Senior High School)	11 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>199,415,461.33</b>
3	Developed Storage Cabinets	1 item specified in Section VII (Technical Specifications) of this Bidding Documents	<b>164,123,399.75</b>
<b>II. Market Items</b>			
4	Chemicals	16 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>14,695,348.21</b>
5	Glassware and Lab Tools	30 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>87,632,867.16</b>
6	Science Devices, Instruments, and	15 items specified in Section VII (Technical	<b>237,719,335.42</b>

	Measuring Tools - Matter	Specifications) of this Bidding Documents	
7	Science Devices, Instruments, and Measuring Tools – Earth & Space and Living Things	23 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>250,108,848.79</b>
8	Mathematical Manipulatives	19 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>282,167,773.45</b>
9	Mathematical Tools and Instrument	14 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>185,034,568.90</b>
10	Models: Earth and Other Heavenly Bodies	11 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>133,430,560.95</b>
11	Models: The Human Anatomy	10 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>108,367,272.90</b>
12	Models: Other Biological Structures and Species	9 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>32,467,754.76</b>
13	Models: Molecular Geometry	6 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>62,985,467.16</b>
14	Force, Motion, and Energy Kits	48 items specified in Section VII (Technical Specifications) of this Bidding Documents	<b>167,988,559.49</b>
<b>Total ABC Amount</b>			<b>2,073,024,444.04</b>

The bidder shall be required to submit bids for all items in the lot. In the event of any incomplete bids for the items in the lot, the bidder will be **disqualified**.



19.5

The computation of a prospective bidder's NFCC must be at least equal to the ABC to be bid, calculated as follows:

*NFCC – [(Current assets minus current liabilities) (15)] minus the value of all outstanding or uncompleted portions of the projects under ongoing contracts, including awarded contracts yet to be started, coinciding with the lot or aggregate of lots bid for.*

The values of the domestic bidder's current assets and current liabilities shall be based on the latest Audited Financial Statements submitted to the BIR.

For purposes of computing the foreign bidders' NFCC, the value of the current assets and current liabilities shall be based on their Audited Financial Statements prepared in accordance with international financial reporting standards. (23.5.1.4a)

If the prospective bidder submits a committed Line of Credit, it must be at least equal to ten (10%) of the ABC of the lot/s bid for: Provided, that if the same is issued by a foreign Universal or Commercial Bank, it shall be confirmed or authenticated by a local Universal or Commercial Bank.

**In case the bidder bids for two or more lots, the bidder shall indicate the lots bid for in the order of priority or preference, following the form prescribed in this bidding documents.**

**The computation of NFCC shall take into account the lots bid for. The number of lots bid for shall also consider the committed line of credit. The bid shall be allowed only to the extent (i.e. number of lots) as the NFCC or the committed line of credit shall cover.**

**In any case, the NFCC computation or committed line of credit, as well as the SLCC, must be sufficient for all the lots or contracts bid for. The NFCC computation shall be in accordance with the prescribed form.**

**In case of a bid involving two or more lots, the bidder shall indicate in the NFCC form the lots bid for, in their order of priorities or preferences. The first lot in the order shall follow the following formula:**

*NFCC = [(current assets minus current liabilities) x (15)] - value of all outstanding or uncompleted portions of the projects under ongoing contracts, including awarded contracts yet to be started*

**For subsequent lots, the formula shall be as follows:**

*NFCC = [(current assets — current liabilities) x (15)] - [value of all outstanding or uncompleted portions of the projects under ongoing contracts, including awarded contracts yet to be started + value of the prior lot/s bid for]*

In case of a joint venture, the NFCC shall be computed based on the Audited

	<p>Financial Statement of the <b>LOCAL LEAD PARTNER</b>, <u>unless it is shown by clear proof that the other partners to the joint venture have infused capital investment to support the operation of the local lead partner to ensure compliance with the obligations under the contracts in this project, in which case the NFCC of the foreign joint venture or the minority partner of the joint venture shall be computed.</u></p> <p>For this purpose, the local lead partner shall be that person/organization/company identified in the Joint Venture Agreement or in the Letters of Intents (for potential JV partners) shown to have the controlling stakes in the JV, and who must be registered as a Filipino (Domestic) company or business entity.</p> <p>For easier reference, participating JVs or prospective JV partners must indicate in their JVAs or Letters of Intent the local lead partner appointed by them.</p>
20.1	<p>I. Within a non-extendible period of <b>five (5) calendar days</b> from receipt by the bidder of the notice from the BAC that it submitted the LCB, the Bidder shall submit the following requirements:</p> <p>a. Latest income and business tax returns: Printed copies of the Electronically filed Income Tax and Business Tax Returns with copies of their respective Payment Confirmation Forms for the immediately preceding calendar/tax year from the authorized agent bank;</p> <p>Only tax returns filed and taxes paid through the BIR Electronic Filing and Payment System (EFPS) shall be accepted.</p> <p><i>NOTE: The latest income and business tax returns are those within the last six months preceding the date of bid submission.</i></p> <p>b. Additional documentary requirements:</p> <ul style="list-style-type: none"> <li>• Manufacturer’s Certificate on the availability of the submitted/approved samples for the next five (5) years;</li> <li>• For items requiring specific material either by design or functionality specifications, the Bidder shall submit the Manufacturer’s Certification that the material of the samples submitted conform with the prescribed technical specifications; and</li> <li>• Training videos, user manuals, activity sheets, and key cards.</li> </ul> <p>c. To ensure the safety, efficacy, or quality of products and if the law requires that a certain product shall pass the requirements of the regulatory body, bidders shall submit certificates, licenses, or other documents issued by such regulatory agency or other accredited certifying body, such as but not limited to, FDA certificate for food and drugs, NTC for electronics equipment and the like.</p>

II. During post-qualification, upon demand by the BAC or its representative(s), a bidder with the lowest calculated bid shall be able to present/submit:

- a. Documents to verify or support its Statement of On-going and/ or Statement identifying its Single Largest Completed Contract which may consist of the following: appropriate and clear duly signed contracts, purchase orders, agreements, notices of award, job orders, or notices to proceed, with the corresponding duly signed certificate of completion, delivery receipts, inspection and acceptance reports, certificates of final acceptance or official receipts.
- b. For validation purposes, original copies Class "A" Eligibility documents.
- c. Certified true copy documents as issued by the certifying/authorized agencies.

During post-qualification, compliance of the goods offered with the requirements specified in this bidding document shall be determined, including the following:

- i. **As per Section 34.3, b.ii, item a, of the IRR of R.A. 9184**, verification of availability and commitment, and/or inspection and testing for the required capacities and operating conditions, of equipment units to be owned/leased/under purchase by the bidder for use in the contract under bidding, as well as checking the performance of the bidder in its ongoing government and private contracts, if any of these ongoing contracts shows:
  - a. Negative slippage of at least fifteen percent (15%) in any one project or a negative slippage of at least ten percent (10%) in each of two (2) or more contracts;
- ii. **As per Section 34.3, b.iii, item a to c, of the IRR of R.A. 9184**, verification and/or inspection and testing of the goods/product, aftersales and/or maintenance capabilities, in applicable cases, as well as checking the following:
  - a. Delay in the partial delivery of goods amounting to ten percent (10%) of the contract price in its ongoing government and private contracts;
  - b. If any of these contracts shows the bidder's failure to deliver or perform any or all of the goods or services within the period(s) specified in the contract or within any extension thereof granted by the Procuring Entity pursuant to a request made by the supplier prior to the delay, and such failure amounts to at least ten percent (10%) of the contract price; or
  - c. Unsatisfactory performance of the supplier's obligations as per contract terms and conditions at the time of inspection.

If the BAC verifies any of these deficiencies to be due to the bidder's fault or negligence, the BAC shall disqualify the bidder from the award, for the procurement of goods.

In case of foreign bidders, a Certificate of Authentication from the Department of Foreign Affairs shall be required for each document submitted, i.e. the Class "A" documents or its equivalent that are written in foreign language, translated to English, and duly authenticated by the appropriate Philippine foreign service establishment/post or the equivalent office having jurisdiction over the foreign bidder's affairs in the Philippines.

To facilitate post-qualification, the bidder at its option may submit in advance, i.e., on the deadline for submission and receipt of bids, above requirements and other documents required in *Section II. ITB 20.1*.

The envelope shall be placed in a **brown** envelope and marked:

ITB 20.1 Documents

Name of Project: \_\_\_\_\_

Bid Opening Date: \_\_\_\_\_

Name of Bidder: \_\_\_\_\_

Failure to submit above requirements within the required timeframe or a finding against the veracity of any such documents or other documents submitted for the project shall be a ground for disqualification of the bidder for the award and the enforcement of the bid securing declaration.

### **III. Submission of Samples (for Market Items Lots 4 to 14):<sup>1</sup>**

In addition to the documentary requirements to be submitted during post-qualification as provided under ITB Clause 20.1, **the bidder(s) with the Lowest Calculated Bid(s) for Lots 4 to 14 shall submit ONE sample item/unit for all the items within the lot(s) bid for, consistent with their actual offer as indicated in their bid.**

However, the bidder may provide a sample of better or superior quality, which, if accepted, shall be the reference for award, contract, prospection and eventual delivery. In case the item will be manufactured from abroad, the bidder may submit its list of equipment and a video showing the manufacturer's plant and equipment from abroad to prove the bidder's capability to manufacture the item.

These samples shall be subjected to evaluation during post-qualification, in which the Technical Working Group (TWG) shall evaluate the said samples to determine compliance with the required technical specifications, subject to the approval of the Bids and Awards Committee (BAC). Please refer to **Annex "C" for the Inspection and Test Protocol.**

---

<sup>1</sup> For **Mass Production Items (Lots 1 to 3)**, please refer to the provision on **"Inspection"** in Section V. Special Conditions of the Contract of this Bidding Documents.

	<p>In case of failed samples, the Supplier is allowed to replace samples within three (3) calendar days from the Notice of Replacement. If the Bidder still fails to submit samples with the minimum DepEd technical specifications, it shall be a ground for disqualification.</p>
--	---

## ***Section IV. General Conditions of Contract***

## 1. **Scope of Contract**

This Contract shall include all such items, although not specifically mentioned, that can be reasonably inferred as being required for its completion as if such items were expressly mentioned herein. All the provisions of RA No. 9184 and its 2016 revised IRR, including the Generic Procurement Manual, and associated issuances, constitute the primary source for the terms and conditions of the Contract, and thus, applicable in contract implementation. Herein clauses shall serve as the secondary source for the terms and conditions of the Contract.

This is without prejudice to Sections 74.1 and 74.2 of the 2016 revised IRR of RA No. 9184 allowing the GPPB to amend the IRR, which shall be applied to all procurement activities, the advertisement, posting, or invitation of which were issued after the effectivity of the said amendment.

Additional requirements for the completion of this Contract are provided in the **Special Conditions of Contract (SCC)**.

## 2. **Advance Payment and Terms of Payment**

2.1. Advance payment of the contract amount is provided under Annex “D” of the revised 2016 IRR of RA No. 9184.

2.2. The Procuring Entity is allowed to determine the terms of payment on the partial or staggered delivery of the Goods procured, provided such partial payment shall correspond to the value of the goods delivered and accepted in accordance with prevailing accounting and auditing rules and regulations. The terms of payment are indicated in the **SCC**.

## 3. **Performance Security**

Within ten (10) calendar days from receipt of the Notice of Award by the Bidder from the Procuring Entity but in no case later than prior to the signing of the Contract by both parties, the successful Bidder shall furnish the performance security in any of the forms prescribed in Section 39 of the 2016 revised IRR of RA No. 9184.

## 4. **Inspection and Tests**

The Procuring Entity or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Project specifications at no extra cost to the Procuring Entity in accordance with the Generic Procurement Manual. In addition to tests in the **SCC, Section VII (Technical Specifications)** shall specify what inspections and/or tests the Procuring Entity requires, and where they are to be conducted. The Procuring Entity shall notify the Supplier in writing, in a timely manner, of the identity of any representatives retained for these purposes.

All reasonable facilities and assistance for the inspection and testing of Goods, including access to drawings and production data, shall be provided by the Supplier to the authorized inspectors at no charge to the Procuring Entity.

## **5. Warranty**

5.1. In order to assure that manufacturing defects shall be corrected by the Supplier, a warranty shall be required from the Supplier as provided under Section 62.1 of the 2016 revised IRR of RA No. 9184.

5.2. The Procuring Entity shall promptly notify the Supplier in writing of any claims arising under this warranty. Upon receipt of such notice, the Supplier shall, repair or replace the defective Goods or parts thereof without cost to the Procuring Entity, pursuant to the Generic Procurement Manual.

## **6. Liability of the Supplier**

The Supplier's liability under this Contract shall be as provided by the laws of the Republic of the Philippines.

If the Supplier is a joint venture, all partners to the joint venture shall be jointly and severally liable to the Procuring Entity.



## ***Section V. Special Conditions of Contract***

## ***Special Conditions of Contract***

<b>GCC Clause</b>	
1	<p><b>Delivery and Documents –</b></p> <p>For purposes of the Contract, “EXW,” “FOB,” “FCA,” “CIF,” “CIP,” “DDP” and other trade terms used to describe the obligations of the parties shall have the meanings assigned to them by the current edition of INCOTERMS published by the International Chamber of Commerce, Paris. The Delivery terms of this Contract shall be as follows:</p> <p>The delivery terms applicable under this Contract shall be <b>DDP (Duties Delivered Paid)</b> in accordance with INCOTERMS. Risk and title to the goods shall pass from the Supplier to DepEd upon receipt and final acceptance of the goods at the designated delivery site <b>(Designated Public Elementary, Junior High, and Senior High Schools specified in the Allocation List [Annex “D”] of this Bidding Documents).</b></p> <p>The goods to be delivered by the Supplier must be in accordance with Section VI. Schedule of Requirements and Section VII. Technical Specifications and other requirements indicated in the Bidding Documents, and/or as may be reasonably deemed necessary to effect the full and timely delivery of the goods.</p> <p>For purposes of this Clause, the representative of the Department of Education (DepEd) at the delivery Site shall be the <b>Authorized Representative (School Head) and the designated Inspectorate Team.</b></p> <p>Upon delivery of the goods to the delivery site, the Supplier shall notify DepEd and present the following documents:</p> <ol style="list-style-type: none"> <li>1. Original and four copies of the Supplier’s invoice showing goods’ description, quantity, unit price, and total amount;</li> <li>2. Original and four copies of the Manufacturer’s and/or Supplier’s Warranty Certificate, where applicable;</li> <li>3. Original (white copy) and scanned copy stored in CD/DVD/Flash Drive of the pre-numbered Inspection and Acceptance Report (IAR) and Delivery Receipt (DR) detailing number and description of goods received and duly signed and dated by the ARP.</li> </ol> <p>In case the Supplier encounters conditions impeding timely delivery of the goods, it must promptly notify DepEd in writing <b>within five (5) calendar days</b> from notice of such conditions, and any request for work suspension and/or contract period extension shall be promptly done in writing as soon as circumstances for such requests have become apparent. The Supplier must provide sufficient proof to support any request for work suspension and/or contract period extension.</p>

**Incidental Services –**

The Supplier is required to provide all of the following services, including additional services, if any, as follows:

- a. Performance or supervision of on-site assembly and/or start-up of the supplied Goods;
- b. Furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied goods;
- c. Performance, supervision, maintenance and/or repair of the supplied goods for a period of time agreed by the parties, provided that this service shall not relieve the supplier of any warranty obligation; and
- d. Provision of training video for various items with training component.

However, assembly, installation, start-up and/or commissioning of items, in cases where they are necessary, shall remain to be the responsibility and for the account of the supplier notwithstanding inspection and acceptance at its premises. In case of failure of Supplier to do this/these, DepEd may call upon the Supplier's warranty so that the assembly, installation, start-up and/or commissioning shall be undertaken by DepEd. In any case, the Supplier shall provide written manuals and tutorial videos for installation, commissioning, start-up, assembly, use and maintenance of the items delivered.

**Spare Parts –**

The Supplier is required to provide all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:

- a. such spare parts as the DepEd may elect to purchase from the Supplier, provided that this election shall not relieve the Supplier of any warranty obligations under this Contract;
- b. in the event of termination of production of the spare parts:
  - i. advance notification to the DepEd of the pending termination, in sufficient time to permit the Procuring Entity to procure needed requirements; and
  - ii. following such termination, furnishing at no cost, to the DepEd, the blueprints, drawings, and specifications of the spare parts, if requested.

**Packaging –**

As may be applicable for goods to be delivered, the Supplier shall provide such packaging as is required to prevent their damage or

deterioration during transit to their final destination, as indicated in this Contract. The packaging shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt, and precipitation during transit, and open storage. Packaging case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit.

The packaging, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided, including additional requirements, if any, specified below, and in any subsequent instructions ordered by DepEd:

*Additional Instructions for Packaging:*

1. Packaging should be according to school and as per Key Stage (see Allocation List).
2. The following will appear on the exterior of the packages/boxes:
  - DepEd Logo
  - Project Name
  - Items inside (name, general description, quantity)
  - Supplier's Name and Contact Details
3. Other provisions on the packaging, please refer to DepEd DO 41, s. 2021.

For the **Mass Production of Cabinets**, the Supplier must ensure that the items are properly sealed, complete, and properly packaged (i.e., **disassembled**), suitable for easier hauling, transport and storage, upon delivery to the designated area to perform the formal acceptance of the items by the recipient school, as the case may be.

**Insurance –**

The goods under this Contract shall be fully insured by the Supplier in a freely convertible currency against loss or damage incidental to manufacture or acquisition, transportation, storage, and delivery. The goods remain at the risk and title of the Supplier until their final acceptance by DepEd.

**Transportation –**

Transport of the goods shall be arranged by the Supplier, and related costs shall be included in the contract price.

DepEd accepts no liability for the damage of goods during transit. Risk and title to the goods will not be deemed to have passed to DepEd until its receipt and final acceptance at the final destination, through its authorized receiving personnel.

	<p><b>Intellectual Property Rights –</b></p> <p>The Supplier shall indemnify DepEd against all third-party claims of infringement of copyright arising from use of the Goods or any part thereof.</p>
2.2	<p><b>Schedule of Payment</b></p> <p>The method and conditions of payment to be made to the Supplier through the Government disbursement procedure within sixty (60) days after the date of acceptance of Goods at the project Site and upon submission of documents under this contract shall be as follows:</p> <p><b>Advance Payment</b></p> <p>An advance payment <b>not to exceed fifteen percent (15%)</b> of the contract amount shall be allowed and paid within 60 calendar days from the signing of the contract. An irrevocable letter of credit or bank guarantee of an equivalent amount must be submitted and shall remain valid until the goods are delivered, and accompanied by a claim for advance payment.</p> <p><b>Progress Payment</b></p> <p>For the progress payment, the Supplier shall be paid upon delivery to at least 25% of the recipient schools with complete goods and acceptance of the same by an authorized representative of DepEd.</p> <p>The Supplier may submit a request for payment based on progress reports which shall be attached to the progress billing and include the following:</p> <ol style="list-style-type: none"> <li>1. quantity of goods delivered based on the schedule of delivery and other relevant terms and conditions of the contract;</li> <li>2. duly signed Delivery Receipts;</li> <li>3. duly signed Inspection and Acceptance Reports, including certification by Supplier, as approved by the duly authorized DepEd representative (School Head), that the goods have been delivered and/or properly installed and commissioned in accordance with the contract;</li> </ol> <p>Other documents in support of a request for payment may be required by DepEd pursuant to existing disbursement, accounting and auditing rules and procedures.</p> <p>(NOTE: The Supplier must furnish a copy of the above-mentioned documents to DepEd Accounting and the End-user [Bureau of Learning Resources - Cebu (BLR-Cebu)] and the Contract Management Division of the Procurement Service, Central Office).</p> <p>Payments shall be subject to the Warranty provision in the form of either retention money in an amount equivalent to three percent (3%) of every progress payment, or a special bank guarantee in the amount equivalent to three percent (3%) of the Contract Price as provided under Section 62.1 of R.A. 9184 and its Revised IRR.</p>

	<p><b>Final Payment</b></p> <p>Final payment shall consist of the full and final payment of the unpaid inspected and accepted goods, subject to the submission of the required documents under the Bidding Documents.</p> <p>Release of retention money shall be at the expiration of the warranty period, or the remaining amount in case it has been utilized pursuant to the warranty provision.</p>
3	<p><b>Performance Security</b></p> <p>The Performance Security shall be posted in favor of DepEd, and shall be forfeited in the event it is established that the Supplier is in default of any of its obligation under the contract. The Supplier shall be responsible for the extension of its performance security and/or renewal of its performance security whenever necessary and/ without need of prior notice or instruction from DepEd, to ensure that it is in force and effect for the whole duration of the contract delivery period and until a Certificate of Final Acceptance is duly issued.</p> <p>Performance Security shall not contain any deletion, crossing-out, expunction, or any form of correction. Otherwise, DepEd may reject such security if any such intercalation, superimposition, or alteration affects any material information, or feature of the document.</p>
4	<p><b>Inspection</b></p> <p>I. The <b>samples for the Mass Production Items (Lots 1 to 3)</b> must be submitted by the Supplier during the inspection or pre-delivery inspection (PDI), subject to the evaluation of the duly designated Inspectorate Team. In case of failed samples, the Supplier is allowed to replace samples within three (3) calendar days from the Notice of Replacement.</p> <p>II. Pursuant to DO 041, s. 2021, inspection or PDI, where applicable for goods to be delivered, shall be conducted by DepEd through the duly designated Inspectorate Team. The inspection or PDI shall be made upon notice to the DepEd of the readiness of the goods for inspection.</p> <p>In case the inspection of goods will be conducted by the designated Inspectorate Team of the DepEd Central Office, the Supplier shall coordinate with DepEd, through the <b>Procurement Management Service-Contract Management Division (ProcMS-CMD)</b>, on the conduct of inspection or pre-delivery inspection (PDI). Any request for inspection or PDI shall be done in writing, and contain the following information:</p> <ol style="list-style-type: none"> <li>a. Project Title and Contract Number;</li> <li>b. Specific goods for inspection;</li> <li>c. Quantity of goods for inspection;</li> <li>d. Venue/Address of inspection site; and</li> <li>e. Proposed schedule of inspection which must be at least ten (10) calendar days from the submission of the letter request.</li> </ol>

	<p>The request for inspection or PDI shall be addressed to ProcMS-CMD, and must be submitted through email at <a href="mailto:procms.cmd@deped.gov.ph">procms.cmd@deped.gov.ph</a>.</p> <p>Prior to and for purposes of inspection, the Supplier shall ensure convenient access to the goods for inspection. The Supplier shall assign personnel to undertake the handling, unpacking, assembly, commissioning, disassembly, repacking, resealing, and sorting of the goods prior to, during, and after the inspection.</p> <p>DepEd shall have the right to visit and inspect the Supplier's premises covered by the Contract, at any time or stage of contract implementation, to monitor and assess the Supplier's capacity to discharge its contractual obligations.</p> <p>Goods with defects or non-compliant with the required technical specifications upon delivery shall be rejected, orally or in writing, by DepEd and replaced by the Supplier in accordance with the warranty provision of this bidding document. The Supplier shall replace all rejected goods within five (5) calendar days from its receipt of the Notice of Rejection from the recipient schools. The replacement goods shall be subject to re-inspection.</p> <p>Goods are considered defective when they are unfit for the use for which it is intended or its fitness for such use is diminished to such an extent that, had DepEd been aware thereof, it would not have acquired it or would have given a lower price for it.</p> <p>Defects in the goods can either be patent or latent. A patent defect is one that is apparent to the buyer or normal observation. It is an apparent or obvious defect. On the other hand, a latent defect is one that is not apparent to the buyer by reasonable observation. A latent defect is hidden or one that is not immediately determinable.</p>
5	<p><b>Warranty</b></p> <p>A one-year comprehensive warranty for the non-expendable goods, and three months for the expendable goods will be applied. The said warranty period shall reckon from the date of issuance of the Certificate of Final Acceptance by the DepEd that the delivered Goods have been duly inspected and accepted (i.e. final acceptance).</p> <p>Payments shall be subject to the Warranty provision in the form of either retention money in an amount equivalent to three percent (3%) of every progress payment, or a special bank guarantee in the amount equivalent to three percent (3%) of the Contract Price as provided under Section 62.1 of R.A. 9184 and its Revised IRR.</p> <p>Replacement and/or repair of the goods may be requested within 360 calendar days for non-expendable goods, and 90 calendar days for expendable goods, from the date of acceptance of goods by DepEd. Replacement and/or repair of the goods shall be made within 30 calendar days upon claim or request therefor.</p> <p>In case the Supplier opts for retention money, the amount shall only be released after the lapse of the entire warranty period, unless during</p>

	<p>the remainder of the warranty period, the retention money is substituted with a special bank guarantee as prescribed above.</p>
--	--

	<p>The Special Bank Guarantee shall not contain any deletion, crossing-out, expunction, or any form of correction. Otherwise, DepEd may reject such security if any such intercalation, superimposition, or alteration affects any material information, or feature of the document.</p>
--	--

## ***Section VI. Schedule of Requirements***



#### **A. List/Description of Goods /Services**

The delivery schedule expressed below stipulates the date of delivery to the project site.

- For Lots 1 to 3 (I. Mass Production Items): **Within Two Hundred Forty (240) calendar days** from the Supplier's receipt of the Notice to Proceed.

- For Lots 4 to 14 (II. Market Items): **Within One Hundred Ninety (190) calendar days** from the Supplier's receipt of the Notice to Proceed.

<b>Item Description</b>	<b>Quantity</b>	<b>Unit of Issue</b>
<b>I. MASS PRODUCTION ITEMS</b>		
<b>LOT 1: BASIC SCIKIT</b>		
Basic Scikit: Rail	22,570	lh
Basic Scikit: Ring with stem	42,185	pc
Basic Scikit: Test Tube Rack	42,185	pc
Basic Scikit: Wire Gauze	42,185	pc
Basic Scikit: Ø 12.7mm x 1000mm long Stand Rod	11,285	pc
Basic Scikit: Ø 9.5mm x 250mm long Stand Rod	84,370	pc
Basic Scikit: Ø 9.5mm x 500mm long Stand Rod	168,740	pc
Dynamics Carts-Rail System (Mechanics 002): Cart-spring loaded	11,285	unit
Dynamics Carts-Rail System (Mechanics 002): Cart-with counterweight	11,285	unit
Dynamics Carts-Rail System (Mechanics 002): Cylindrical Mass, 50-gram	56,425	pc
Dynamics Carts-Rail System (Mechanics 002): Driving Mass, 3-gram	56,425	pc
Dynamics Carts-Rail System (Mechanics 002): Leveling Pad Assembly	11,285	assy
Dynamics Carts-Rail System (Mechanics 002): Modelling Clay, 1 bar/set	11,285	bar
Dynamics Carts-Rail System (Mechanics 002): Plastic Hammer	11,285	pc
Dynamics Carts-Rail System (Mechanics 002): SCIKIT MECHANICS Storage Case 002 (With Cover and Base Sheathing)	11,285	pc
Dynamics Carts-Rail System (Mechanics 002): Stopper-Fork Assembly	11,285	assy
Dynamics Carts-Rail System (Mechanics 002): String (thin), 1 ball/set	11,285	ball
Free Fall Apparatus (Mechanics 001): Ball Case (with Cover and foam)	13,630	pc
Free Fall Apparatus (Mechanics 001): Digital Timer Assembly (Digital Stopwatch)	13,630	assy
Free Fall Apparatus (Mechanics 001): Metertape with hooks and plastic pointer	13,630	assy
Free Fall Apparatus (Mechanics 001): Pad Switch Assembly	13,630	assy
Free Fall Apparatus (Mechanics 001): SCIKIT MECHANICS Storage Case 001 (With Cover and Base Sheathing)	13,630	pc
Free Fall Apparatus (Mechanics 001): Solenoid Assembly	13,630	assy
Free Fall Apparatus (Mechanics 001): Synchro Box Assembly	13,630	assy

Free Fall Apparatus (Mechanics 001): Ø 12.7mm Steel Spherical Ball	27,260	pc
Free Fall Apparatus (Mechanics 001): Ø 25mm Plastic Spherical Ball with metal screw	27,260	pc
Free Fall Apparatus (Mechanics 001): Ø 25mm Steel Spherical Ball	27,260	pc
SCIKIT BASIC 001: SCIKIT BASIC Storage Case 001 (With Cover and Base Sheathing)	8,437	pc
SCIKIT BASIC 001: Stand Base	84,370	assy
SCIKIT BASIC 001: Stand Support	168,740	pc
SCIKIT BASIC 002: Multiclamp	210,925	assy
SCIKIT BASIC 002: SCIKIT BASIC Storage Case 002 (With Cover and Base Sheathing)	8,437	pc
SCIKIT BASIC 002: Test Tube Holder	42,185	pc
SCIKIT BASIC 003: SCIKIT BASIC Storage Case 003 (With Cover and Base Sheathing)	8,437	pc
SCIKIT BASIC 003: Universal Bosshead	84,370	assy
SCIKIT BASIC 003: Universal Clamp	101,244	assy
SCIKIT MECHANICS 003: 10-Newton Spring Balance	44,530	assy
SCIKIT MECHANICS 003: Friction Block and Friction Board	35,210	set
SCIKIT MECHANICS 003: Leveling Hose	13,630	lh
Experiment Module (SCIKIT MECHANICS)	8,437	pc
User's Manual (SCIKIT MECHANICS)	8,437	pc
<b>Sub-Total</b>	<b>1,621,229</b>	
<b>LOT 2: SCIENCE AND MATHEMATICS EQUIPMENT (Elem, JHS, &amp; SHS)</b>		
Blackboard Compass	6,180	pc
Blackboard Protractor	16,545	pc
Fresh Water Aquarium with Stand	6,180	pc
Heat Conductivity Apparatus	44,530	pc
Light Source (Single Slit)	11,285	pc
Set of Coils (Transformer)	13,630	set
Variable Power Supply with 5 pcs. Terminal Board	13,630	set
Fraction Set	73,405	set
Linear Pair/Angle Demonstrator	40,220	pc
Number Blocks	42,505	set
Place Value Chart with decimal pockets	6,180	pc
<b>Sub-Total</b>	<b>274,290</b>	
<b>LOT 3: STORAGE CABINETS</b>	<b>9,074</b>	
<b>II. SCIENCE AND MATHEMATICS EQUIPMENT (MARKET ITEMS)</b>		
<b>LOT 4: CHEMICALS</b>		
Benedict's Solution, 100 mL/bottle	3,050	bottle
Boric Acid, 100 grams/bottle	3,050	bottle
Bromothymol Blue	2,275	bottle
Calcium Chloride, 100 grams / bottle	3,050	bottle
Copper Sulfate, CuSO <sub>4</sub> , 100 grams/bottle	3,050	bottle
Gentian Violet, 100 ml / bottle	2,275	bottle
Iodine Solution, 100 ml / bottle	2,341	bottle
Magnesium Ribbon, 25 grams, 1 roll	3,050	roll

Manganese Dioxide, 50 grams / bottle	3,050	bottle
Microscope's Immersion Oil, 100mL/bot	2,275	bottle
Phenolphthalein, 100 grams/bottle	3,050	bottle
Potassium Chloride, 100 grams / bottle	3,050	bottle
Potassium Iodide, 100 grams / bottle	3,050	bottle
Sodium Hydroxide (Lye), 250 grams/bottle	3,050	bottle
Zinc Chloride, 100 grams / bottle	3,050	bottle
Zinc metal, pellets/mossy, 100 grams / bottle	3,050	bottle
<b>Sub-Total</b>	<b>45,766</b>	
<b>LOT 5: GLASSWARES AND LAB TOOLS</b>		
Beaker, borosilicate, 250 mL	178,000	pc
Beaker, borosilicate, 50 mL	89,000	pc
Burette, 10 mL capacity (acid)	13,630	pc
Burette, 10 mL capacity (base)	13,630	pc
Burner, Alcohol, glass, 150 mL Capacity	89,000	pc
Burner, Bunsen	15,595	pc
Cork Stopper # 5 (for Ø 16mm test tube)	15,595	pc
Crucible with lid/cover	15,595	pc
Dish, Evaporating, 75 mL	46,495	pc
Distillation set-up: Condenser, Liebig-type	4,310	pc
Distillation set-up: Distilling Flask, borosilicate, 250ml,	4,310	pc
Double burette clamp/holder	4,310	pc
Electrolysis Apparatus, student-type (Brownlee)	15,595	pc
Flask, Erlenmeyer, borosilicate, narrow-mouth, 250 mL	173,690	pc
Funnel, borosilicate, fluted	89,000	pc
Glass Tubing, Ø 6 mm x Ø 4 mm x 1500 mm long	15,595	pc
Manometer, Open U-tube	4,310	pc
Mortar and Pestle, porcelain, 150 mL.	46,495	pc
Osmosis Apparatus	4,310	pc
Reagent Bottle, narrow-mouth, amber, borosilicate, 250 mL	15,595	pc
Reagent Bottle, wide-mouth, transparent, borosilicate, 250 mL	15,595	pc
Rubber Stopper # 0 (for Ø 16mm test tube)	15,595	pc
Spatula, spoon, porcelain and glazed	89,000	pc
Stirring Rod, Ø 6 mm x 250 mm long	89,000	pc
Test Tube, borosilicate, Ø 16 mm x 150 mm long	399,175	pc
Test tube brush	89,000	pc
Tong, Crucible	15,595	pc
Vial, screw-neck, 25 ml. (with screw-type plastic cap)	359,990	pc
Vial, screw-neck, 50 mL. (with screw-type plastic cap)	359,990	pc
Watch Glass, Ø 90 mm	89,000	pc
<b>Sub-Total</b>	<b>2,376,000</b>	
<b>LOT 6: SCIENCE DEVICES, INSTRUMENTS, AND MEASURING TOOLS - MATTER</b>		
Balance, Toploading, Electronic	15,595	pc
Balance, Triple Beam, with tare, 2610-gram	15,595	pc

Calorimeter	4,310	pc
Centrifuge	2,586	pc
Electrical Conductivity (Conductivity of Solutions) Apparatus	13,630	pc
Filter Paper, crepe, 580mm x 580 mm sheet, Grade 0905	46,495	sheet
Gloves, Hand, super nitrile	89,000	pair
Graduated Cylinder, borosilicate, 10 mL	46,495	pc
Graduated Cylinder, borosilicate, 100 mL	46,495	pc
Graduated pipette with rubber pipettor, borosilicate, 10 mL	15,595	pc
Hydrometer for heavy liquids	15,595	pc
Hydrometer for light liquids	15,595	pc
Laboratory Hot Plate with magnetic stirrer	15,595	pc
Safety Goggles, polycarbonate	89,000	pair
Thermometer, Laboratory type, Alcohol, -20°C to 110°C	89,000	pc
<b>Sub-Total</b>	<b>520,581</b>	
<b>LOT 7: SCIENCE DEVICES, INSTRUMENTS, AND MEASURING TOOLS - EARTH &amp; SPACE and LIVING THINGS</b>		
Anemometer with Wind Vane, Cup type	29,362	unit
Anemometer, Simple	14,681	set
Aneroid Barometer Set (Demonstration Type)	82,725	unit
Aneroid Barometer, wall-mount	16,545	unit
Compass, Magnetic	40,220	pc
Dissecting Set with pan	4,310	set
Gloves, Surgical	8,620	pair
Hand Lens, 10x magnification	1,965	pc
Hand Lens, 5x magnification	77,715	pc
Lens Paper, 50's/pack	9,320	pack
Microscope, Compound with 4 Objectives	37,280	unit
Microscope, Digital	862	unit
Pipette, Beral, 1 mL	136,300	pc
Prepared Slide Set, Microscope, 25 pieces	1,864	set
Prepared Slide Set, Mitosis and Meiosis	1,864	set
Reaction Plates with 6 Wells	11,285	pc
Sedimentator Tube	1,965	pc
Sling Psychrometer	30,900	unit
Soil pH, Moisture, Sunlight Meter	1,965	unit
Soil/Test Sieve	6,180	set
Thermometer, Classroom, wall-mount	6,180	pc
Tong, Beaker	4,310	pc
Wash Bottle, plastic, 250 mL	13,630	pc
<b>Sub-Total</b>	<b>540,048</b>	
<b>LOT 8: MATHEMATICAL MANIPULATIVES</b>		
Algebra Tile Set, plastic	1,864	set
Base Ten Blocks	73,405	set
Beads, Ø16mm	8,501	set
Circle Area Demonstrator	6,180	pc
Compass, Drawing, student type	247,200	pc

Cuisenaire Rods, 250 pcs/set	8,501	set
Elapsed Time (Clock) Set	8,501	pc
Geoboard, 11 x 11	80,440	pc
Geoboard, 5 x 5	85,010	pc
Geostrips	73,405	set
Ghost Grid Whiteboard, Mobile Magnetic, 72-inch x 40-inch	16,938	pc
Linking Cubes	73,405	set
Model, Basic 3D Geometrical Collapsible	30,900	set
Model, Basic 3D Geometrical Solids	8,044	set
Pattern Blocks, 250 pcs/set	29,362	set
Pentominoes	73,405	set
Plastic Two-colored Counters, 1-inch diameter, 200 pcs/set	51,825	set
Probability Kit	10,365	set
Tangrams, set of 30	6,180	set
<b>Sub-Total</b>	<b>893,431</b>	
<b>LOT 9: MATHEMATICAL TOOLS &amp; INSTRUMENT</b>		
Balance, Double-pan, 500-gram	42,505	pc
Blackboard Triangle, 30° x 60° and 45° x 45°	1,864	set
Calculator, Graphing, non-projectable	11,285	pc
Calculator, Scientific	90,280	pc
Digital Clock, tabletop	6,180	pc
Measuring Kit (Volume)	8,501	set
Meterstick, plastic	330,900	pc
Protractor (for student)	661,800	pc
Ruler, Plastic, 12 inches or 30 cm	661,800	pc
Scale, Spring, Hanging type	8,501	pc
Scale, Weighing, analog, 10 kg. capacity	8,501	pc
Scale, Weighing, bathroom-type	8,501	pc
Tape Measure, 1.5 meters	330,900	pc
Template, shapes	42,505	pc
<b>Sub-Total</b>	<b>2,214,023</b>	
<b>LOT 10: MODELS: EARTH AND OTHER HEAVENLY BODIES</b>		
Globe, Celestial	42,185	unit
Globe, Terrestrial	40,220	unit
Landform Demonstration Kit	11,285	kit
Model, Earth Internal Structure, 1/4 part detachable	2,257	unit
Model, Seismograph	9,320	unit
Model, Solar System	393	unit
Model, Sun-Earth-Moon	42,185	unit
Model, Tectonics Demonstrator	2,257	kit
Model, Volcano, cross section	11,285	unit
Rock Samples, 24 pcs/set, (minerals of 3 rock types)	786	set
Telescope, Astronomical (Reflecting)	393	unit
<b>Sub-Total</b>	<b>162,566</b>	
<b>LOT 11: MODELS: THE HUMAN ANATOMY</b>		

Model, Human Circulatory System	6,180	unit
Model, Human Endocrine System	1,864	unit
Model, Human Nervous System	1,864	unit
Model, Human Nose (Nasal-Throat Anatomy)	8,501	unit
Model, Human Skeleton	6,180	unit
Model, Human Torso	6,573	unit
Model, Lung Demonstration	6,180	unit
Model, Pumping Heart	6,180	unit
Model, Reproductive System, Female (Pelvic Anatomy)	6,180	unit
Model, Reproductive System, Male	6,180	unit
<b>Sub-Total</b>	<b>55,882</b>	
<b>LOT 12: MODELS: OTHER BIOLOGICAL STRUCTURES AND SPECIES</b>		
Model, Animal Cell	2,726	pc
Model, Animal Meiosis	2,726	set
Model, Animal Mitosis	2,726	set
Model, Chloroplast	2,726	unit
Model, DNA	1,864	unit
Model, Invertebrates	6,180	set
Model, Mitochondrion	2,726	unit
Model, Plant Cell	2,726	unit
Model, Vertebrates	6,180	set
<b>Sub-Total</b>	<b>30,580</b>	
<b>LOT 13: MODELS: MOLECULAR GEOMETRY</b>		
Model, Atomic Orbital, 82-pc	15,595	set
Model, Biochemistry Molecular, (262 atom parts)	15,595	set
Model, Crystal Structures Set (Graphite, diamond, sodium chloride, carbon dioxide)	15,595	set
Model, Molecular, Inorganic/Organic (307-pc)	15,595	pc
Model, Sublevel Orbitals of the Atom (Quantum)	15,595	pc
Model, VSEPR, 14 shapes (50-pc)	15,595	pc
<b>Sub-Total</b>	<b>93,570</b>	
<b>LOT 14: FORCE, MOTION, AND ENERGY KITS</b>		
Advanced Electromagnetism Kit	330	kit
Air Blower	66	pc
Archimedes Principle Set	330	set
Basic Electronics Kit	330	kit
Basic Lens Set, acrylic	13,630	pc
Coefficient of Linear Expansion	4,310	pc
Connector, Black (# 18 copper, AWG stranded) with alligator clip on one end and banana plug on the other end	98,505	pc
Connector, Red (# 18 copper, AWG stranded) with alligator clip on one end and banana plug on the other end	98,505	pc
Connector, Yellow (# 18 copper, AWG stranded) with alligator clip on one end and banana plug on the other end	42,270	pc
DC Ammeter	11,705	unit
DC String Vibrator, string included	3,545	pc

DC Voltmeter	11,705	unit
Diffraction slits & Diffraction grating Set	9,320	set
Digital Geiger-Muller Counter with radioisotopes samples	66	pc
Dry Cell Holder (size D)	121,800	pc
Dry Cell, 1.5 volts, size D	121,800	pc
Engine Model (Internal Combustion)	4,310	pc
Flask, Florence, glass, 500 mL	4,310	pc
Force Table	4,310	pc
Fuse Holder w/ Fuse	11,705	pc
Galvanometer	11,705	unit
Helical Spring	13,630	pc
Iron Core Rod (non-corrugated)	9,415	pc
Laser Light	11,285	pc
Long Nose Pliers, 6-inch, 1 pair/set	12,360	pc
Magnet Wire	8,316	spool
Manometer, Open U-tube with Nakamura-type Water Pressure Apparatus	4,310	pc
Miniature Light Bulb	91,350	pc
Miniature Light Bulb Holder	91,350	assy
Mirror Set, acrylic	13,630	set
Motor-Generator Model Experiment Set	11,705	set
Multimeter, digital	660	pc
Optical Bench Set	13,630	set
Pair of Bar Magnets	15,797	pair
Prism Set	11,285	set
Resistance Board	4,310	pc
Ring and Ball Apparatus	330	unit
Ripple Tank Set	330	set
Slinky Coil, metal	13,630	unit
Sound Resonance Set: Loud Speaker	330	pc
Sound Resonance Set: Resonance Tube, close-ended	330	pc
Sound Resonance Set: Tone Generator	330	pc
Strobe Light	1,965	pc
Switch, Knife type, Single Pole Single Throw	30,450	pc
Ticker Timer Set	9,320	set
Toy Car, non-friction, non-battery	42,505	pc
Tuning Fork Set	330	pc
Vacuum Tube and Manual Vacuum Pump	1,965	set
<b>Sub-Total</b>	<b>989,405</b>	
<b>Grand-Total</b>	<b>1,128,983</b>	

## B. Delivery Sites

The goods shall be delivered **Door-to-Door** and inspected at the Recipient Schools as specified in the Allocation List attached as **Annex "D"** of this Bidding Documents.



### **Statement of Compliance**

I/We have read and understood the requirements/scope of service/terms of reference and conditions stipulated herein and shall therefore comply to the conditions set forth in the Contract with respect to this **Section VI. Schedule of Requirements**, if our bid is considered for award.

---

Name and Signature of Bidder's Authorized Representative

## ***Section VII. Technical Specifications***

# Technical Specifications

Item	Specification	Statement of Compliance
		<p><i>[Bidders must state here either “Comply” or “Not Comply” against each of the individual parameters of each Specification stating the corresponding performance parameter of the equipment offered. Statements of “Comply” or “Not Comply” must be supported by evidence in a Bidders Bid and cross-referenced to that evidence. Evidence shall be in the form of manufacturer’s un-amended sales literature, unconditional statements of specification and compliance issued by the manufacturer, samples, independent test data etc., as appropriate. A statement that is not supported by evidence or is subsequently found to be contradicted by the evidence presented will render the Bid under evaluation liable for rejection. A statement either in the Bidder’s statement of compliance or the supporting evidence that is found to be false either during Bid evaluation, post-qualification or the execution of the Contract may be regarded as fraudulent and render the Bidder or supplier liable for prosecution subject to the applicable laws and issuances.]</i></p>

## I. General Specifications

Item	Description	STATEMENT OF COMPLIANCE (State Comply or Not Comply)	BIDDER'S ACTUAL OFFER
1	All equipment and components must be of the required level of technology, new, compliant with the requested specifications, responding to current quality standards in international markets, manufactured by reputable and consolidated international brands, reliable and fully adequate for the intended purpose.		
2	All equipment markings, user manuals and electronic copies must be in English.		
3	All equipment shall conform and operate on the standard electric supply in the Philippines (220Vac, 50/60 Hz power, type A & B power sockets)		
4	All equipment must be able to operate in the environmental conditions of the different locations in The Philippines, especially considering humid environments at temperatures ranging from 8°C to 45°C, dusty and moisty environments and frequently salty air.		
5	All connections between components shall be ready to operate, once installation is finalized.		
6	All necessary cables, adaptors and connections must be included and clearly marked, in order to facilitate rapid and accurate assembly.		
7	Bidder should execute an Undertaking that the spare parts are available nationwide for a minimum period of five (5) years and that the original brand of the spare parts are made available to DepEd.		
8	Imported products should pass international quality control product standards and have international quality control product markings such as CE, ISO, ASTM, ASQC, AFCIQ, ASQ, DGQ, EOQC, IQA, and the likes, while locally made products (Philippine-made) should pass the local quality control product standards and bear the PS mark.		
9	The items must be branded and permanently marked on the items, good quality, must be free from toxic materials, and must be properly packed.		
10	The equipment and tools can be utilized by male and female learners.		

**II. Detailed Specifications**

Item	Description	Technical Specifications	STATEMENT OF COMPLIANCE (State Comply or Not Comply)	BIDDER'S ACTUAL OFFER
<b>I. MASS PRODUCTION</b>				
<b>LOT 1: BASIC SCIKIT</b>				
1	<b>Basic Scikit: Ø 9.5mm x 250mm long Stand Rod</b>	Functional Specifications: used to interconnect stand base to stand supports; used for suspending pulleys, meter tapes		
		Performance Specifications: should effectively interconnect stand base-stand support systems; suspend single pulleys, meter tapes		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
2	<b>Basic Scikit: Ø 9.5mm x 500mm long Stand Rod</b>	Functional Specifications: used to interconnect stand base to stand supports in heavier setups		
		Performance Specifications: should effectively interconnect stand base-stand support systems in heavier setups		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
3	<b>Basic Scikit: Ø 12.7mm x 1000mm long Stand Rod</b>	Functional Specifications: used as vertical support for free fall setup; horizontal support for suspending multiple pulley systems		
		Performance Specifications: should be able to support vertically free fall setup; horizontal support for		

		suspending multiple pulley systems		
		Design Specifications: please see Technical Drawing in Annex “E” of this Bidding Documents		
<b>4</b>	<b>Basic Scikit: Rail</b>	Functional Specifications: used as path rail for motorized and dynamics carts		
		Performance Specifications: should be able to serve as path rail for motorized and dynamics carts		
		Design Specifications: please see Technical Drawing in Annex “E” of this Bidding Documents		
<b>5</b>	<b>Basic Scikit: Ring with stem</b>	Functional Specifications: used to support glassware in heating activities		
		Performance Specifications: should be stable in supporting glassware		
		Design Specifications: please see Technical Drawing in Annex “E” of this Bidding Documents		
<b>6</b>	<b>Basic Scikit: Test Tube Rack</b>	Functional Specifications: used for resting racks for test tubes both for specimen viewing and storage		
		Performance Specifications: should be able to keep test tubes in place used for resting racks for test tubes both for specimen viewing and storage		
		Design Specifications: please see Technical Drawing in Annex “E” of this Bidding Documents		
<b>7</b>	<b>Basic Scikit: Wire Gauze</b>	Functional Specifications: used to diffuse open flame in activities that involve heating		
		Performance Specifications: should be able to diffuse open		

		flame in activities that involve heating		
		Design Specifications: please see Technical Drawing in Annex “E” of this Bidding Documents		
<b>8</b>	<b>SCIKIT BASIC 001: Stand Base</b>	Functional Specifications: used as base support of activity equipment setups		
		Performance Specifications: should be stable in supporting equipment setups		
		Design Specifications: please see Technical Drawing in Annex “E” of this Bidding Documents		
<b>9</b>	<b>SCIKIT BASIC 001: Stand Support</b>	Functional Specifications: used to support stand base assembly		
		Performance Specifications: should provide sturdy support for stand base assembly		
		Design Specifications: please see Technical Drawing in Annex “E” of this Bidding Documents		
<b>10</b>	<b>SCIKIT BASIC 001: SCIKIT BASIC Storage Case 001 (With Cover and Base Sheathing)</b>	Functional Specifications: used as storage for stand bases		
		Performance Specifications: should be able to store free fall apparatus set components		
		Design Specifications: please see Technical Drawing in Annex “E” of this Bidding Documents		
<b>11</b>	<b>SCIKIT BASIC 002: Multiclamp</b>	Functional Specifications: used as for interconnecting rods perpendicularly		

		Performance Specifications: should be sturdy in interconnecting rods		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>12</b>	<b>SCIKIT BASIC 002: Test Tube Holder</b>	Functional Specifications: is used for holding heated test tubes		
		Performance Specifications: should be stable in holding heated test tubes		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>13</b>	<b>SCIKIT BASIC 002: SCIKIT BASIC Storage Case 002 (With Cover and Base Sheathing)</b>	Functional Specifications: Used as storage of multiclamps and test tube holders		
		Performance Specifications: should be able to store 25 pieces multiclamp and 5 pieces test tube holders		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>14</b>	<b>SCIKIT BASIC 003: Universal Clamp</b>	Functional Specifications: is used for securing heated beakers and flasks in place		
		Performance Specifications: should be stable in holding heated glassware		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		



15	<b>SCIKIT BASIC 003: Universal Bosshead</b>	Functional Specifications: for interconnecting rods to increase overall length as activity requirement; can also be used to perpendicularly interconnect rods for lighter loads		
		Performance Specifications: should be sturdy in interconnecting rods		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
16	<b>SCIKIT BASIC 003: SCIKIT BASIC Storage Case 003 (With Cover and Base Sheathing</b>	Functional Specifications: used as storage for clamps and bossheads		
		Performance Specifications: should be able to store 12 pieces universal clamp and 10 universal bosshead		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
17	<b>Free Fall Apparatus (Mechanics 001): Ball Case (with Cover and foam)</b>	Functional Specifications: used storage case for the metal balls and metal embedded plastic ball		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
18	<b>Free Fall Apparatus (Mechanics 001): Digital Timer Assembly (Digital Stopwatch)</b>	Functional Specifications: used to determine time of fall of metal balls or metal embedded plastic ball in free fall activity		

		Performance Specifications: should be able to determine time of fall of metal balls or metal embedded plastic ball in free fall activity		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>19</b>	<b>Free Fall Apparatus (Mechanics 001): Metertape with hooks and plastic pointer</b>	Functional Specifications: used to measure the height of fall of falling objects in free fall activity		
		Performance Specifications: should be able to measure the height of fall of falling objects in free fall activity		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>20</b>	<b>Free Fall Apparatus (Mechanics 001): Ø 12.7mm Steel Spherical Ball</b>	Functional Specifications: used as free fall object in free fall activity		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>21</b>	<b>Free Fall Apparatus (Mechanics 001): Ø 25mm Plastic Spherical Ball with metal screw</b>	Functional Specifications: used as free fall object in free fall activity		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		

22	<b>Free Fall Apparatus (Mechanics 001): Ø 25mm Steel Spherical Ball</b>	Functional Specifications: used as free fall object in free fall activity		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
23	<b>Free Fall Apparatus (Mechanics 001): Pad Switch Assembly</b>	Functional Specifications: used as second switch to stop the stopwatch in free fall activity		
		Performance Specifications: should be able to stop the stopwatch in free fall activity		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
24	<b>Free Fall Apparatus (Mechanics 001): Solenoid Assembly</b>	Functional Specifications: used as electromagnet to temporarily suspend the metal balls or the metal imbedded plastic ball in free fall activity		
		Performance Specifications: should be able to provide electromagnetism to temporarily suspend the metal balls or the metal imbedded plastic ball in free fall activity		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
25	<b>Free Fall Apparatus (Mechanics 001): Synchro Box Assembly</b>	Functional Specifications: used to simultaneously start the stopwatch and cut-off current to the solenoid		
		Performance Specifications: should be able to simultaneously start the		

		stopwatch and cut-off current to the solenoid		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>26</b>	<b>Free Fall Apparatus (Mechanics 001): SCIKIT MECHANICS Storage Case 001 (With Cover and Base Sheathing)</b>	Functional Specifications: used as storage case for free fall apparatus set		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>27</b>	<b>Dynamics Carts-Rail System (Mechanics 002): Cart-spring loaded</b>	Functional Specifications: used as source of action force in Newton's 3rd law of Motion Experiment		
		Performance Specifications: should be able to provide action force in Newton's 3rd law of Motion Experiment		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>28</b>	<b>Dynamics Carts-Rail System (Mechanics 002): Cart-with counterweight</b>	Functional Specifications: used as source of reaction force in Newton's 3rd law of Motion Experiment		
		Performance Specifications: should be able to provide reaction force in Newton's 3rd law of Motion Experiment		
		Design Specifications: please see Technical Drawing in		

		Annex "E" of this Bidding Documents		
<b>29</b>	<b>Dynamics Carts-Rail System (Mechanics 002): Cylindrical Mass, 50-gram</b>	Functional Specifications: used for loading into each dynamics cart for newton's 2nd Law of Motion experiment		
		Performance Specifications: should be able to load into each dynamics cart for newton's 2nd Law of Motion experiment		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>30</b>	<b>Dynamics Carts-Rail System (Mechanics 002): Driving Mass, 3-gram</b>	Functional Specifications: use to provide the 'net' force in newton's 2nd Law of Motion experiment		
		Performance Specifications: should be able to provide the 'net' force in newton's 2nd Law of Motion experiment		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>31</b>	<b>Dynamics Carts-Rail System (Mechanics 002): Leveling Pad Assembly</b>	Functional Specifications: used as bottom support of rails		
		Performance Specifications: should be able to support rails		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		

32	<b>Dynamics Carts-Rail System (Mechanics 002): Plastic Hammer</b>	Functional Specifications: used to strike the push rod to release spring in spring-loaded dynamics cart		
		Performance Specifications: should be able to make push rod release spring in spring-loaded dynamics cart		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
33	<b>Dynamics Carts-Rail System (Mechanics 002): Modelling Clay, 1 bar/set</b>	Functional Specifications: used as storage case for dynamics carts and accessories set		
		Design Specifications: 1. Any color 2. Minimum weight: 150 gram bar, individually packed 3. Non-drying, non-hardening type 4. Brand must be permanently marked in its packaging.		
34	<b>Dynamics Carts-Rail System (Mechanics 002): Stopper-Fork Assembly</b>	Functional Specifications: used as low inertia string guide in Newton's 2nd Law of Motion Experiment		
		Performance Specifications: should be able to provide low inertia string guide in Newton's 2nd Law of Motion Experiment		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		

<b>35</b>	<b>Dynamics Carts-Rail System (Mechanics 002): String (thin), 1 ball/set</b>	Functional Specifications: used to transmit net force from weight of 3-gram driving masses to pull dynamics carts along rail		
		Performance Specifications: should be able to transmit net force from weight of 3-gram driving masses to pull dynamics carts along rail		
		Design Specifications: 1. Ball of cotton string, crochet size 8 thread type 2. Ball is 50 grams 3. Any color		
<b>36</b>	<b>Dynamics Carts-Rail System (Mechanics 002): SCIKIT MECHANICS Storage Case 002 (With Cover and Base Sheathing)</b>	Functional Specifications: used as storage case for Dynamics Carts-Rail System (Mechanics 002) and accessories		
		Performance Specifications: must store the items for Dynamics Carts-Rail System Set		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>37</b>	<b>SCIKIT MECHANICS 003: 10-Newton Spring Balance</b>	Functional Specifications: used to measure forces with magnitudes equivalent up to the weight of 1 kilogram mass		
		Performance Specifications: should be able to measure forces with magnitudes equivalent up to the weight of 1 kilogram mass		

		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>38</b>	<b>SCIKIT MECHANICS 003: Friction Block and Friction Board</b>	Functional Specifications: Used to validate factors affecting friction force		
		Performance Specifications: Must be able to validate factors affecting friction force		
<b>39</b>	<b>SCIKIT MECHANICS 003: Leveling Hose</b>	Functional Specifications: used to check horizontal levelness of surfaces where the rail will be placed		
		Performance Specifications: should be able to check horizontal levelness of surfaces where the rail will be placed		
<b>40</b>	<b>User's Manual (SCIKIT MECHANICS)</b>	Functional Specifications: used as reference guide on assembly of mechanics items		
		Design Specifications: please see MECHANICS Manual		
		See Cover and Inside Pages Specifications		
<b>41</b>	<b>Experiment Module (SCIKIT MECHANICS)</b>	Functional Specifications: used as guides to perform mechanics activities		
		Design Specifications: please see EXPERIMENT MODULES ( <a href="https://bit.ly/3F5Hy2Z">https://bit.ly/3F5Hy2Z</a> )		



		See Cover and Inside Pages Specifications		
--	--	---	--	--

**LOT 2: SCIENCE AND MATHEMATICS EQUIPMENT (Elem, JHS, & SHS)**

<b>1</b>	<b>Blackboard Compass</b>	Functional Specifications: used to aid teacher in constructing/drawing circles on board		
		Performance Specifications: should be able to draw visible/large circles on board		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>2</b>	<b>Blackboard Protractor</b>	Functional Specifications: used to aid teacher in constructing/drawing angles, arcs, and circles on board		
		Performance Specifications: should be able to draw visible/large angles, arcs, and circles on board		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>3</b>	<b>Heat Conductivity Apparatus</b>	Functional Specifications: Used to demonstrate the different thermal (heat) conductivities of five (5) different metals		
		Performance Specifications: must be able to demonstrate the different thermal (heat) conductivities of five (5) different metals, with copper as the first metal, followed by aluminum, brass, mild steel and stainless steel.		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>4</b>	<b>Light Source (Single Slit)</b>	Functional Specifications: Used to produce a defined beam of light		

		Performance Specifications: Must be able to produce a defined beam of light		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>5</b>	<b>Set of Coils (Transformer)</b>	Functional Specifications: used to demonstrate transformer principle		
		Performance Specifications: should be able to demonstrate transformer principle		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>6</b>	<b>Variable Power Supply with 5 pcs. Terminal Board</b>	Functional Specifications: used to provide variable AC and DC voltages for student group work		
		Performance Specifications: should be able to provide variable AC and DC voltages for student group work		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>7</b>	<b>Fresh Water Aquarium with Stand</b>	Functional Specifications: Used to keep aquatic plants and animals		
		Performance Specifications: Must be able to demonstrate interaction among plants and animals in a marine-like environment.		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>8</b>	<b>Fraction Set</b>	Functional Specifications: used to demonstrate part-to-whole concept using shapes		

		Performance Specifications: must be able to demonstrate fraction as a concept using whole and fractional part of a circle and square		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>9</b>	<b>Linear Pair/Angle Demonstrator</b>	Functional Specifications: used to demonstrate kinds of angles and some angle relationship		
		Performance Specifications: must be able to demonstrate acute, obtuse, and right angle and deduct the said angles' definitions		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>10</b>	<b>Number Blocks</b>	Functional Specifications: used in number recognition and fundamental operation		
		Performance Specifications: must be sturdy when thrown and show specific number and/or operation; be able to perform like dice		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		
<b>11</b>	<b>Place Value Chart with decimal pockets</b>	Functional Specifications: used to visualize whole and decimal numbers' place value		
		Performance Specifications: must be able to hold number cards and some base ten blocks		
		Design Specifications: please see Technical Drawing in		

		Annex "E" of this Bidding Documents		
<b>LOT 3: STORAGE CABINETS</b>				
1	<b>Storage Cabinet</b>	Functional Specifications: Used for storage of science and mathematics equipment		
		Design Specifications: please see Technical Drawing in Annex "E" of this Bidding Documents		

**MARKET ITEMS**

**LOT 4: CHEMICALS**

1	<b>Benedict's Solution, 100 mL/bottle</b>	Functional Specifications: Used to test for levels/ traces of simple reducing sugars		
		Performance Specifications: Must be able to test for the presence (levels of traces) of reducing sugars such as glucose.		
		A positive test with Benedict's reagent is shown by a color change from clear blue to:		
		a) blue solution - 0 g % (no trace of simple reducing sugar)		
		b) green precipitate- 0.5 to 1.0 g % (traces of simple reducing sugar)		
		c) yellow precipitate- 1.0-1.5 g % (low simple reducing sugar)		
		d) orange precipitate - 1.5 to 2.0 g % (moderate simple reducing sugar)		
		e) brick-red precipitate - greater than 2.0 g % (high presence of simple reducing sugar)		
		Design Specifications:		
		1. Features an aqua blue liquid		
		2. Chemical Formula: $CuSO_4 \cdot 5H_2O + Na_2CO_3 + Na_2C_6H_5O_7$		
		3. Capacity: 100 mL		
4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.				

		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning		
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.		
		7. Expiration dates should be at least two years		
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)		
		9. Comes with a brand printed permanently on the product label		
		10. Must be brand new		
<b>2</b>	<b>Boric Acid, 100 grams/bottle</b>	Functional Specifications: Used as a substrate in Flame test to visually identify boron or its specific unknown metalloid ion based on the characteristic color it emits on the Bunsen flame.		
		Performance Specifications: Must be used as a substrate in Flame test to visually identify boron, or its ion based on the characteristic color it emits on the Bunsen flame. Boric acid emits a <b>bright green</b> color which indicates the presence of boron or its ion		
		Design Specifications:		
		1. Features a colorless or white, odorless and crystalline solid		
		2. Chemical formula : H <sub>3</sub> BO <sub>3</sub>		
		3. Mass/bottle : 100 g		
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.		
		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer		

		and with appropriate hazard warning		
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.		
		7. Expiration dates should be at least two years		
		8. Accompanied with Certificate of Analysis and SDS( Safety Data Sheet)		
		9. Comes with a brand printed permanently on the product label		
		10. Must be brand new		
<b>3</b>	<b>Bromothymol Blue</b>	Functional Specifications: Used as an indicator of dissolved Carbon dioxide.		
		Performance Specifications: Must be able to show the effect of changes in abiotic factors on the ecosystem.		
		Design Specifications:		
		1. Color: Dark Blue/blue-black		
		2. Concentration range : 0.01% - 0.04% aqueous solution (as indicated in the product label)		
		3. Capacity: 100 mL		
		4. With Safety Data Sheet		
		5. The chemical must be in original plastic packing with threaded chemical seal pack bottle.		
		6. Properly labeled with the chemical name, concentration, name of the manufacturer, manufacturing and expiry date. Expiration shall be at least two years.		
		7. Must be branded and brand new. The brand shall be printed on the product label.		
<b>4</b>	<b>Calcium Chloride, 100 grams / bottle</b>	Functional Specifications: Used as a substrate in Flame test to visually identify calcium or its ion based on the characteristic color it emits on the Bunsen flame.		

		Performance Specifications: Used as a substrate in Flame test to visually identify calcium element, or an unknown metalloid ion based on the characteristic color the chemical emits on the Bunsen flame. Calcium chloride emits an <b>orange red/yellowish red</b> color which indicates the presence of the calcium ion		
		Design Specifications:		
		1. Features a white powder, crystals or granules		
		2. Chemical Formula : CaCl <sub>2</sub>		
		3. Mass per bottle : 100 grams		
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.		
		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning.		
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.		
		7. Expiration dates should be at least two years		
		8. Accompanied with Certificate of Analysis and with SDS (Safety Data Sheet)		
		9. With brand printed permanently on the product label		
		10. Must be brand new		
<b>5</b>	<b>Copper Sulfate, CuSO<sub>4</sub>, 100 grams/bottle</b>	Functional Specifications: Used as : a) an oxidizing agent or oxidant and is reduced in a spontaneous [chemical (redox) reaction decreasing its oxidation state with metals above it, like zinc, in the Activity Series of Metals]		
		b) a substrate in Flame test to visually identify copper or its ion based on the characteristic		

		color it emits on the Bunsen flame .		
		Performance Specifications: Must be able to		
		a) oxidize the other reactant of a spontaneous redox reaction by gaining electrons reducing its oxidation state with metals above it, like zinc, in the Activity Series of Metals, resulting in copper in the free state and the salt of the metal being displaced.		
		b) a substrate in Flame test to visually identify copper or its ion based on the characteristic color it emits on the Bunsen flame. Copper sulfate emits <b>blue green</b> color on the Bunsen flame.		
		Design Specifications:		
		1. Features a blue, odorless crystalline solid		
		2. Chemical formula : CuSO <sub>4</sub>		
		3. Mass per bottle : 100 g		
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.		
		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning.		
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.		
		7. Expiration dates should be at least two years		
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)		
		9. With brand printed permanently on the product label		
		10. Must be brand new		
<b>6</b>	<b>Gentian Violet, 100 ml / bottle</b>	Functional Specifications: Used in microscopy as biological stain.		



		Performance Specifications: Must be able to enhance animal cell image as to presence or absence of some organelles.		
		Design Specifications:		
		1. Capacity (minimum): 100 mL per bottle		
		2. Color: Blue-violet/dark purple		
		3. With Safety Data Sheet		
		4. The chemical must be in original plastic packing with threaded chemical seal pack bottle.		
		5. Properly labeled with chemical name, name of the manufacturer, manufacturing and expiry date. Expiration shall be at least two years.		
		6. Must be branded and brand new. The brand shall be printed on the product label.		
<b>7</b>	<b>Iodine Solution, 100 ml / bottle</b>	Functional Specifications: Used in microscopy as biological stain.		
		Performance Specifications: Must be able to enhance plant cells as to presence or absence of some organelles.		
		Design Specifications:		
		1. Capacity: 100 mL per bottle		
		2. Color: Light orange-brown		
		3. Alternate name: Lugol's Solution		
		4. With Safety Data Sheet		
		5. The chemical must be in original plastic packing with threaded chemical seal pack bottle.		
		6. Properly labeled with chemical name, name of the manufacturer, manufacturing and expiry date. Expiration shall be at least two years.		
		7. Must be branded and brand new. The brand shall be printed on the product label.		

<b>8</b>	<b>Magnesium Ribbon, 25 grams, 1 roll</b>	Functional Specifications: Used as a reactant and is ignited over a flame to demonstrate a highly exothermic combustion reaction		
		Performance Specifications: Must be able to produce a highly exothermic combustion reaction resulting in a <b>blinding white light</b> and intense heat when ignited over a flame. A white powdery solid, magnesium oxide is produced		
		Design Specifications:		
		1. Features a relatively soft, lightweight solid metal		
		2. Color : Shiny silvery gray--white		
		3. Chemical formula : Mg		
		4. Form : Solid (ribbon)		
		5. Mass per roll : 25-27 g		
		6. Number of roll : 1 roll		
		7. Comes in original plastic packing		
		8. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning.		
		9. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.		
		10. Expiration dates should be at least two years		
		11. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)		
12. Comes with a brand printed permanently on the product label				
13. Must be brand new				
<b>9</b>	<b>Manganese Dioxide, 50 grams / bottle</b>	Functional Specifications: Used as a catalyst to demonstrate decomposition reaction of hydrogen peroxide and observe its effect on the rate of chemical reaction		

		Performance Specifications: Must be used as a catalyst and to undergo a spontaneous chemical reaction in the decomposition of hydrogen peroxide to produce bubbles of oxygen gas and water and to demonstrate its effect on the rate of chemical reaction		
		Design Specifications:		
		1. Form: Solid powder		
		2. Color : Brown-black solid/ blackish or brown solid		
		3. Chemical formula : MnO <sub>2</sub>		
		4. Mass per bottle : 50 g		
		5. Comes in original screw type plastic packing with threaded chemical seal pack bottle.		
		6. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning.		
		7. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.		
		8. Expiration dates should be at least two years		
		9. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)		
		10. Comes with a brand printed permanently on the product label		
		11. Must be brand new		
<b>10</b>	<b>Microscope's Immersion Oil, 100mL/bot</b>	Functional Specifications: Used to increase the resolving power of the microscope's 100x objective.		
		Performance Specifications: Must be able to give a clear and very distinct image of the specimen.		
		Design Specifications:		
		1. Capacity: 100 mL/bottle		

		2. Non-drying, clear and transparent		
		3. With Refractive index: 1.515 - 1.518 (as indicated in SDS, product label or certificate)		
		4. With Safety Data Sheet		
		5. The chemical must be in original plastic packing with threaded chemical seal pack bottle.		
		6. Properly labeled with chemical name, name of the manufacturer, manufacturing and expiry date. Expiration shall be at least two years.		
		7. Must be branded and brand new. The brand shall be printed on the product label.		
<b>11</b>	<b>Phenolphthalein, 100 grams/bottle</b>	Functional Specifications: Used as an indicator to effect a color change to distinguish an acid from a base and in performing acid base titration		
		Performance Specifications: Must be used as an indicator to distinguish and acid from a base and in performing acid base titration, as it indicates the change in pH by changing its color, the results vary:		
		a) For a base, it gives a pink color		
		b) For an acid, it is colorless		
		Design Specifications:		
		1. Features a white to cream, odorless solid powder		
		2. Chemical formula : C <sub>20</sub> H <sub>14</sub> O <sub>4</sub>		
		3. Mass per bottle : 100 g		
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.		
		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning		
		6. With manufacturing and expiry date, chemical assay,		

		and other useful information regarding the product.		
		7.Expiration dates should be at least two years		
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)		
		9. Comes with a brand printed permanently on the product label		
		10. Must be brand new		
<b>12</b>	<b>Potassium Chloride, 100 grams / bottle</b>	Functional Specifications: Used as a substrate in Flame test to visually identify a specific element or an unknown metalloid ion based on the characteristic color it emits on the Bunsen flame.		
		Performance Specifications: Must be used as :		
		a) a substrate in Flame test to visually identify potassium element, or its ion based on the characteristic color it emits on the Bunsen flame.		
		Potassium chloride emits a <b>light lilac</b> color which indicates the presence of the potassium ion		
		b) as a catalyst and to undergo a spontaneous chemical reaction in the decomposition of hydrogen peroxide to produce bubbles of oxygen gas and water to demonstrate the effect of catalyst on the rate of chemical reaction		
		Design Specifications:		
		1. Features a white crystalline solid		
		2. Chemical formula : KCl		
		3. Mass per bottle: 100 g		
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.		
		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer		

		and with appropriate hazard warning		
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.		
		7. Expiration dates should be at least two years		
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)		
		9. Comes with a brand printed permanently on the product label		
		10. Must be brand new		
<b>13</b>	<b>Potassium Iodide, 100 grams / bottle</b>	Functional Specifications: Used as :		
		a) a substrate in Flame test to visually identify potassium or its ion based on the characteristic color it emits on the Bunsen flame		
		b) a catalyst to demonstrate decomposition reaction of hydrogen peroxide to form water and oxygen		
		Performance Specifications: Must be :		
		a) used as a substrate in Flame test to visually identify potassium, or its ion based on the characteristic color the chemical emits on the Bunsen flame. Potassium iodide emits a <b>lilac</b> color which indicates the presence of the potassium ion		
		b) able to undergo a spontaneous decomposition of hydrogen peroxide into bubbles of oxygen gas and water		
		Design Specifications:		
		1. Features white granules and crystals solid		
2. Chemical formula: KI				
3. Mass per bottle: 100 g				
4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.				

		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning		
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.		
		7. Expiration dates should be at least two years		
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)		
		9. Comes with a brand printed permanently on the product label		
		10. Must be brand new		
<b>14</b>	<b>Sodium Hydroxide (Lye), 250 grams/bottle</b>	Functional Specifications: Used :		
		a) to differentiate an acid from a base		
		b) as a titrant added from a base burette in acid base titration		
		Performance Specifications: a) Must turn pink when added with drop/s of phenolphthalein and be able to neutralize an acid to form salt and water		
		b) In acid-base titration, the sodium hydroxide is used as a titrant added from a base buret to a known quantity of the analyte (the unknown solution) until the reaction is complete. Knowing the volume of titrant added allows the determination of the concentration of the unknown using the formula : $N_a = N_b V_b / V_a$		
		c) pH value : pH 13-14		
		Design Specifications: 1. Features a white semi-transparent odorless hygroscopic solid		

		2. Chemical formula : NaOH		
		3. Mass per bottle : 250 grams		
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.		
		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning		
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.		
		7. Expiration dates should be at least two years		
		8. Accompanied with Certificate of Analysis and SDS ( Safety Data Sheet)		
		9. Comes with a brand printed permanently on the product label		
		10. Must be brand new		
<b>15</b>	<b>Zinc Chloride, 100 grams / bottle</b>	Functional Specifications: Used as a substrate in Flame test to visually identify zinc or its ion based on the characteristic color it emits on the Bunsen flame.		
		Performance Specifications: Must be used as a substrate in Flame test to visually identify zinc element or its ion based on the characteristic color it emits on the Bunsen flame. Zinc chloride emits a <b>blue green to pale green/colorless</b> color which indicates the presence of the zinc ion		
		Design Specifications:		
		1. Features a white crystalline/granular solid powder		
		2. Chemical Formula : ZnCl <sub>2</sub>		
		3. Mass per plastic bottle: 100 grams		



		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.		
		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning		
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.		
		7. Expiration dates should be at least two years		
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)		
		9. Comes with a brand marked permanently on the product label		
		10. Must be brand new		
<b>16</b>	<b>Zinc metal, pellets/mossy, 100 grams / bottle</b>	Functional Specifications: Used as a reducing agent to reduce the other reactant of a single displacement (redox reaction) with metals above it in the Activity Series of Metals		
		Performance Specifications: Must be able to reduce the other reactant of a single displacement (redox) reaction with metals above it in the Activity Series of Metals, , like zinc, to produce salt and the displaced metal in its free state		
		Design Specifications:		
		1. Features a bluish white, or as a grey powder/pellets/mossy solid		
		2. Chemical Formula : Zn		
		3. Mass per plastic bottle : 100 grams		
		4. Comes in original screw type plastic packing, with threaded chemical seal pack bottle.		

		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning		
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.		
		7. Expiration dates should be at least two years		
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)		
		9. Comes with a brand printed permanently on the product label		
		10. Must be brand new		

**LOT 5: GLASSWARES AND LAB TOOLS**

<b>1</b>	<b>Beaker, borosilicate, 250 mL</b>	Functional Specifications: Used to contain/hold/prepare solids and liquids during chemical reaction and to heat them over a Bunsen burner's flame up to more than 100°C for normal, standard use service		
		Performance Specifications: Must be able to contain/hold /prepare solids and liquids during chemical reaction and heats them over a Bunsen burner's flame up to more than 100°C for normal, standard use service		
		Design Specifications:		
		1. Features a cylindrical container with straight sides, a flat bottom, with a beaded rim and with a small spout (or "beak") to aid in pouring.		
		2. Material: Borosilicate, clear, smooth, and transparent bubble-free glass with the following dimensions:		
		Outside diameter: 68-70mm		
		Height: 90-92mm		
		Thickness: 1.5mm to 2.0mm		
	3. Type: Griffin, low form			

		4. Features an easy-pour spout		
		5. With permanent colored graduations of approximate volumes, large colored easy to read block letters, numbers and inscriptions/markings enamelled onto the glass, which includes the following:		
		a) Capacity: 250 mL		
		b) Manufacturer's name or trademark		
		c) With large white marking spot		
		d) With double graduated metric scale		
		d1) With marking graduation to fill: starts at 25 mL in 25mL increments		
		d2) With marking graduation to empty: starts at 0 mL in 200 mL increments		
		d3) Graduation interval: 25mL		
		d4) Graduation range: 25mL to 200 mL		
		6. Must be able to stand solidly/is stable when placed on a level surface		
		7. Must be free from breakage, cracks, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein		
		8. Must be able to withstand heating of water up to 150 degrees Celsius		
		9. Wrapped in paper, enclosed in bubble wrap and packed individually in a compartmentalized box		
		10. Comes with a brand enamelled permanently onto the glass		
		11. Must be brand new		
<b>2</b>	<b>Beaker, borosilicate, 50 mL</b>	Functional Specifications: Used to contain/hold/prepare solids and liquids during chemical reaction and to heat them over a Bunsen burner's flame up to more than 100 °C		

		Performance Specifications: Must be able to contain/hold /prepare solids and liquids during chemical reaction and heats them over a Bunsen burner's flame up to more than 100 °C		
		Design Specifications:		
		1. Features a cylindrical container with straight sides, a flat bottom with a beaded rim and a small spout (or "beak") to aid in pouring		
		2. Material: Borosilicate, clear, smooth, and transparent bubble-free glass with the following dimensions:		
		Outer diameter: 40-42 mm		
		Height: 55-57 mm		
		Thickness: 1.5 to 2.0 mm		
		3. Type: Griffin, low form		
		4. Features an easy-pour spout		
		5. With permanent colored graduations of approximate volumes, large colored easy to read block letters, numbers and inscriptions/ markings enamelled onto the glass, which includes the following:		
		a) Capacity: 50mL		
		b) Manufacturer's name or trademark		
		c) With large white marking spot		
		d) With single graduated metric scale		
		d1)With marking graduation to fill: starts at 10 mL in 10mL increments		
		d2) Graduation interval: 10mL		
		d3) Graduation range: 10mL to 40mL		
		6. Must be able to stand solidly/is stable when placed on a level surface		
		7. Must be free from breakage, cracks, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein		

		8. Must be able to withstand heating up water up to 150°C		
		9. Wrapped in paper, enclosed in bubble wrap and packed individually in compartmentalized box.		
		10. Comes with a brand enamelled permanently onto the glass		
		11. Must be brand new		
<b>3</b>	<b>Burette, 10 mL capacity (acid)</b>	Functional Specifications: Used to hold/contain the acid up to 10 mL capacity as a titrant to be delivered/ dispensed to titrate the base in acid-base titration to determine unknown concentration of base		
		Performance Specifications: Must hold/contain the acid up to 10 mL capacity as a titrant to be delivered/ dispensed to titrate the base (with color change from pink to colorless when end point is reached) in acid-base titration to determine unknown concentration of base		
		Design Specifications:		
		1. Features a long, vertical cylindrical glass tube with a volumetric graduation on its full length, with a leak-free plastic stopcock at its lower end and a tapered capillary tube at the stopcock's outlet.		
		2. Material : Clear, transparent, smooth, bubble-free high quality borosilicate glass, with the following dimensions:		
		Length of burette: 510-620mm		
		3. Fitted with grease-free interchangeable with 1.5 to 2 mm bore plastic leak-free stopcock plug. Material of stopcock: PTFE key		
		4. With permanent, durable colored markings in fine, clear, continuous, sharp, of uniform width, distinct colored graduation lines of approximate volumes, clearly legible and indelible block letters,		

		inscriptions/ markings under normal conditions of use of the burettes, and large, easy-to-read numbers every 0.5 mL enamelled permanently onto the glass before the first graduation line which includes the following:		
		a) Manufacturer's name or trademark		
		b) Capacity: 10 mL		
		c) Sub. Div. : 0.05 ml		
		d)Tolerance: $\pm 0.02$ - $\pm 0.03$ mL		
		e) Class: A		
		f) Unit of volume: mL		
		g) Ex		
		h) Reference Temp: 20°C-27°C		
		5. With Statement of Accuracy /Certificate of Accuracy) latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin		
		6. Marked with an individual serial number (Serially Numbered)		
		7. Individually placed in bubble wrap, enclosed in a polystyrene and packed in a padded sturdy box.		
		8. Must be free from breakage, leaks, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein.		
		9. Includes Operations Manual in English,		
		10. With Activity Sheets/Teacher's Manual in English		
		11. Comes with a brand enamelled permanently onto the glass		
		12. Must be brand new		
<b>4</b>	<b>Burette, 10 mL capacity (base)</b>	Functional Specifications: Used to hold/contain the base as a titrant to be delivered/ dispensed to titrate an acid up to 10 mL capacity in acid-base		

		titration to determine unknown concentration of acid		
		Performance Specifications: Must hold/contain the base as a titrant to be delivered/dispensed to titrate an acid up to 10 mL capacity (with color change from colorless to very faint pink when end point is reached) in acid-base titration to determine unknown concentration of acid		
		Design Specifications:		
		1. Features a long, graduated glass tube, with a leakage-free stopcock at its lower end and a tapered capillary tube at the screw type stopcock's outlet.		
		2. Material : Clear, transparent, bubble-free, smooth borosilicate glass, with the following dimensions:		
		a) Length of burette: 444.5-520 mm		
		3. With PTFE (screw-thread type/needle valve-Rotaflow leak-proof plastic) stopcock		
		4. With permanent, durable colored markings in fine, clear, continuous, sharp, of uniform width, distinct colored graduation lines of approximate volumes, clearly legible and indelible block letters and inscriptions with large, easy-to-read numbers every 0.5-1.0 mL subdivisions enamelled permanently onto the glass, before the first graduation line, which includes the following:		
		a) Manufacturer's name or trademark		
		b) Capacity: 10 mL		
		c) Sub. Div. : 0.05 ml		
		d) Tolerance: 0.05 mL		
		d) Class: B		
		e) Unit of volume: mL		
		f) Ex		
		g) Reference Temp: 20°C-27°C		

		5. With machine Jet flow control which is made from thick walled capillary tubing which forms an integral part of the burette shall have no cavity at the join likely to trap air bubbles.		
		6. With Statement of Accuracy /Certificate of Accuracy) latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin		
		7. Marked with an individual serial number (Serially Numbered).		
		8. Individually placed in bubble wrap, enclosed in polystyrene and packed in a padded sturdy box		
		9. Must be free from breakage, leaks, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein.		
		10. Includes Operations Manual in English,		
		11. With Activity Sheets/Teacher's Manual in English		
		12. Comes with a brand enamelled permanently onto the glass		
		13. Must be brand new		
<b>5</b>	<b>Burner, Alcohol, glass, 150 mL Capacity</b>	Functional Specifications: Used to produce hot, consistent open flame for slow/gentle heating of glassware and substances		
		Performance Specifications: Must be able to produce hot, consistent open flame		
		a)for slow/gentle heating of glassware and substances		
		b)can withstand prolonged heating without breaking		
		c) visually determine the identity of an unknown metal or metalloid ion based on the characteristic color the chemical/salt emits on the Bunsen flame to investigate		



		reactions of ions and apply these in qualitative analysis through an activity, on Flame Test		
		d) bend a glass tubing		
		e) heat to sterilize, to accelerate, and to trigger chemical reactions		
		f) for combustion purposes and techniques		
		Design Specifications:		
		1. Features a globe-shaped body and flat base (bottom) with threaded mouth		
		2. Material : Sturdy, heavy walled, clear, transparent, smooth, bubble-free glass		
		3. Capacity : 150 mL		
		4. With rust/corrosive-free wick holder permanently attached to a threaded base		
		a) Material of wick holder and cover/caps : Nickel- plated brass		
		b) Type of wick holder : Threaded		
		5. With one (1) pc cotton fiber/strand braided wick perfectly fitted to the wick tube		
		a) Material of wick : Cotton fiber/strand		
		b)Type of wick: Braided		
		c)Length of wick : 178-179 mm		
		d)Diameter : 5-6 mm		
		6. With shiny, smooth, and corrosion-free metal snuff/snap-on cover/ cap		
		7 With ten (10) pc replacement braided cotton fiber/strand wicks		
		8. Wrapped in paper, enclosed in bubble wrap and packed in a compartmentalized box		
		9. Must be free from rust, breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities		

		including all other defects not stated herein.		
		10. Comes with a brand printed permanently onto the box		
		11. Must be brand new		
<b>6</b>	<b>Burner, Bunsen</b>	Functional Specifications: Used to :		
		a) produce single, hot, continuous, consistent open blue flame		
		b) for slow/gentle heating of glassware and substances,		
		c) rapidly heat high-boiling liquids with low flammability like water		
		d) heat, sterilize/accelerate/trigger chemical reactions,		
		e) for combustion purposes		
		Performance Specifications: Must be able to produce a single, hot, continuous, consistent open blue flame to:		
		a) visually determine the hottest part of the Bunsen flame		
		b) visually determine the identity of an unknown metal or metalloid ion based on the characteristic color the chemical/salt emits on the Bunsen flame to investigate reactions of ions and apply these in qualitative analysis through an activity, on Flame Test		
		c) bend a glass tubing		
		d) used as a heating medium to demonstrate distillation, as one of the simple separation techniques		
		e) slow/gentle heating of glassware and substances		
		f) rapidly heat high-boiling liquids with low flammability like water		
		g) heat, to sterilize, to accelerate, and to trigger chemical reactions		
		h) for combustion purposes and techniques		
		Design Specifications:		

		1.Type : Gas type with accessories		
		2. Features a long, hollow burner tube with stabilizer top and serrated inlet tube		
		3. Material for burner tube : Aluminum, with the following dimensions:		
		a) Diameter of burner tube: 11-12 mm diameter		
		b) Over-all height: 152-155mm		
		4. With flame stabilizer		
		5.With threaded gas needle valve (located opposite to serrated inlet tube)		
		6. Material of base: Nickel-plated zinc-alloy		
		7. Must be able to stand solidly/is stable when placed on a level surface		
		8. Individually packed in a sturdy box		
		9. With User's Manual and Operations Guide in English		
		10. Comes with Activity Sheets with Teacher's Manual in English		
		11. For numbers #9 to 10; the technical specifications (a-e) must be followed:		
		a) For Contents List of materials, In Table form		
		b) For User's Manual, Instruction Sheets/Assembly Guides, in sentences format		
		i) With sentences grammatically correct and		
		ii) With correct spelling and terminologies, punctuations and others		
		c) In original print, not photocopied		
		d) In colored pictures, drawings/illustrations		
		e) In 0.3 mm minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name: labeled with the required parts with details as follows:		
		i) Paper Size : A4 size , 80 gsm		

		ii) Font : Times New Roman		
		iii) Font size : 12		
		iv) Margins on all sides with 2 point width border line		
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled		
		12. Must be free from rust, cracks, chipped rims and sharp edges, surface irregularities and all other defects not stated herein.		
		13. Comes with a brand printed permanently on the box		
		14. Must be brand new		
<b>7</b>	<b>Cork Stopper # 5 (for Ø 16mm test tube)</b>	Functional Specifications: Used to seal the openings of 16 mm diameter test tubes and other laboratory glassware to prevent leaks, hazards and contamination to yield positive results during chemical reactions		
		Performance Specifications: Must be able to seal the openings of 16 x 150 mm test tubes and other laboratory glassware and to prevent leaks, hazards and contamination to yield positive results during chemical reactions		
		Design Specifications:		
		1. Features an extra Select Grade cylindrical with a tapered bottom end with fewer lenticels (crevices)		
		2. Material of cork : Elastic and near impermeable with the following dimensions:		
		a) Height : 22-22.5 mm		
		b) Top Ø : 15-15.5 mm		
		c) Bottom Ø: 13-13.5 mm		
		3. Number of cork stopper: #5		
		4. Must perfectly fit the 16 x 150 mm test tube		
		5. Must be free from defect of discontinuities in the cork tissue such as "lung", exfoliation, and insect,		

		ant/worm galleries and all other defects not stated herein.		
		6. Packed in a resealable plastic bag		
		7. With brand printed permanently on the resealable plastic bag		
		8. Must be brand new		
<b>8</b>	<b>Crucible with lid/cover</b>	Functional Specifications: Used as a container to heat metals or other substances may be melted or subjected to very high temperatures		
		Performance Specifications: Must be able to contain elements, compounds, metals, organic compounds or other substances to be melted or subjected to very high temperatures to determine mass relationship in a chemical reaction		
		Design Specifications:		
		1. Features a high/tall form cylindrical crucible		
		2. Capacity : 30 mL		
		3. Material : Porcelain, with the following dimensions:		
		a) Height : 43-50 mm		
		b) Base diameter: 24-26 mm		
		c) Top diameter: 33-40 mm		
		4. Glazed inside and out, except outside bottom and rim.		
		5. With crucible cover completely glazed except for rim.		
		6. Must be able to stand solidly flat/is stable when placed on a level surface		
		7. Must be free from breakage, cracks, chipped rims and sharp edges, surface irregularities and all other defects not stated herein		
		8. Comes with a brand printed permanently in the compartmentalized sturdy box		
		9. Must be brand new		

<b>9</b>	<b>Dish, Evaporating, 75 mL</b>	Functional Specifications: Used to contain/hold substances and to heat chemical solutions gradually, driving off the water to leave residual chemical solute		
		Performance Specifications: Must be able to contain/hold substances and to demonstrate evaporation, as one of the techniques in separating mixtures, by heating chemical solutions gradually, driving off the water to leave residual chemical solute		
		Design Specifications:		
		1. Features a deep form, broad, and wider at the top, with round bottom		
		2. Material : Porcelain, with the following dimensions:		
		a) Diameter: 80-82 mm		
		b) Height/depth: 30-35 mm high		
		3. Capacity: 75 mL		
		4. With pouring lip/spout		
		5. Must be free from breakage, cracks, chipped rims and sharp edges, other surface irregularities and other defects not stated herein.		
		6. Must be able to contain the salt solution for an experiment on evaporation		
		7. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, surface irregularities including all other defects not stated herein.		
		8. Each dish is individually packed, wrapped in paper, and packed in a sturdy box		
	9. Comes with a brand printed permanently in the sturdy box			
	10. Must be brand new			
<b>10</b>	<b>Distillation set-up: Condenser, Liebig-type</b>	Functional Specifications: Used to condense the water vapor into its liquid state producing a distillate		

		Performance Specifications: Must be able to condense the water vapor into its liquid state producing a distillate, used in distillation, as one of the simple separation techniques		
		Design Specifications:		
		1. Features two concentric straight glass tubes, the inner one being longer and protruding at both extremities, surrounded by a water jacket with sealed inner tube and outer tube of an inner straight tube surrounded by an outer jacket tube, the cool water flows through the outer jacket to condense the vapor in the inner tube, having a better cooling performance than air condenser.		
		2. Material : Transparent, smooth, clear, bubble-free borosilicate glass, with the following dimensions:		
		a) Tubulation OD: 9-15 mm		
		b) Jacket OD : 40- 43 mm		
		c) Jacket length : 300-301 mm		
		d) Over-all Length: 458-460 mm		
		3. With the following permanent inscriptions and numbers permanently enamelled onto the glass:		
		a) Manufacturer's name or trademark		
		b) Ground cone and socket joint: 24/40		
		4. With sealed inner tube		
		5. With Standard Taper Outer and Inner Joints permanently enamelled onto the glass the glass		
		5. With a <b>drip tip</b> at the bottom		
		6. Accessories:		
		a) One (1) pc rubber stopper that will fit upper (inlet) tube		
		i) Number of rubber stopper : #3		
		ii) Number of hole : One (1) hole		

		iii) Diameter of hole : 5.0-5.5 mm		
		iv) Hardness : 40-45 Duro		
		b) Rubber tube		
		Material of rubber Hose : Non-tacky, Latex rubber tube with the following dimensions:		
		ii) Inner diameter : Ø 8.0-8.5 mm		
		iii) Outer diameter : Ø 12.0-12.5 mm		
		iv) Length : 3000-3005 mm long		
		v) Color of rubber tube : Amber		
		7. The glass is wrapped in bubble wrap, enclosed in a polystyrene and packed in a sturdy box while the rubber stopper /tube is placed in a resealable plastic bag.		
		8. Must be free from breakage, cracks, chipped rims and sharp edges, striae, surface irregularities and all other defects not stated herein		
		9. Must be able to produce a distillate during experiment on Distillation using this item as part of the whole set		
		10. Must have User's Manual in English on the installation, use and care, proper storage with repair and maintenance		
		11. With Activity Sheets/Teacher's Manual in English		
		12. For numbers #10 to 11; the technical specifications (a-e) must be followed:		
		a) For Contents List of materials, In Table form		
		b) For User's Manual, Instruction Sheets/Assembly Guides, in sentences format		
		i) With sentences grammatically correct and		
		ii) With correct spelling and terminologies, punctuations and others		
		c) In original print, not photocopied		



		d) In colored pictures, drawings/illustrations		
		e) in 0.3 mm minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name: labeled with the required parts with details as follows:		
		i) Paper Size : A4 size , 80 gsm		
		ii) Font : Times New Roman		
		iii) Font size : 12		
		iv) Margins on all sides with 2 point width border line		
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled		
		13. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein		
		14. Must have a brand enamelled permanently onto the glass		
		15. Must be brand new		
<b>11</b>	<b>Distillation set-up: Distilling Flask, borosilicate, 250ml,</b>	Functional Specifications: Used to hold/ contain the liquid to be distilled in distillation, as one of the simple separation technique		
		Performance Specifications: Must be used to hold/ contain the liquid to be distilled in distillation, as one of the simple separation technique		
		Design Specifications:		
		1. Features a long neck, a side arm that facilitates condensation, and a round bottom for uniform heating .		
		2. Material : Clear, transparent, bubble-free borosilicate glass with a beaded rim with the following dimensions:		
		a) Flask Height : 240-250 mm		

		b) Side Arm Length: 129-130 mm		
		c) Side arm : 76 to 78 mm below the top of the neck		
		3. With the following permanent inscriptions and numbers permanently enamelled onto the glass:		
		a) Capacity: 250 mL		
		b) Manufacturer's name or trademark		
		c) With permanent large white marking spot		
		4. Supplied with an accessory		
		a) rubber stopper that fits the mouth of the distilling flask		
		i) Hardness: 40-45 Duro		
		ii) Number of hole : One (1)		
		iii) Diameter of hole: 5-5.5 mm		
		5. Wrapped in bubble wrap, enclosed in a polystyrene and packed in a padded sturdy box		
		6. Must be free from breakage, cracks, chipped rims and sharp edges, striae, surface irregularities and all other defects not stated herein		
		7. Must be able to produce a distillate during an experiment on Distillation using this item as a part of the distillation setup		
		8. Must have a brand enamelled permanently onto the glass		
		9. Must be brand new		
<b>12</b>	<b>Double burette clamp/holder</b>	Functional Specifications: Used to hold and secure two burettes on a stand, so that each burette is fixed and more convenient for the experiment.		
		Performance Specifications: Must be used to hold and secure two burettes simultaneously on a stand, so that the burettes are fixed and more convenient to perform acid-base titration experiment to determine concentration of solutions.		

		Design Specifications:		
		1. Features a double Y-shaped or butterfly-shaped items which have spring action clamps.		
		2. Material of body: Die cast aluminum with chemical resistant white enamel finish with the following dimensions:		
		Length range : 245-262 mm		
		Width range : 120-127 mm		
		Mounting hole diameter ( $\Phi$ ): 15-36 mm		
		3. Color of body : White enamel		
		4. Material of sleeves/jaws/grips : Vinyl or rubber for excellent grip		
		5. Color of sleeves/jaws/grips : Colored		
		Distance between sleeves/jaws/grips : 85 -120 mm		
		6. With 4 spring action clamps, 2 on each opening		
		7. With two separate adjusting knobs or squeeze clamping mechanism		
		8. Color of adjusting knobs : Colored		
		9. Mounts directly to standard support rod with built in hook connector.		
		10. The dual metal burette clamp supports burettes from 10-100 mL (10-100 cc).		
		11. They can be attached to support stand rods from 16 mm to 17 mm diameter		
		12. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein.		
		13. Comes with a brand marked permanently onto the body/box		
		14. Must be brand new		
<b>13</b>	<b>Electrolysis Apparatus, student-type (Brownlee)</b>	Functional Specifications: Used to demonstrate and describe the decomposition reactions at the electrodes during the electrolysis of water, producing		

		1:2 ratio of hydrogen & oxygen gases respectively, by passing DC current through water.		
		Performance Specifications: Must be able to demonstrate and describe the decomposition reactions at the electrodes during the electrolysis of water, producing 1:2 ratio of hydrogen & oxygen gases respectively, by passing DC current through water. Positive results occur:		
		a) When an ember in a stick is introduced onto the test tube with hydrogen gas, it pops.		
		b) If the gas is oxygen, the ember must glow more		
		Design Specifications:		
		1. Shape of Jar : Cylindrical container with a flat bottom, with a wide mouth and a small turned-out lip for pouring		
		2. Material of jar: Clear, transparent, smooth, and bubble-free borosilicate glass, with the following dimensions:		
		a) Diameter : 114-130 mm		
		b) Height : 127-160 mm		
		3. Capacity: 1000 mL		
		4. Comes with two (2) electrodes		
		a) Material of two electrodes: Platinum		
		b) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the electrodes, is <b>platinum</b> , to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier.		

		5. Comes with an acid-proof insulating support to hold the two binding posts (one red, one black)		
		6. Holder of two test tubes : Two (2) spring clips		
		7. With two (2) <b>reusable</b> test tubes with graduations		
		a) rimless		
		b) graduated from its bottom to top. Zero starts at bottom and 25- 27 mL on top/mouth of test tube		
		c) Material of test tubes : Borosilicate , clear, smooth, transparent and bubble-free <b>reusable</b> glass, free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein, with the following dimensions:		
		c1) Diameter: 18 mm		
		c2) Length : 150-151 mm long		
		c3) Capacity : 25-27 mL		
		d) With heavy uniform wall thickness, excellent heat resistance, round bottom glass		
		e) With permanent graduation lines of approx. volume and inscriptions in high contrast fine, clean, continuous and of uniform width, and in colored enamel.		
		f) With <b>Certification from the manufacturer</b> that the test tubes are <b>reusable and not disposable</b>		
		8. Comes with power source: 220 V -240 V AC input)/ (0-12 V) DC output, and with switch selector		
		9. Comes with 9 V battery with one (1) battery snap		
		10. Comes with two (2) connecting wires (1 red, 1 black)		
		a) Length : 304-305 mm		
		b) Type of wire : Stranded		
		c) Gauge no. : 20 - can be seen printed on the insulation of the wire		

		d) Comes with alligator clip soldered on one end of the wires with banana plugs soldered on the other end of each wire (1 red, 1 black)		
		12. Comes with two (2) replacement graduated test tubes		
		a) rimless		
		b) graduated from its bottom to top. Zero starts at bottom		
		c) Material of test tubes : Borosilicate , clear, transparent and bubble-free-glass, with the following dimensions:		
		d)Diameter :18.0-18.5 mm		
		e) Length :150-151mm long		
		f) Capacity : 25 mL		
		g) With heavy uniform wall thickness, excellent heat resistance, round bottom glass		
		h) With permanent graduation of approx. volume and inscriptions in high contrast white enamel.		
		i) With brand etched/printed permanently onto the item		
		13. Comes with two (2) solid rubber stoppers to fit perfectly the two (18 x 150 mL) test tubes		
		14. Must be able to separate water into its elements producing two gases (hydrogen and oxygen) with a <b>2:1 ratio</b> , a) 2 mL hydrogen: 1 mL oxygen; b) 4 mL hydrogen: 2 mL oxygen, c) 6 mL hydrogen: 3 mL oxygen, d) 8 mL hydrogen: 4 mL oxygen, e) 10 mL hydrogen: 5 mL oxygen, and so on until 6-8 mL of the has been collected for hydrogen gas, during the Electrolysis of Water experiment, and then test for the gases. Testing for each of the gases: a) For the gas collected at the negative electrode, a <b>popping sound must be produced - Hydrogen gas</b> b) For the gas collected at the		

	positive electrode, <b>the ember must glow more - Oxygen gas</b> supports combustion		
	15. With a well written Operations Manual and Assembly Guide in English		
	16. With sample Activity Sheets/Teacher's Manual in English		
	17. With Detailed instructions provided.		
	18. For numbers 15-17, the following technical specifications from (a-e) must be followed:		
	a) For List of materials, In Table form		
	b) For User's Manual, Teacher's Guide, Student Worksheets, Instruction Sheets/ Assembly Guides, In sentences format		
	i) With sentences grammatically correct and		
	ii) With correct spelling and terminologies, punctuations and others		
	c) In original print, not photocopied		
	d) In colored pictures, drawings/illustrations		
	e) in 0.3 mm minimum thickness plastic keycard that shall contain the actual colored picture of the model including the name: labeled with the required parts with details as follows:		
	i) Paper Size : A4 size , 80 gsm		
	ii) Font : Times New Roman		
	iii) Font size : 12		
	iv) Orientation: Portrait		
	v) Margins on all sides with 2 point width border line		
	vi) Line with arrow head of 1.25 point with width shall point to the specific part being labeled		

		<p>19. Comes with a <b>training video</b> that shows the actual equipment submitted and approved during the sample evaluation in a <b>USB</b> and shall contain the following:</p> <p>I. Training Video Contents:  "a. Name of the equipment  b. Parts of the equipment  c. Instruction on how to use the equipment  d. Sample Experiment/Activity using the equipment  e. Maintenance of the equipment  f. Troubleshooting  g. Storage and safekeeping (include cleaning) of the equipment"</p> <p>II. Training Video details:  "a. Shall be in MP4 format.  b. Shall be saved in a USB 3.0 Flash Drive.  c. Shall have a High-Definition resolution of at least 1080p.  d. Shall have a readable subtitle (font style &amp; size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle.  e. Shall comply an aspect ratio of 4:3.  f. Shall have a cover video pane containing the equipment name and a video pane for each video content.  g. The video, voiceover (audio), and subtitle shall be in sync.  h. The training video shall cover all the above requirement (video contents)."</p>		
		<p>20. Placed in bubble wrap, enclosed in polystyrene and comes complete with a padded box with storage slots for each item to help prevent glass breakage.</p>		
		<p>21. Must be free from breakage, cracks, chipped rims and sharp edges surface irregularities and other defects not stated herein</p>		



		22. Comes with a brand etched/enamelled permanently onto the glass		
		23. Must be brand new		
<b>14</b>	<b>Flask, Erlenmeyer, borosilicate, narrow-mouth, 250 mL</b>	Functional Specifications: Used to :		
		a) contain/hold a small chemical reaction,		
		b) mix solids and liquids,		
		c) heat substances over a Bunsen/alcohol burner's flame up to over 100 °C or		
		d) collect them in a titration/distillation experiment		
		Performance Specifications: Must be able to:		
		a) contain/hold a small chemical reaction,		
		b) mixes solids and liquids during chemical reaction,		
		c) heats substances up to 100°C over a Bunsen burner's flame up to 250 mL, or		
		d) serves as a reaction vessel in a titration experiment, and to collect distillate during distillation		
		Design Specifications:		
		1. Features a conical body, a cylindrical short neck , narrow mouth, with sloping sides, beaded rim, and with a flat bottom		
		2. Material : Clear, and transparent bubble-free, smooth, borosilicate, glass with the following dimensions:		
		a) Outside diameter: 80-82 mm		
		b)Height: 130-132 mm		
		c) Thickness: 1.5 to 2.0mm		
		b) Neck inside diameter range : 28 to 30 mm		
		3. With uniform wall thickness		
4. With narrow mouth, heavy duty beaded rim, graduated				
5. With easy pour spout				

		6. With permanent durable white enamel graduations of approximate volumes, large white block letters, numbers and easy to read inscriptions enamelled onto the glass, which includes the following:		
		a) Manufacturer's name or trademark		
		b) Capacity: 250 mL		
		c) With large white marking spot		
		d) With single graduated metric scale		
		d1) Graduation range : 50 -200 mL		
		d2) Graduation interval: 25 mL		
		d3) Graduation starts at: 50 mL in 25 mL increments		
		e) Tolerance: $\pm 6\%$ and other inscriptions enamelled onto the glass		
		7. Wrapped in paper and individually packed in a compartmentalized box		
		8. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein		
		9. Must be able to withstand heating of water up to 150 degrees Celsius		
		10. Placed in bubble wrap and packed in a sturdy box to help prevent glass breakage.		
		11. Comes with a brand enamelled permanently onto the glass		
		12. Must have a brand printed permanently on the glass		
		13. Must be brand new		
<b>15</b>	<b>Funnel, borosilicate, fluted</b>	Functional Specifications: Used to direct the smooth flow of the liquid or fine-grained substances into another container to prevent spills		
		Performance Specifications: Must be able to direct the smooth flow of the liquid or fine-grained substances into		

		another container to prevent spills		
		Design Specifications:		
		1.Type : 60 ° angle, <b>Fluted</b> short stem funnel		
		2. Shape: A wide, inverted conical top with narrow short circular tube at the bottom, with depressed inside flutings in 60° angle		
		3. Material: Borosilicate, clear, transparent, bubble-free glass, with the following dimensions:		
		a) Top outside diameter: 75-76 mm		
		b) Stem outer diameter : 8-8.5 mm		
		c) Stem length : 75-76 mm		
		d) Total Height : 139-140 mm		
		4. With heavy beaded rim/edge and heavy uniform wall for strength.		
		5. With slanted fire polished tip, filter angle (angled 60°) and depressed inside fluting help reduce filtering time		
		6. Wrapped in paper, enclosed in bubble wrap, and individually packed in a sturdy box		
		7. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein		
		8. Comes with a brand and 60° embossed permanently onto the glass		
		9. Must be brand new		
<b>16</b>	<b>Glass Tubing, Ø 6 mm x Ø 4 mm x 1500 mm long</b>	Functional Specifications: Used to contain/hold/mix liquids or gases during chemical reactions and to connect other pieces of equipment/glassware to a gas or liquid assembly		
		Performance Specifications: Must be able to:		

		a) be bent to connect other pieces of equipment/glassware to a gas or liquid assembly like in the activity " Flowing Up" and connect Florence flask to the Liebig condenser as a substitute for distilling flask for Distillation set up		
		b) contain/hold/mix liquids or gases during chemical reactions, to relate the rate of gas effusion with molar mass and demonstrate Graham's law of effusion in an experiment where a white ring mass is observed		
		Design Specifications:		
		1. Shape : Long slender hollow glass		
		2. Material : Soda lime, clear, transparent, bubble-free glass tubing, with the following dimensions:		
		a) Outside diameter : 6.0-6.5 mm		
		b) Wall thickness : 1.0-1.2 mm		
		c)Length: 1219-1500 mm		
		3. With fire polished ends		
		4. Individually wrapped in used newspaper, enclosed in a bubble wrap, and packed in a sturdy box		
		5. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein		
		6. Comes with a brand printed permanently on its packaging		
		7. Must be brand new		
<b>17</b>	<b>Manometer, Open U-tube</b>	Functional Specifications: Used to indicate the difference in the heights of the manometric liquid to measure pressure		
		Performance Specifications: Must be able to indicate the difference in the heights of the manometric liquid to measure pressure by getting the pressure difference		

		Design Specifications:	
		1. Type : Differential pressure manometer	
		2. Shape : U-shaped glass tube partially filled with liquid, with no moving parts and requires no calibration	
		3. Material : Glass	
		4. With a 50-52 cm arm with funnel top on one arm and 4.5-5.5 cm bent (90°) with 15-16 mm rifled tip on another arm for easy connection	
		5. U-tube is mounted on a board, fixed on a wooden stand for vertical mounting using metal clips	
		a) Material of stand : Wooden	
		b) Dimensions of back plate	
		i) Length : 540-542 mm	
		ii) Width : 90-102 mm	
		6. A millimeter scale is fitted between the arms of the tube.	
		a) Scale having graduation range: 0-50 cm	
		b) Graduation increment: 1mm, with 0 at the bottom	
		7. Accessories:	
		a) With latex tubing, glass wall 2 mm thickness, 7.5-8.0 mm inner diameter.	
		i) Material of rubber tubing: Non-toxic non-tacky latex rubber tubing for the laboratory activity.	
		ii) Length of rubber tube: 3000-3300 mm	
		8. Stand with glass tube placed in bubble wrap, enclosed in bubble wrap and packed individually in a sturdy box	
		9. Accessories enclosed in resealable plastic bag	
		10. With User's Manual in English	
		11. With Assembly Guides and Activity Sheets	
		12. For numbers #10 and 11; they must be:	
		a) In Table form for List of materials, in A4 size, glossy paper, laminated	

		b) In sentences format for instruction sheets/assembly guides		
		i) With sentences grammatically correct and		
		ii) With correct spelling and terminologies, punctuations and others		
		c)Printed in original copy, not photocopied		
		d) In colored drawings/illustrations		
		e) in 0.3 minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name labeled with the required parts with details as follows:		
		i) Paper Size: A4 size, 80 gsm		
		ii) Font: Times New Roman		
		iii) Font size: 12		
		iv) Margins on all sides with 2 point width border line		
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled		
		13. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein.		
		14. Individually packed in a sturdy box		
		15. Comes with a brand printed permanently onto the wooden stand		
		16. Must be brand new		
<b>18</b>	<b>Mortar and Pestle, porcelain, 150 mL</b>	Functional Specifications: Used to pulverize/mash/grind and to mix materials in a mortar using a pestle		
		Performance Specifications: Must be able to pulverize/mash/grind and mixes materials in a mortar using a pestle to demonstrate how particle size affects solubility and the rate of chemical reaction.		

	Decreasing the size of the particles increases the rate of dissolving and speeds up the rate of reaction because the surface area of the reactant has been increased.		
	Design Specifications:		
	<b>A. Mortar</b>		
	1. Shape of mortar : Deep form, bowl shape, with wide mouth, and with deeply molded, smooth rounded bottom		
	2. Material for mortar and pestle: Porcelain, with the following dimensions:		
	a) Outside diameter : 130-132 mm		
	b) Height/Depth : 65-85mm		
	3. Capacity: 150 mL		
	4. With pouring lip		
	5. With unglazed grinding surface (interior) and uniformly glazed exterior		
	<b>B. Pestle:</b>		
	6. Shape of pestle: Cylindrical with bulbous bottom, with the following dimensions:		
	a) Length range : 133-160 mm and		
	b) Diameter range: 28-40 mm diameter at its widest point.		
	7. Material of pestle: A heavy bat-shaped porcelain		
	8. Uniformly glazed on its handle and rough on opposite end		
	9. The set is individually wrapped, enclosed in a bubble wrap and packed in a sturdy box		
	10. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein		
	11. Comes with a brand marked permanently on the body/box		
	12. Must be brand new		

19	<b>Osmosis Apparatus</b>	Functional Specifications: Used to show that water passes through a semi-permeable membrane causing a rise in the level of water in the thistle tube		
		Performance Specifications: Must be able to show that water passes through a semi-permeable membrane causing a rise in the level of water in the thistle tube, to describe/demonstrate the effect of concentration on one of the colligative properties (osmotic pressure) of solutions		
		Design Specifications:		
		1. Features a long shaft of tube with a reservoir and a funnel like/flared rim section at the top and at the bottom. The shaft is designed to allow insertion through a small hole present in a Y-shaped support stand giving way for the tube to be inserted into a container.		
		2. Comes as a complete set, which is composed of the following items:		
		a) With one (1) pc battery jar = 600-605 mL cap		
		b) With one (1) pc double thistle tube with brand name etched onto the glass		
		b1) Shape of double thistle tube: A long shaft of tube that ends in a reservoir bulb with a funnel shaped/flared rim at the top and bottom part		
		b2) Material of double thistle tube and jar : Smooth, clear, transparent free from bubbles, striae, or other imperfections borosilicate glass, with the following dimensions:		
		Length of double thistle tube : 405-410 mm		
		Diameter of each thistle tube (top and bottom): 29-30 mm		
	Diameter of glass tube: 14-15 mm			



		c) With one (1) pc stable <b>Y-shaped</b> metal support stand, <b>safe to use, and absence/free of all sharp edges</b> , all surface imperfections/irregularities and all other defects not stated herein		
		c1) Shape of metal support stand: Y-shaped support stand		
		c2) Material of support stand: Aluminum		
		c3) With a black plastic adjusting screw at the rear end with the red adjusting screw near the center of the Y-support stand used to adjust the opening of the stand when the double thistle tube is mounted vertically in place		
		d) Comes with ten (10) pc semi-permeable membrane		
		3. Each item is individually placed in a snap fit organizer shaped into each item and packed as a complete set in a padded sturdy polystyrene box		
		4. With Instruction Manual and Activity Sheets		
		5. With a well written User's Manual (Assembly guides) and Activity Sheets in American English, with technical specifications details(a-e) as follows:		
		a) original print		
		b) A4 size copy paper (80 gsm)		
		c) With colored pictures, drawings/illustrations		
		d)Margin of 1/2 inch on all sides: with 2 point width border line		
		e) Lay out orientation : Portrait		
		f) Title: OSMOSIS APPARATUS shall be placed on the top center		
		i) Font style: Times New Roman		
		ii) Font size: 36		
		iii) UPPERCASE		
		iv) BOLD		
		g) Labels		

		i) Font style : Times New Roman		
		ii)Font size: 14.		
		iii) First letter of the label is capitalized		
		iv) Line with arrowhead of 1.25 width shall point to the specific part being labeled		
		h) Sentences must be grammatically correct and with correct spelling, punctuations and terminologies		
		i) with colored illustrations and drawings		
		j) with 0.3 mm minimum thickness plastic laminated in thick plastic		
		6. Must be free from rust and dirt, breakage, cracks , chipped rims, sharp edges, other surface irregularities and all other defects not stated herein		
		7. Placed in bubble wrap, with storage slots for each item enclosed in polystyrene and packed as a set in a padded box to help prevent glass breakage.		
		8. Comes with a brand permanently etched onto the double thistle tube and in the box		
		9. Must be brand new		
<b>20</b>	<b>Reagent Bottle, narrow-mouth, amber, borosilicate, 250 mL</b>	Functional Specifications: Used to contain/store and to provide UV protection of prepared light sensitive solutions/substances to prevent change/alteration in the composition of their contents		
		Performance Specifications: Must be able to contains/store and to provide UV protection for the prepared light sensitive solutions/substances to prevent change/alteration in the composition of their contents.		
		Design Specifications:		
		1. Shape : Cylindrical narrow-mouth bottle		
		2. Material : Borosilicate, smooth, bubble-free glass with the following dimensions:		

		a) Bottle diameter range: 66-72 mm		
		b) Neck I.D. range : 23-28 mm		
		c) Over-all height: 130 to 150 mm		
		3. Color: Amber		
		4. With approximate volumes, capacity, and other markings are in permanent white enamel which resists aggressive washing solutions		
		a) Manufacturer's name or trademark		
		b) 250 mL		
		c) white marking field/spot in permanent white enamel		
		5. With octagonal plastic stopper Socket size: 19/26 that fits the mouth well		
		6. With a white marking field/spot in permanent white enamel		
		a) logo/brand name		
		b) 250 mL		
		7. Wrapped in paper, enclosed in bubble wrap and packed individually in a padded sturdy box		
		8. Must be free from breakage, cracks , chipped rims, sharp edges, striae, all surface irregularities including all other defects not stated herein		
		9. Comes with a brand enamelled permanently onto the glass		
		10. Must be brand new		
<b>21</b>	<b>Reagent Bottle, wide-mouth, transparent, borosilicate, 250 mL</b>	Functional Specifications: Used to hold/ contain/store prepared solutions/ substances		
		Performance Specifications: Must be able to hold/contain/store prepared solutions/substances		
		Design Specifications:		

		1. Shape: Cylindrical wide-mouth bottle		
		2. Material: Borosilicate, clear, smooth, transparent and bubble-free glass, with the following dimensions:		
		a) Bottle diameter : 69 mm to 73 mm		
		b) Mouth diameter: 34 mm to 44 mm		
		c) Height : 129 mm to 142 mm		
		3. Features no-drip pour lip		
		4. With ground-in glass stopper		
		5. With air tight seal		
		6. With approximate volumes, capacity, and other markings are in permanent white enamel/stain which resists aggressive washing solutions		
		a) Manufacturer's name or trademark		
		b) 250 mL		
		c) white marking field/spot in permanent white enamel		
		7. Wrapped in paper, enclosed in bubble wrap and packed individually in a sturdy box		
		8. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein		
		9. Comes with a brand enamelled onto the glass		
		10. Must be brand new		
<b>22</b>	<b>Rubber Stopper # 0 (for Ø 16mm test tube)</b>	Functional Specifications: Used to seal the openings of 16 mm diameter test tubes and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance.to prevent leaks, hazards and contamination		
		Performance Specifications: Must be able to seal the openings of 16 x 150 mm test tubes and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance.to prevent		

		leaks, hazards and contamination		
		Design Specifications:		
		1. Shape: Cylindrical with a tapered bottom end		
		2. Material : Rubber compound with the following dimensions:		
		a) Height : 25-25.5 mm		
		b) Top $\varnothing$ : 17-17.50 mm		
		c) Bottom $\varnothing$ : 13-13.5 mm		
		3. Hardness : 40-45 Duro		
		4. Packed in resealable plastic bag		
		5. With no. 0 embossed onto the rubber stopper		
		6. Must be free from cracks, sharp edges, and all other surface imperfections including all other defects not stated herein		
		7. Comes with a brand marked permanently in the bag		
		8. Must be brand new		
<b>23</b>	<b>Spatula, spoon, porcelain and glazed</b>	Functional Specifications: Used to hold/contain and transfer solids and liquids from one container to the other		
		Performance Specifications: Must be able to hold/contain and transfers solids and liquids from one container to the other		
		Design Specifications:		
		1. Features a white, broad, flat, flexible blade (spatula) on one end and a spoon on the other end.		
		2. Material : Uniformly glazed smooth finish porcelain		
		a) Capacity: 0.3 mL		
		b) Overall Length : 121-142 mm		
		3. Must be free from breakage, cracks, chipped edges and all other defects not stated herein		
		4. Wrapped in paper, enclosed in bubble wrap and packed in a sturdy box.		
		5. Must be free from cracks, sharp edges, and all other		

		surface imperfections including all other defects not stated herein.		
		6. Comes with a brand marked permanently in the box		
		7. Must be brand new		
<b>24</b>	<b>Stirring Rod, Ø 6 mm x 250 mm long</b>	Functional Specifications: Used to mix liquids and solids		
		Performance Specifications: Must be able to mix liquids and solids well to speed up the dissolving process and increases the rate of reaction		
		Design Specifications:		
		1. Features a long, slender cylindrical solid glass, with the same thickness and slightly longer than a drinking straw and with rounded fire polished ends.		
		2. Material: Clear, transparent bubble-free stir stick solid borosilicate glass with the following dimensions:		
		a) Diameter( Ø) : 6-6.3 mm		
		b) Length: 250-254 mm long		
		3. With rounded and fire polished ends		
		4. Wrapped in paper, enclosed in bubble wrap and packed in a sturdy box		
		5. Must be free from breakage, cracks, chipped unpolished ends, all other surface imperfections including all other defects not stated herein		
		6. Comes with a brand marked permanently in the box		
		7. Must be brand new		
<b>25</b>	<b>Test tube brush</b>	Functional Specifications: Used to clean test tubes and other small sized glassware		
		Performance Specifications: Must be able to clean test tubes and other small-sized glassware with densely filled radial tip and head brush to make complete contact with walls, corners and bottom.		

		Design Specifications:		
		1. Features a radial tufted tip white nylon bristles and brush head lined against a rather sturdy wire handle with a looped end to make complete contact with walls, corners and bottom to clean test tubes and other small sized glassware.		
		2. Material of bristles : Medium stiff nylon with the following dimensions:		
		a) Diameter of bristle section: 18-19 mm		
		b) Length of bristle section : 82-102 mm		
		c) Over-all length: 228 -229 mm		
		3. Material of handle: Galvanized steel wire		
		4. Type of wire handle : Common loop twisted wire		
		5. With circular wire loop for hanging		
		6. Packed in a resealable plastic bag		
		7. Must be free from rust, sharp edges, all other surface irregularities including all other defects not stated herein		
		8. Comes with a brand marked permanently in the box		
		9. Must be brand new		
<b>26</b>	<b>Test Tube, borosilicate, Ø 16 mm x 150 mm long</b>	Functional Specifications: Used to contain/hold a small chemical reaction , to mix small quantities of solids and liquids, and to heat small quantities of substances		
		Performance Specifications: Must be able to contain/hold a small chemical reaction and , mixes solids and liquids, heats small quantity of substances up to more than 100°C over a Bunsen burner's flame		
		Design Specifications:		
		1. Features a finger-like length of glass tubing, open at the top, usually with a rounded lip at		

		the top, and a rounded 'U' shaped bottom		
		2. Material of test tube: Borosilicate , clear, transparent and bubble-free, <b>reusable glass</b> , with rim, with the following dimensions:		
		a) Outside Diameter: 15.8- 16.0 mm		
		b) Thickness: 1.3 -1.4 mm		
		c) Length: 150-152 mm		
		d) Comes with a certification from the manufacturer that the test tube is <b>reusable and not disposable</b>		
		3. Capacity: 20 mL		
		4. With heavy uniform wall thickness, excellent heat resistance		
		5. With large, white enamel marking spot		
		6. Test tubes must be reusable (not disposable)		
		7. Wrapped individually in tissue paper, enclosed in bubble wrap and packed in compartmentalized box		
		8. Must be free from breakage, cracks, chipped rims, surface irregularities and all other defects not stated herein		
		9. Comes with a brand enamelled permanently in the glass		
		10. Must be brand new		
<b>27</b>	<b>Tong, Crucible</b>	Functional Specifications: Used to lift and hold crucibles, remove the lids from crucibles, transfer evaporating dishes or picking small objects out of a reaction container		
		Performance Specifications: Must be able to lift and hold crucibles, remove the lids from crucibles, transfer evaporating dishes or picking small objects out of a reaction container.		
		Design Specifications:		



		1. Features a scissor-like and a long bent neck tongs, with two anti-skid pincers or pieces of metals that concave together, which allow the users to grasp a hot crucible, flasks, evaporating dishes, or even small beakers		
		2. Material : Stainless steel, durable, stable, rust and heat resistant		
		a) Color: Silver		
		b) Finish: Smooth		
		c) Overall Length: 228 -229 mm		
		3. With riveted joints		
		4. With serrated tips.		
		5. Enclosed in resealable bag and packed in a sturdy box		
		6. Must be free from rust, dirt, cracks, chipped and sharp edges and surface irregularities including all other defects not stated herein		
		7. Comes with a brand marked permanently in a box		
		8. Must be brand new		
<b>28</b>	<b>Vial, screw-neck, 25 ml. (with screw-type plastic cap)</b>	Functional Specifications: Used to hold/contain/store/mix small quantities of samples/solutions/substances up to 25 mL		
		Performance Specifications: Must be able to hold/contain/store/mix small quantities of samples up to 25 mL		
		Design Specifications:		
		1. Type : Threaded Screw cap		
		2. Shape : Bottle-like shape with a threaded neck, solid plastic closure and with a flat bottom.		
		3. Material : Borosilicate clear, transparent, and bubble-free glass, with the following dimensions:		
		a) Outside Diameter : 25-30 mm		
		b) Length: 60-80 mm		

		4. With screw- type solid plastic cap		
		5. Shape of neck : Cylindrical, round		
		6. Neck finish : Continuous thread		
		7. Cap Color: Colored		
		8. Cap Attached: No		
		9. Cap Material : Plastic		
		10. Closure style : Solid top, screw thread cap		
		11. Material: Plastic		
		a)Diameter : 25-30 mm		
		b) Length: 60-80 mm		
		12. Capacity: 25 mL		
		13. Packed individually in a compartmentalized/partitioned box		
		14. Must be free from breakage, cracks, chipped and sharp edges and surface irregularities including all other defects not stated herein		
		15. Comes with a brand marked permanently on the box		
		16. Must be brand new		
<b>29</b>	<b>Vial, screw-neck, 50 mL (with screw-type plastic cap)</b>	Functional Specifications: Used to hold/contain/store/mix small quantities of samples/ solutions/substances up to 50 mL		
		Performance Specifications: Must be able to hold/contain/store/mix samples/solutions/substances up to 50 mL		
		Design Specifications:		
		1. Type : Threaded Screw cap		
		2. Features a bottle-like shape with a threaded neck, screw cap plastic closure and with a flat bottom		
		3. Material : Borosilicate, clear, transparent, and bubble-free glass with the following dimensions:		
		a) Outside Diameter : 25-50 mm		
		b) Length : 100-108 mm		
		4. Capacity: 50 mL		

		5. Shape of neck: Cylindrical, round		
		6. Neck finish: Continuous thread		
		7. Cap Color: Colored		
		8. Cap Attached: No		
		9. Cap Material: Plastic		
		10. Closure style: Solid top, screw thread cap		
		11. Material: Plastic		
		a) Diameter : 24-26 mm		
		11. Packed individually in a compartmentalized box		
		12. Must be free from breakage, cracks, chipped and sharp edges and surface irregularities including all other defects not stated herein		
		13. Comes with a brand marked permanently on the box		
		14. Must be brand new		
<b>30</b>	<b>Watch Glass, Ø 90 mm</b>	Functional Specifications: Used to:		
		a) cover glassware like beakers		
		b) evaporates solvents in a sample and		
		c) holds/contains liquids and solids prior to heating.		
		Performance Specifications: Must be able to:		
		a) cover glassware like beakers		
		b) evaporate solvents in a sample and		
		c) hold/contain liquids and solids prior to heating.		
		Design Specifications:		
		1. Shape : Circular concave		
		2. Material : Borosilicate, clear, transparent, and bubble-free glass with the following dimensions:		
		a) Diameter : 90-91 mm		
		b) Thickness range : 1.5 mm to 2 mm		
		3. Fire-polished rims/edges		
		4. Individually wrapped in used newspaper, enclosed in a bubble wrap, and packed in a sturdy box		

		5. Must have fire polished edges/rims, be free from breakage, cracks, chipped and sharp edges, surface irregularities including all other defects not stated herein		
		6. Comes with a brand marked permanently in the box		
		7. Must be brand new		

**LOT 6: SCIENCE DEVICES, INSTRUMENTS, AND MEASURING TOOLS - MATTER**

<b>1</b>	<b>Balance, Toploading, Electronic</b>	Functional Specifications: Used to measure an object's mass up to 500 g capacity accurate up to 0.01 g readability		
		Performance Specifications: Must be able to measure an object's mass up to 500 g capacity accurate up to 0.01 g readability to determine mass relationship in a chemical reaction		
		Design Specifications:		
		1. Type: Digital		
		2. Shape of pan: Rectangular		
		3. Material of pan: Stainless steel		
		4. Removable high strength stainless steel weighing platform		
		5. Load/Capacity: 500 g		
		6. Readability/Accuracy: 0.01 g		
		7. Repeatability: 0.01 g		
		8. Comes with 500 g span calibration mass		
		9. Power Supply : 220-240V/ 50Hz		
		10. With large Liquid crystal display (LCD) with backlight		
	11. With multiple weighing units and overload protection			
	12. With automatic calibration			
	13. With standard RS 232 interface			
	14. Parts counting and percentage weighing			
	15. With accessories, such as:			
	a) the power cord,			
	b) AC Adapter and			

		c) 4 AA batteries		
		d) draft shield		
		16. With Statement of Accuracy/ Certification of Accuracy latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin		
		17. Comes with a <b>training video</b> that shows the actual equipment submitted and approved during the sample evaluation in a <b>USB</b> and shall contain the following:		
		I. Training Video Contents:		
		a. Name of the equipment b. Parts of the equipment c. Instruction on how to use the equipment d. Sample Experiment/Activity using the equipment e. Maintenance of the equipment f. Troubleshooting g. Storage and safekeeping (include cleaning) of the equipment		
		II. Training Video details:		
		a. Shall be in MP4 format. b. Shall be saved in a USB 3.0 Flash Drive. c. Shall have a High-Definition resolution of at least 1080p. d. Shall have a readable subtitle (font style & size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle. e. Shall comply an aspect ratio of 4:3. f. Shall have a cover video pane containing the equipment name and a video pane for each video content. g. The video, voiceover (audio), and subtitle shall be in sync. h. The training video shall cover all the above requirement (video contents).		

		18. Must be rust-free, free from dirt and breakage, cracks, chipped and sharp edges, other surface irregularities including all other defects not stated herein		
		19. Comes with a brand marked permanently onto the item		
		20. Must be brand new		
<b>2</b>	<b>Balance, Triple Beam, with tare, 2610-gram</b>	Functional Specifications: To measure mass of solids, liquids and gases accurate up to 0.1 g readability		
		Performance Specifications: Must be able to measure mass of solids and liquids accurate up to 0.1 g readability to determine mass relationship in a chemical reaction		
		Design Specifications:		
		1. Features three graduated-tier beam with pan		
		2. Display: Easy to-read deep-notched, tiered beams and dial plates		
		3. Material of weighing pan: Stainless Steel		
		4. Shape of weighing pan: Circular		
		5. Pan size diameter : 150-151 mm		
		6. Material of base : Cast metal with corrosion resistant smooth finish		
		7. With <b>spring, loaded zero-adjust compensator</b>		
		8. With self-aligning agate bearings, precision ground steel knife edges		
		9. With magnetic dampening to minimize oscillation and speed weighing		
		10. With adjustment knob for taring		
		11. With iron stand assembly (stand rod and C clamp) for fastening on the table and suspending the triple beam balance on air for specific gravity determination		
		12. Maximum Capacity : 2610 grams		

		13. Accuracy : 0.10 gram readability		
		14. With three beam graduations:		
		a) Rear beam : 100 g X 10 g		
		b) Center beam : 500 g X 100 g		
		c) Front beam : 10 g X 0.1 g		
		15. Equipped with three separate masses/counterweights:		
		a) 2 pc 1,000 grams counter weights		
		b) 1-pc 500 grams counter weight		
		16. With Statement of Accuracy (Certificate of Traceability) indicating accuracy traceable to standards of the country of origin		
		17. With English User's manual that contains Operation guide and also indicates formula and procedure in determining specific gravity and taring.		
		18. Comes with a <b>training video</b> that shows the actual equipment submitted and approved during the sample evaluation in a <b>USB</b> and shall contain the following:		
		I. Training Video Contents:		
		a. Name of the equipment b. Parts of the equipment c. Instruction on how to use the equipment d. Sample Experiment/Activity using the equipment e. Maintenance of the equipment f. Troubleshooting g. Storage and safekeeping (include cleaning) of the equipment		
		II. Training Video details:		

		<p>a. Shall be in MP4 format.</p> <p>b. Shall be saved in a USB 3.0 Flash Drive.</p> <p>c. Shall have a High-Definition resolution of at least 1080p.</p> <p>d. Shall have a readable subtitle (font style &amp; size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle.</p> <p>e. Shall comply an aspect ratio of 4:3.</p> <p>f. Shall have a cover video pane containing the equipment name and a video pane for each video content.</p> <p>g. The video, voiceover (audio), and subtitle shall be in sync.</p> <p>h. The training video shall cover all the above requirement (video contents).</p>		
		19. Must be free from rust and dirt, breakage, cracks, chipped and sharp edges, other surface irregularities including all other defects not stated herein		
		20. Enclosed in a polystyrene and packed in a sturdy box		
		21. Comes with a brand marked permanently onto the item and		
		22. Must be brand new		
<b>3</b>	<b>Calorimeter</b>	Functional Specifications: Used to measure heat effects or heat of reactions		
		Performance Specifications: a) Must be able to measure the heat effects or heat of reactions, the heat of neutralization of an acid and heat of fusion in the laboratory b) to distinguish between exothermic and endothermic processes		
		Design Specifications: 1. Features a double-walled cylindrical double wall with air insulation between two polished spun vessels		



	2. Material : Two polished spun aluminum vessels with the following dimensions:		
	A) Outer vessel size:		
	a) Height :100-140 mm		
	b) Diameter : 65-115 mm		
	B) Inner vessel size :		
	a) Height: 72-89 mm		
	b) Diameter : 61-77 mm		
	3. The two are separated by a molded polystyrene insulated separator/insulating wall.		
	4. The outer vessel has a transparent plastic lid/molded Bakelite cover, and with hole for thermometer		
	5. Supplied complete with stirrer, but without thermometer.		
	6. Accessories:		
	a) With a plastic insulator ring or fiber washer for insulating and supporting one vessel within the other, protects the polystyrene insulation against damage and liquid spills.		
	b) Insulated Stirrer		
	c) A clear transparent molded cover or plastic lid with a filler cap, with two holes (one hole is for the rubber stopper that holds the thermometer and the other hole for the stirrer		
	d) Rubber stopper with one hole		
	e) With polystyrene/a fiber separator to insulate the inner vessel		
	f) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the insulation of the calorimeter, is polystyrene, to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material		

		test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier.		
		7. With Instruction Manual in English that contains precise instructions on how to conduct common calorimetry experiments.		
		8. With User's Manual on the use, care, maintenance, trouble shooting and proper storage in English		
		9. With Activity Sheets/Teachers Manual in English		
		10. For numbers #7 to 9; technical specifications (a-e) must be followed:		
		a) For Contents List of materials, In Table form		
		b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format		
		i) With sentences grammatically correct and		
		ii) With correct spelling and terminologies, punctuations and others		
		c) In original print, not photocopied		
		d) In colored pictures, drawings/illustrations		
		e) in 0.3 mm minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name: labeled with the required parts with details as follows:		
		i) Paper Size: A4 size, 80 gsm		
		ii) Font: Times New Roman		
		iii) Font size: 12		
		iv) Margins on all sides with 2 point width border line		
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled		
		11. Must be free from rust and dirt, cracks, scratches, dented rims, sharp edges, surface		

		irregularities including all other defects not stated herein		
		12. Comes with a brand printed permanently on the calorimeter		
		13. Must be brand new		
<b>4</b>	<b>Centrifuge</b>	Functional Specifications: Used as one of the separation techniques for mixtures and compounds when the density difference between the particles and liquid is great, the particles are large, and the liquid viscosity is low. Separates blood at 3300 rpm and can be slowed down to separate other fluids at lower G forces such as urine specimens		
		Performance Specifications: Must be able to separate mixtures and compounds based on density difference between the particles and liquid is great, the particles are large, and the liquid viscosity is low. Separates blood at 3300 rpm and can be slowed down to separate other fluids at lower G forces such as urine specimens		
		Design Specifications:		
		1. Type : Fixed speed		
		2. Material: Non-toxic plastic, with the following dimensions:		
		a) Height : 241-266 mm		
		b)Width : 279-330 mm		
		c) Depth : 279-330 mm		
		d) <b>Certification from the manufacturer</b> of the <b>non-toxicity</b> of the material used		
		3. Color finish: Black		
		4. With Angled rotor, 8-Place Centrifuge with Timer		
		5. With Lid safety shut-off switch		
		6. Holds 3 mL to 15 mL size tubes		
		7. With 12 volt DC maintenance-free motor		
		8. Maximum volume : 120 mL (15 mL x 8)		
		9. Fuse : 3 amp/ 250 volts		

	10. Maximum speed : 3,500 rpm with fixed speed control. (blood, urine, etc.)		
	11. Clear view port in lid for using tachometer		
	12. Suction-cupped feet to prevent slipping		
	13. With Auto-off 30-minute timer with bell		
	14. With power cord		
	15. Power supply: 110/220 v , with auto-switching power adapter		
	16. Certification : CE, UL, cUL approved		
	17. Includes the following:		
	a). Eight-place tube rotor		
	b) Eight 15ml tube sleeves		
	c) Eight 13 x 75 mm tube sleeve inserts		
	d) Eight 15 mL round bottom plastic centrifuge tubes with screw cap with white or black print graduations		
	e) Eight 13 x 75mm round bottom plastic centrifuge tubes with screw cap		
	18. Placed in bubble wrap, enclosed in polystyrene and individually packed in sturdy box		
	19. With Operations Manual and Assembly Guide in English		
	20. With sample activity sheets in English		
	21. For numbers #19 to 20; technical specifications (a-e) must be followed:		
	a) For Contents List of materials, In Table form		
	b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format		
	i) With sentences grammatically correct and		
	ii) With correct spelling and terminologies, punctuations and others		
	c) In original print, not photocopied		
	d) In colored pictures, drawings/illustrations		

		e) in 0.3 mm minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name labeled with the required parts with details as follows:		
		i) Paper Size: A4 size, 80 gsm		
		ii) Font: Times New Roman		
		iii) Font size: 12		
		iv) Margins on all sides with 2 point width border line		
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled		
		22. Comes with a <b>training video</b> that shows the actual equipment submitted and approved during the sample evaluation in a <b>USB</b> and shall contain the following: I. Training Video Contents: "a. Name of the equipment b. Parts of the equipment c. Instruction on how to use the equipment d. Sample Experiment/Activity using the equipment e. Maintenance of the equipment f. Troubleshooting g. Storage and safekeeping (include cleaning) of the equipment" II. Training Video details: "a. Shall be in MP4 format. b. Shall be saved in a USB 3.0 Flash Drive. c. Shall have a High-Definition resolution of at least 1080p. d. Shall have a readable subtitle (font style & size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle. e. Shall comply an aspect ratio of 4:3. f. Shall have a cover video pane containing the equipment name		

		and a video pane for each video content. g. The video, voiceover (audio), and subtitle shall be in sync. h. The training video shall cover all the above requirement (video contents)."		
		23. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, surface irregularities including all other defects not stated herein		
		24. Comes with a brand marked permanently onto the label		
		25. Must be brand new		
<b>5</b>	<b>Electrical Conductivity (Conductivity of Solutions) Apparatus</b>	Functional Specifications: Used as a visual demonstration of the electrical conductivity of various liquids/solutions.		
		Performance Specifications: Must be used as a visual demonstration of the electrical conductivity of various liquids/solutions whether it is an/a:		
		a) electrolyte - conducts electricity or		
		b) non-electrolyte - does not conduct electricity		
		Design Specifications:		
		1. Shape : Cylindrical jar with flat bottom		
		2. Material of jar: Clear, transparent, smooth, and bubble free glass, with the following dimensions:		
		a) Diameter: 72-75 mm		
		b) Height : 75-80 mm		
		3. Capacity of jar/container: 150-200 mL		
		4. It comes with a jar cover which perfectly fits the glass jar		
		a) Material of jar cover: Plastic		
		b) Color of jar cover: Green/Any color		
		5.It consists of an electric lamp (3.0-4.0 V) in series with open electrodes		
		6. It comes with a plastic molded lamp socket		

	7. It comes with one (1) pc bulb		
	a) Type of bulb: Miniature type		
	b) Voltage: 3.0-4.0 volts		
	c) Number of extra light bulbs : Ten (10) pc		
	8. With two (2) binding posts color coded (black and red) for connection to two wire connectors.		
	9. With two (2) electrodes, which fit inside the glass jar, internally connected to the lamp circuit, namely:		
	a) a copper wire (anode) and		
	b) a carbon rod (cathode)		
	10. Length of electrodes : 60-80 mm		
	11. First power source: 2 AA batteries		
	12. With 1 pc battery holder		
	13. Comes with second power source: 220 V -240 V AC input)/ (0-12 V) DC output, comes with switch selector		
	14. Comes with:		
	a) two (2) connecting wires (1 red, 1 black) with alligator clips (1 red, 1 black) soldered on one end of the wire		
	b) Length of wire : 305-330 mm		
	c) Type of wire: Stranded		
	d) Gauge number : 20 - which is printed permanently on the insulation of the wire		
	15. Placed in bubble wrap, enclosed in polystyrene and comes complete with a padded box with storage slots for each item to help prevent glass breakage.		
	16. Must be free from breakage, cracks, chipped rims and sharp edges surface irregularities and other defects not stated herein		
	17. Must be able to show during an experiment on Electrical Conductivity of Solutions that electrolytes conduct electricity when the bulb lights up while non-electrolyte solutions did not		

		conduct electricity when the bulb wont light up		
		18. With Operations Manual and Assembly Guide in English		
		19. With sample activity guide/sheets/Teacher's Manual in English		
		20. For numbers #18 to 19; the technical specifications a-e must be followed:		
		a) For Contents List of materials, In Table form		
		b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format		
		i) With sentences grammatically correct and		
		ii) With correct spelling and terminologies, punctuations and others		
		c) In original print, not photocopied		
		d) In colored pictures, drawings/illustrations		
		e) in 3.0 mm minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name labeled with the required parts with details as follows:		
		i) Paper Size: A4 size, 80 gsm		
		ii) Font: Times New Roman		
		iii) Font size: 12		
		iv) Margins on all sides with 2 point width border line		
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled		
		21. Comes with a brand marked permanently onto the box		
		22. Must be brand new		
<b>6</b>	<b>Filter Paper, crepe, 580mm x 580 mm sheet, Grade 0905</b>	Functional Specifications: Used to filter/separate mixtures solids from liquids		
		Performance Specifications: Must be able to filter solids from liquids to demonstrate filtration, as one of the techniques in		



		separating mixtures (solids from liquids)		
		Design Specifications:		
		1. Type: Technical use		
		2. Shape of filter paper : Square		
		3. Material: Cellulose with the following dimensions:		
		a) Length: 580-580.5 mm		
		b) Width : 580-580.5 mm		
		4. Color: White to cream		
		5. Surface: Creped, very coarse textured surface		
		6. Grade 0905		
		7. Initial Filtration Speed: 5 sec/10 mL		
		8. Flow rate : High		
		9. Packed in a brown filter paper tube		
		10. Must be free from dirt and all other surface imperfections including all other defects not stated herein		
		11. Comes with a brand marked permanently printed in the filter paper tube		
		12. Must be brand new		
<b>7</b>	<b>Gloves, Hand, super nitrile</b>	Functional Specifications: Used to protect hands against mechanical risks, microorganisms, chemical burns and splashes		
		Performance Specifications: Must be able to protect hands against mechanical risks, microorganisms, chemical burns and splashes		
		Design Specifications:		
		1. Features a slightly curved fingers and forward-facing thumb correspond to the natural position of the hand (hand-shaped)		
		2. Material : <b>Nitrile, reusable</b> , with the following dimensions:		
		a) Length of gloves : 330-360 mm		
		b) Thickness : 15 mil/0.38 mm minimum		

		The thickness must be measured from the cuff, palm and fingers		
		<p>c) Submission of the <b>original copy of the Test certificate/s issued by the testing unit</b>, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the <b>material of the hand gloves</b>, is <b>super nitrile</b>, to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier.</p> <p>d) With Certification from the manufacturer that the hand gloves is reusable and not disposable</p>		
		3. Color : Green		
		4. Size : 8/Medium		
		5. Interior finish ( liner material) : Flocklined acid/solvent resistant)		
		6. Exterior finish : Embossed texture		
		7. Cuff style: Straight		
		8. Latex free to suit those with latex allergies		
		9. Non-slip wear resistant high elasticity , waterproof		
		10. Puncture resistant		
		11. With detailed imprints on each glove, on the following:		
		a) the glove size/s		
		b) the name of manufacturer		
		c) nitrile, flocklined		
		d) individual manufacturing lot		
		e) with pictograms for certification category requirements CE 0334 ( EN 420, EN 388, EN 374) designed for protection against mechanical risks, chemical risks, and micro-organisms)		

		12. Individually packed in pairs in a resealable plastic bag		
		13 With a statement of conformity from the manufacturer that the gloves complies with the specifications currently published and has been subject to the strict quality conditions imposed by internal management systems.		
		14. Comes with a brand printed permanently onto the gloves		
		15. Must be brand new		
<b>8</b>	<b>Graduated Cylinder, borosilicate, 10 mL</b>	Functional Specifications: Used to measure and to deliver the volume of liquids		
		Performance Specifications: Must be able to measure and to deliver the volume of liquids up to 10 mL capacity		
		Design Specifications:		
		1. Features a narrow cylindrical container with a small turned-out lip		
		2. Material: Borosilicate, clear, smooth, transparent and bubble-free glass		
		a) Thickness range : 1.3-1.4 mm		
		b) Outside diameter: 13-14 mm		
		c) Height: 177-178 mm		
		3. Features an easy-pour spout		
		4. With permanent white enamel graduations of approximate volumes, large white block letters, numbers and inscriptions/markings easy to read etched/engraved onto the glass, before the first graduation, which includes the following:		
		a) Manufacturer's name or trademark		
		b) Capacity: 10 mL		
c) Graduations: 0.10				
d) Class: A				
e) Tolerance : $\pm 0.10 - \pm 0.20$				

		f) EX/TD g) ISO/ASTM/Certification/s latest issued by the concerned institution which must conform to the standards appropriate to the goods' country of origin. institution appropriate to the goods' country of origin.		
		h) 20°C-27°C		
		5. Single metric scale		
		a) Graduation Range : 1 to 10 mL		
		b) Graduation interval : 0.1 mL		
		6. With a hexagonal non-detachable glass base		
		7. With a bumper guard		
		8. With Statement of Accuracy (Certificate of Traceability) indicating accuracy traceable to standards of the country of origin		
		9. Placed in bubble wrap, and packed individually in a compartmentalized box		
		10. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein		
		11. Comes with a brand marked permanently onto the glass		
		12. Must be brand new		
<b>9</b>	<b>Graduated Cylinder, borosilicate, 100 mL</b>	Functional Specifications: Used to measure and to deliver the volume of liquids		
		Performance Specifications: a) Must be able to measure and to deliver the volume of liquids up to 100 mL capacity b) Used as a container to determine the volume of irregularly shaped solids by water displacement		
		Design Specifications:		
		1. Features a narrow cylindrical container with a small turned-out lip		

	2. Material : Borosilicate, clear and transparent bubble-free glass with the following dimensions:		
	a) Thickness range : 1.3-1.4 mm		
	b) Outside diameter: 29-31 mm		
	c) Height: 254-256 mm		
	3. Features an easy-pour spout		
	4. With permanent white enamel graduations of approximate volumes, large white block letters, numbers and inscriptions/markings easy to read etched/engraved onto the glass, before the first graduation, which includes the following:		
	a) Manufacturer's name or trademark		
	b) Capacity: 100 mL		
	c) Graduations: 1 mL		
	d) Class A		
	e) Tolerance : $\pm 0.60$ mL		
	f) EX/TD		
	g) ISO/ASTM/Certification/s latest issued by the concerned institution which must conform to the standards appropriate to the goods' country of origin.		
	h) 20°C		
	5. With single graduated metric scale		
	a) Graduation range : 5 to 100 mL		
	b) Graduation Interval : 1 mL		
	6. With plastic bumper guard		
	7. With a hexagonal non-detachable glass base		
	8. With Statement of Accuracy (Certificate of Traceability) or Certification of Accuracy, a test issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin		
	9. Placed in bubble wrap, and packed individually in a compartmentalized box		

		10. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein		
		11. Comes with a brand marked permanently onto the item		
		12. Must be brand new		
<b>10</b>	<b>Graduated pipette with rubber pipettor, borosilicate, 10 mL</b>	Functional Specifications: Used to measure the amount of liquid being dispensed/delivered/transferred to another container accurate up to 10 mL capacity		
		Performance Specifications: Must be able to measure the amount of liquid being dispensed/delivered/transferred to another container accurate up to 10 mL capacity		
		Design Specifications:		
		1. Features a serological, transfer type straight tube with one constricted end		
		2. Material : Borosilicate, <b>reusable</b> , clear, transparent bubble-free glass		
		a) With <b>Certification from the manufacturer</b> that the graduated pipette is <b>reusable and not disposable</b>		
		3. With permanent colored enamel graduations of approximate volumes, large white block letters, numbers and inscriptions/markings easy to read etched/engraved onto the glass, before the first graduation, which includes the following:		
		a) Manufacturer's name or trademark		
		b) Capacity : 10 mL		
		c) Color band code for 10 mL cap :Orange		
		d) Graduation interval: 0.1 mL		
		e) Class A		
f) Marked "TD" /Ex				
g) Tolerance : $\pm 0.06$				

		h) ISO/ASTM/Certification/s latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin.		
		i) 20°C		
		4. Graduated to tip, zero at top		
		5. Color code for 10 mL cap :Orange		
		6. Top end is constricted		
		7. Capacity: 10 mL		
		8. Graduation interval: 0.1 mL		
		9. Class A permanently marked on the glass		
		Tolerance $\pm 0.06$ mL		
		10. Graduations , approximate volumes, capacity, and other markings are in permanent amber stain which resists aggressive washing solutions		
		11. With <b>Statement of Accuracy/ Certification of Accuracy</b> latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin		
		12. With a statement of conformity from the manufacturer that the product complies with the specifications currently published and has been subject to the strict quality conditions imposed by internal management systems.		
		13. Accessory :		
		With Rubber pipettor		
		a) Type : Three (3) -way Safety Bulb-type Pipet Filler with S, E and A letters embossed on the rubber		
		b) Material : Non-toxic natural rubber		
		c) Color : Red/orange		
		d) With pinch release valves that control air evacuation, liquid uptake, and liquid dispensing		
		e) Fits standard size pipettes		

		14. Packaging : Wrap glassware in newspaper and secure with a piece of masking tape and place in a bubble pouch, enclosed in polystyrene and packed in a sturdy box		
		15. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein		
		16. Comes with a brand printed permanently on the glass		
		17. Must be brand new		
<b>11</b>	<b>Hydrometer for heavy liquids</b>	Functional Specifications: Used to measure relative density of heavy liquids based on the concept of buoyancy		
		Performance Specifications: Must be able to measure relative density of heavy liquids based on the concept of buoyancy, like glycerine		
		Design Specifications:		
		1. Type : Long Plain Form		
		2. Features a long cylindrical hollow glass tube with a bulb weighted at the pointed bottom with a steel ballast with graduations on the arrow stem for measuring.		
		3. Material : Clear , transparent bubble-free Glass, with the following dimensions:		
		a) Length : 300 - 330 mm		
		4. Specific Gravity Range: 1.00 - 2.00		
		5. Subdivision : 0.01		
		6. Comes with a ballast		
		a) Material of ballast : Glass		
		b) Heavy metals (lead, mercury)- free metal ballast		
		c) Material inside the ballast : Steel pellets and		
		d) With a binder		
		7. With Statement of Accuracy/ Certification of Accuracy latest issued by the concerned institution which must conform to the authoritative standards		



	appropriate to the goods' country of origin		
	8. Individually serialized		
	9. Individually packed in a protective hard plastic case		
	10. With User's Manual in English		
	11. With Activity Sheets/Teacher's Manual in English		
	12. For numbers #10-11, the technical specifications (a-e) must be followed:		
	a) For Contents List of materials, In Table form		
	b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format		
	i) With sentences grammatically correct and		
	ii) With correct spelling and terminologies, punctuations and others		
	c) In original print, not photocopied		
	d) In colored pictures, drawings/illustrations		
	e) in 0.3 minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name labeled with the required parts with details as follows:		
	i) Paper Size : A4 size , 80 gsm		
	ii) Font : Times New Roman		
	iii) Font size: 12		
	iv) Margins on all sides with 2 point width border line		
	v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled		
	13. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein.		
	14. Must have a brand etched/engraved onto the glass		

		15. Must be brand new		
<b>12</b>	<b>Hydrometer for light liquids</b>	Functional Specifications: Used to measure relative density of light liquids based on the concept of buoyancy like water		
		Performance Specifications: Must be able to measure the relative density of liquids lighter than water based on the concept of buoyancy		
		Design Specifications:		
		1. Type : Long Plain Form		
		2. Shape : Long cylindrical hollow glass tube with a bulb weighted at the bottom with a steel ballast with graduations on the narrow stem for measuring		
		3. Material : Clear , transparent bubble-free Glass , with the following dimensions:		
		a)Total Length: 300 - 330 mm		
		b)Subdivision : 0.005		
		4. Specific Gravity Range : 0.70 to 1.0		
		5. Accuracy : ±1 subdivision		
		6. Comes with a ballast		
		a) With heavy metals (lead, mercury)- free metal ballast and glass		
		b) Material inside the ballast: Steel pellets and		
c) With a binder				
7. With Statement of Accuracy/ Certification of Accuracy latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin				
8. Individually serialized, packed in a protective hard plastic case				
9. Individually packed in a protective hard plastic case				
10. With User's Manual in English				

		11. With Activity Sheets/Teacher's Manual in English		
		12. For numbers #10-11; the technical specifications (a-e) must be strictly followed:		
		a) For Contents List of materials, In Table form		
		b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format		
		i) With sentences grammatically correct and		
		ii) With correct spelling and terminologies, punctuations and others		
		c) In original print, not photocopied		
		d) In colored pictures, drawings/illustrations		
		e) in 0.3 mm minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name labeled with the required parts with details as follows:		
		i) Paper Size : A4 size , 80 gsm		
		ii) Font : Times New Roman		
		iii) Font size : 12		
		iv) Margins on all sides with 2 point width border line		
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled		
		13. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein		
		14. With a brand etched/printed onto the item		
		15. Must be brand new		
<b>13</b>	<b>Laboratory Hot Plate with magnetic stirrer</b>	Functional Specifications: a) Used to heat samples, glassware and its contents, solutions, and substances uniformly with constant stirring , or b) boiling of water		

		c) to sterilize glassware and other materials uniformly,		
		d) dissolving buffers and reagents with constant stirring		
		e) preparing media,		
		f) concentrating samples and		
		g) to prepare chemicals used in scientific research.		
		Performance Specifications: Must be able to		
		a) heat samples, glassware and its contents, solutions, and substances with constant stirring		
		b) boiling of water		
		c) to sterilize glassware and other materials uniformly		
		d) dissolving buffers and reagents with constant stirring		
		e) preparing media,		
		f) concentrating samples and		
		g) to prepare chemicals used in scientific research		
		h) Agitates the liquid to speed up the reaction and mixes components (solid and liquid to get homogeneous mixtures		
		Design Specifications:		
		1. Type : Digital		
		2. Top plate material : Ceramic coated aluminum plate (chemical-acid-base resistant)with the following dimensions:		
		a) Length : 178-220 mm		
		b) Width: 178-220 mm		
		c) Submission of the <b>original copy of the Test certificate/s issued by the testing unit</b> , like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the <b>top plate is ceramic coated aluminum (chemical-acid-base resistant)</b> , to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during		

	preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier.		
	3. Color of top plate : White		
	4. Color of body: Midnight blue/any color		
	5. Comes with temperature probe, probe holder, support rod, and stir bar a) With accurate internal temperature sensor and external temperature probe b) With plug/holder/ clamp/clip for temperature probe c) With built-in support rod mount, thumbscrew, accommodates rods up to 13 mm in dia. d) With Stand rod with the following dimensions: i) Material: Stainless steel ii) Diameter (Φ):12-14 mm iii) Length: Φ450-452 mm iv) With PTFE Cross Spinplus magnetic stirrer bar Dimensions: 1 x 9/16 inches (25.4 x 14.3 mm) Color: White		
	6.Maximum Operating Temp.: 380 °C minimum		
	7. Temperature accuracy : ± 0.3 °C at set temperature		
	8. Stirring capacity : 5-20 Liters		
	9. Speed : 80-1500 rpm		
	10. Control resolution : 5 rpm		
	11. Temperature range and accuracy : Max 380 °C minimum		
	12. Heating power consumption : 600 W minimum		
	13. With digital LCD with backlight display		
	14. With digital feedback controller with joggle shuttle switch(Turn + Push)		
	15. With over temperature protection		
	16. With power cord, AC AdapterQuick and easy adjustment knob		

	17. Control: Quick and easy adjustment knob		
	18. With safety LEDs to indicate when heating function has been activated		
	19. Power: 220-240 V AC, 50/60 Hz, 800 W minimum		
	20. With built-in support rod mount, thumbscrew, accommodates rods up to 13 mm in dia.		
	21. With quick adjustment knob and LED indicator		
	22. Includes English User's Manual which consists of the Operating Manual		
	23. With Activity Sheets/Teacher's Manual in English		
	24. For numbers #22-23; the technical specifications ( a-e) must be strictly followed:		
	a) For Contents/ List of materials, In Table form		
	b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format		
	i) With sentences grammatically correct and		
	ii) With correct spelling and terminologies, punctuations and others		
	c) In original print, not photocopied		
	d) In colored pictures, drawings/illustrations		
	e) in 0.3 minimum thickness plastic laminated Assembly Guides that shall contain the actual colored picture of the model including the name labeled with the required parts with details as follows:		
	i) Paper Size: A4 size , 80 gsm		
	ii) Font : Times New Roman		
	iii) Font size: 12		
	iv) Margins on all sides with 2 point width border line		
	v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled		

		25. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein		
		26. Must be packed in polystyrene and enclosed in a sturdy box		
		27. Comes with a <b>training video</b> that shows the actual equipment submitted and approved during the sample evaluation in a <b>USB</b> and shall contain the following:		
		I. Training Video Contents:		
		a. Name of the equipment b. Parts of the equipment c. Instruction on how to use the equipment d. Sample Experiment/Activity using the equipment e. Maintenance of the equipment f. Troubleshooting g. Storage and safekeeping (include cleaning) of the equipment		
		II. Training Video details:		
		a. Shall be in MP4 format. b. Shall be saved in a USB 3.0 Flash Drive. c. Shall have a High-Definition resolution of at least 1080p. d. Shall have a readable subtitle (font style & size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle. e. Shall comply an aspect ratio of 4:3. f. Shall have a cover video pane containing the equipment name and a video pane for each video content. g. The video, voiceover (audio), and subtitle shall be in sync. h. The training video shall cover all the above requirement (video contents).		
		28. Comes with a brand marked permanently on the box		

		29. Must be brand new		
<b>14</b>	<b>Safety Goggles, polycarbonate</b>	Functional Specifications: Used to protect eyes and face against chemical burns and splashes		
		Performance Specifications: Must be able to protect eyes and face against chemical burns and splashes		
		Design Specifications:		
		1 Features an angled vented portion that does not allow direct straight line from the exterior to the interior of the eyewear which encloses wide area surrounding the eyes		
		2. Material of lens : Polycarbonate lens		
		a) Submission of the <b>original copy of the Test certificate/s issued by the testing unit</b> , like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the lens of the safety goggles, is <b>polycarbonate</b> , to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier.		
		b) With Certification from the manufacturer that the pair of hand gloves is reusable and not disposable		
	3. Color of the lens: Clear			
	4. Lens type : Anti-splash, anti-fog treated/anti-scratch coating			
	5. With indirect ventilation channels (preventing penetration of splashes) one through each side of the frame to keep out large particles, dust, and liquids and splash hazards, improves air circulation and reduces fogging in hot/humid conditions			



	6. With wrap around elasticized adjustable headband integrated with goggle frame to prevent slippage and holds the goggle more securely		
	7. With pivoting headband clips to adjust strap around hard hats or hearing protection		
	8. Peel-off goggle covers available to extend the life of the lens		
	9. Can be worn over most prescription eyewear (OTG compatible)		
	10. With firm comfortable seal around forehead, cheeks, nose and temples protects against chemicals, dust and grindings		
	11. Shall bear mark ANZI Z87.1-2010 Standard for Chemical Splash and Dust Protection, Z87+D3 to indicate an impact protector type (ANSI Z87.1, CE EN 166 or CSA Z94.3 certification compliance) on the frame and the lens		
	12. The manufacturer or supplier certification mark must be present on all approved safety lenses, frames (front and temple), removable side shields, and other parts of the glasses, or goggles.		
	13. Individually packed in a transparent plastic bag		
	14. Labeling of the primary packaging displays, product name, product reference, manufacturer name, size, type, performance testing information for particular storage conditions (temperature, pressure, light, humidity, as appropriate or harmonized symbol as applicable.		
	15. With issuance of certification statement from the manufacturer as to the:		
	a) Non-toxicity of the materials used		
	b) Material of the lens : polycarbonate		
	c) It is fog coated/scratch and impact resistant		

		16. Individually packed in a sturdy box/plastic bag		
		17. Must be free from cracks, sharp edges, and all other surface imperfections including all other defects not stated herein		
		18. Comes with a brand marked permanently on the box		
		19. Must be brand new		
<b>15</b>	<b>Thermometer, Laboratory type, Alcohol, -20°C to 110°C</b>	Functional Specifications: Used to measure the temperature		
		Performance Specifications: Must measure the temperature , -20° to 110°C		
		Design Specifications:		
		1. Type : Alcohol filled, partial immersion thermometer		
		2. Features a small sealed tube made of glass that has a small hollow bulb filled partly with ethanol and partly with nitrogen and ethanol vapors on one end and a thin capillary opening running through the length of its center		
		3. Material : Glass		
		4. Color : White/yellow		
		5. Non-toxic red-filled thermometer		
		6. Partial immersion type with immersion line indicator and ring top		
		7. With precision red alcohol-filled, reinforced bulbs, and with expansion chamber		
		8. With white back with non-roll sleeve		
9. With clear and permanent markings; scale never washes out				
10. Provided with non-roll plastic case				
11. With continuous alcohol column with no separations				
12. All graduation lines, figures, and letters should be clear-cut, distinct, and filled with a permanent pigment of suitable				

		color with the following dimensions:		
		a) Length : 200 mm ( min)		
		b). Accuracy: $\pm 1^{\circ} \text{C}$		
		c) Range : $-20^{\circ}\text{C}$ to $110^{\circ}\text{C}$		
		d) Division: $1^{\circ}\text{C}$		
		e) Diameter: 5.8 to 6.2 mm f) Immersion line: 76 mm		
		13. With Statement of Accuracy/ Certification of Accuracy latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin		
		14. Must be free from breakage , cracks, chipped and sharp edges and surface irregularities including all other defects not stated herein.		
		15. Comes with a brand printed permanently onto the glass		
		16. Must be brand new		

**LOT 7: SCIENCE DEVICES, INSTRUMENTS, AND MEASURING TOOLS - EARTH & SPACE and LIVING THINGS**

<b>1</b>	<b>Anemometer with Wind Vane, Cup type</b>	Functional Specifications: Used to measure wind speed in real time and indicate the direction where the wind is coming from and where it is heading		
		Performance Specifications: Should be able to measure wind speed in real time and indicate the direction where the wind is coming from and where it is heading		
		Design Specifications:		
		1. Anemometer and wind vane combined in 1 unit		
		2. Dimension of unit : 340-350 mm x 75-80 mm x 75-80 mm (H x W x D)		
		3. Powered by AA dry cells		
		4. Direct digital reading of wind speed, can display wind speed in m/s and km/hr, can		

		measure average wind speed and instantaneous wind speed by means of selector switch		
		5. Wind vane should be free moving to indicate wind direction, wind vane should have arrow head on one end and arrow tail on the other end		
		6. Made of corrosion resistant material		
		7. All labels, inscriptions, and instructions should be in English		
		8. The item should be free from toxic materials		
		9. The item should be branded and permanently marked on the item		
<b>2</b>	<b>Anemometer, Simple</b>	Functional Specifications: Used to determine wind speed by calculating the number of rotations the rotor makes per unit time		
		Performance Specifications: Should be able to determine wind speed by calculating the number of rotations the rotor makes per unit time		
		Design Specifications:		
		1. Sensitive/low friction model for demonstrating the principle of wind velocity. Can rotate with human blow		
		2. Made of corrosion resistant material		
		3. Consist of 4 cups (4.5-5 cm diameter) mounted on a hub and on an axle securely affixed to a tough and stable base. 3-cups are colored black with one red cup to facilitate counting of rotations.		
		4. Dimension: 210-220 mm x 150-160 mm (H X W)		
		5. With No Removable Parts		
		6. All labels and inscriptions should be in English, and permanently marked on the item		
		7. The item should be free from toxic materials		

		8. The item should be branded and permanently marked on the item		
<b>3</b>	<b>Aneroid Barometer Set (Demonstration Type)</b>	Functional Specifications: Used to demonstrate how an aneroid barometer works		
		Performance Specifications: Should be able to demonstrate how an aneroid barometer works		
		Design Specifications:		
		1. The unit is supplied with rubber compression bulb with tube, changes in pressure can be demonstrated and obtained by compressing the rubber bulb		
		2. Dual graduation: mm Hg and mbar(hPa).		
		3. Range: 960 to 1060 mbar with mmHg equivalent		
		4. Dial Diameter of 98 to 100 mm		
	5. With English User's manual that includes the operation and reset procedure.			
	6. Must be branded and permanently marked on the item			
<b>4</b>	<b>Aneroid Barometer, wall-mount</b>	Functional Specifications: Used to measure the prevailing atmospheric pressure in a locality in real time		
		Performance Specifications: Should be able to measure the prevailing atmospheric pressure in real time		
		Design Specifications:		
		1. Reading standard Scale Range: 960 mbar to 1060 mbar		
		2. Dual graduation: mmHg and mbar(hPa)		
		3. Dial Diameter: 98 mm-130 mm		
	4. Materials: plated bezel, scratch-free cover glass, and plastic base			

		5. With English User's manual that includes the operation and reset procedure.		
		6. Must be branded and permanently marked on the item		
<b>5</b>	<b>Compass, Magnetic</b>	Functional Specifications: Used to find direction on the earth's surface by the alignment of the compass needle with the earth's magnetic field		
		Performance Specifications: Should be able to find direction on the earth's surface by the alignment of the compass needle with the earth's magnetic field		
		Design Specifications:		
		1. Outside Diameter: 48-50 mm		
		2. Needle mounted in an Aluminum case with clear, scratch-free plastic or glass face		
		3. Graduated dial marked in cardinal points (North, South, West, East, Northwest, Northeast, Southwest, and Southeast).		
		4. Must be branded and permanently marked on the item		
<b>6</b>	<b>Dissecting Set with pan</b>	Functional Specifications: Used to perform a wide variety of dissections.		
		Performance Specifications: Must be able to aid in classifying different animal tissues during dissection.		
		Design Specifications:		
		1. 10 pc dissection set that includes the following stainless steel instruments:		
		• 1 piece surgical scissors, minimum length of 110mm		
		• 1 piece fine point/iris scissors, minimum length of 110mm		
• 1 piece fine point curved forceps, minimum length of 110mm				

		<ul style="list-style-type: none"> <li>• 1 piece fine point straight tip forceps, minimum length of 110mm</li> </ul>		
		<ul style="list-style-type: none"> <li>• 1-piece tissue forceps/mosquito forceps, curved tip</li> </ul>		
		<ul style="list-style-type: none"> <li>• 1-piece scalpel minimum 4 cm blade length</li> </ul>		
		<ul style="list-style-type: none"> <li>• 1-piece scalpel handle</li> </ul>		
		<ul style="list-style-type: none"> <li>• 1-piece teasing needle angular with chuck</li> </ul>		
		<ul style="list-style-type: none"> <li>• 1-piece teasing needle straight with chuck</li> </ul>		
		<ul style="list-style-type: none"> <li>• 1-piece mall probe and seeker</li> </ul>		
		2. In a rectangular vinyl zippered case;		
		3. With 1-piece stainless steel dissecting pan (minimum): 254 mm x 178 mm x 38 mm		
		4. "Stainless steel" shall be embossed or engraved on the items whenever applicable.		
		5. Must be branded and brand new. The brand shall be printed on vinyl zippered case.		
<b>7</b>	<b>Gloves, Surgical</b>	Functional Specifications: Used to protect hands from dirt and contamination.		
		Performance Specifications: Must be able to protect hands against dirt, laceration and contamination.		
		Design Specifications:		
		1. Sterile, latex surgical gloves		
		2. Smooth, powder-free and beaded cuff		
		3. Color: White or beige		
		4. Size range: Medium - Large		
		5. Individually sealed pack pair of gloves with brand and type of material printed on it.		
		6. Must be branded and brand new.		
<b>8</b>	<b>Hand Lens, 10x magnification</b>	Functional Specifications: Used for enlarging the appearance of objects 10 times its actual size		
		Performance Specifications: Should be able to enlarge the appearance of objects 10 times its actual size		

		Design Specifications:		
		1. Magnification: x 10		
		2. Diameter (viewable area) 18-20 mm		
		3. Body: Stainless steel;		
<b>9</b>	<b>Hand Lens, 5x magnification</b>	Functional Specifications: Used to produce a magnified image of an object.		
		Performance Specifications: Must be able to magnify the image of an object.		
		Design Specifications:		
		1. Five times (5x) magnification power		
		2. Glass lens; diameter range: 45mm - 50 mm		
		3. Mounted in a circular chrome-plated metal frame with a cylindrical handle		
		4. No sharp edges and other defects		
		5. Safely packed in a box		
		6. Must be branded and brand new. The brand shall be printed on the box.		
<b>10</b>	<b>Lens Paper, 50's/pack</b>	Functional Specifications: Used to clean the microscope lenses.		
		Performance Specifications: Must be able to clean the microscope lenses.		
		Design Specifications:		
		1. Measures (minimum) 100 mm x 150 mm		
		2. Material: Fine, soft, lint-free paper		
		3. Quantity: 50 sheets/booklet		
		4. Must be packed in a resealable plastic		
		5. Must be branded and brand new. The brand shall be printed on the cover of the booklet.		
<b>11</b>	<b>Microscope, Compound with 4 Objectives</b>	Functional Specifications: Used to view specimen not visible to the naked eye.		



		Performance Specifications: Must be able to focus specimen not visible to the naked eye using the four objectives.		
		Design Specifications:		
		1. Eyepiece: Glass lens, locked-in wide field, 10X with pointer, and with own separate plastic storage case includes an extra 15X eyepiece		
		2. Nosepiece: Quadruple with accurate centering and click stops; easy to turn		
		3. Objectives: With metal casing, glass lens, DIN achromatic objectives are parfocal, par centered, color coded, 4x,10x; retractable 40x, and 100x (oil immersion) with own separate plastic storage case		
		4. Stage: Built in flat, firmly fixed graduated mechanical stage clips and with knobs; minimum 110 mm x 110 mm ; glass slides shall not be displaced when mounted		
		5. Condenser: N.A. 1.25 with iris diaphragm		
		6. Focus: Dual coarse controls with slip clutch and adjustable tension ring; dual lever type fine focus controls; adjustable safety stop. Gives sharp, clear, well-lighted images		
		7. Mirror range: 49mm - 51 mm, 2-sided, plane-concave		
		8. No sharp metal parts and other defects		
		9. With wooden storage case; and immersion oil provided		
		10. With English User's Manual that shall provide the diagram of correct microscope parts; function of each part; operation guide; cleaning and troubleshooting instructions.		
		11. Manual details:		
		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)		
		Cover: Paper board, 280 gsm (minimum 0.30 mm)		

		b. Size: (minimum) 165 mm x 215 mm Fold		
		(minimum) 330 mm x 215 mm Spread		
		c. Binding: Saddle Staple		
		d. Font type: Arial and Font size (minimum): 10		
		e. Pictures shall be in full color		
		12. Comes with a training video that shows the actual equipment submitted and approved during the sample evaluation and shall contain the following:		
		I. Training Video Contents:		
		a. Name of the equipment b. Parts of the equipment c. Instruction on how to use the equipment d. Sample Experiment/Activity using the equipment e. Maintenance of the equipment f. Troubleshooting g. Storage and safekeeping (include cleaning) of the equipment		
		II. Training Video details:		
		a. Shall be in MP4 format. b. Shall be saved in a USB 3.0 Flash Drive. c. Shall have a High-Definition resolution of at least 1080p. d. Shall have a readable subtitle (font style & size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle. e. Shall comply an aspect ratio of 4:3. f. Shall have a cover video pane containing the equipment name and a video pane for each video content. g. The video, voiceover (audio), and subtitle shall be in sync. h. The training video shall cover all the above requirement (video contents).		

		13. Warranty on parts and labor: 2 years		
		14. Must be branded and brand new. The brand shall be permanently mark on the item.		
<b>12</b>	<b>Microscope, Digital</b>	Functional Specifications: Used to focus specimen with the image viewed through the LCD screen.		
		Performance Specifications: Must be able to show the structure of subcellular organelles.		
		Design Specifications:		
		1. Nosepiece: Triple with 4x, 10x, 40x achromatic objectives and click stop		
		2. Magnification: 40x, 100x, and 400x (1600x with digital zoom)		
		3. Has full color (minimum) 3.5" TFT LCD screen with onboard software		
		4. Digital Camera: 5 MP CMOS sensor (minimum) as indicated in the manufacturer's manual		
		5. With built-in top and bottom LED illumination sources		
		6. 220V; 50/60 Hz power source		
		7. Battery options 4AA		
		8. Stage: (minimum) 88 mm x 88 mm; fully mechanical with metal clips;		
		9. Six position filter wheel		
		10. With 180° rotating LCD screen		
11. Combination of smooth-finished metal and plastic parts				
12. Supports up to 32G Memory size				
13. AC Plug (power) SD Card (32G max) Port(s) In				
14. With TV/AV output for display on large monitors for classroom or at the laboratory				
15. Comes with a training video that shows the actual equipment submitted and approved during the sample evaluation and shall contain the following:				

		I. Training Video Contents:		
		<ul style="list-style-type: none"> <li>a. Name of the equipment</li> <li>b. Parts of the equipment</li> <li>c. Instruction on how to use the equipment</li> <li>d. Sample Experiment/Activity using the equipment</li> <li>e. Maintenance of the equipment</li> <li>f. Troubleshooting</li> <li>g. Storage and safekeeping (include cleaning) of the equipment</li> </ul>		
		II. Training Video details:		
		<ul style="list-style-type: none"> <li>a. Shall be in MP4 format.</li> <li>b. Shall be saved in a USB 3.0 Flash Drive.</li> <li>c. Shall have a High-Definition resolution of at least 1080p.</li> <li>d. Shall have a readable subtitle (font style &amp; size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle.</li> <li>e. Shall comply an aspect ratio of 4:3.</li> <li>f. Shall have a cover video pane containing the equipment name and a video pane for each video content.</li> <li>g. The video, voiceover (audio), and subtitle shall be in sync.</li> <li>h. The training video shall cover all the above requirement (video contents).</li> </ul>		
		16. Warranty on parts and labor: 2 years		
		17. With English User's Manual that shall provide the diagram of correct microscope parts; function of each part; operation guide; cleaning and troubleshooting instructions.		
		18. Manual details:		
		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)		
		Cover: Paper board, 280 gsm (minimum 0.30 mm)		

		b. Size: (minimum) 165 mm x 215 mm Fold		
		(minimum) 330 mm x 215 mm Spread		
		c. Binding: Saddle Staple		
		d. Font type: Arial and Font size (minimum): 10		
		e. Pictures shall be in full color		
		19. Accessories included:		
		a. 2GB SD card		
		b. USB 2.0 Cable (data transfer)		
		c. Dust Cover		
		d. Rugged canvass carrying case with shoulder strap		
		e. Five (5) prepared slides		
		f. 4 Plug international AC adapter		
		g. AV out cable for viewing on a TV or projector		
		20. Must be branded and brand new. The brand shall be permanently mark on the item.		
<b>13</b>	<b>Pipette, Beral, 1 mL</b>	Functional Specifications: Used to transfer/dispense liquid samples.		
		Performance Specifications: Must be able to transfer/dispense liquid sample up to a volume of 1 mL		
		Design Specifications:		
		1. One-piece pipette, made from flexible soft non-toxic plastic that has a protuberance on top that serves as liquid retention chamber (Certificate of non-toxicity is required)		
		2. Capacity: 1 mL in 0.25 mL grad interval		
		3. No rubber head		
		4. Total length (minimum): 140 mm		
		5. With molded (embossed) graduations		
		6. Must be brand new		
<b>14</b>	<b>Prepared Slide Set, Microscope, 25 pieces</b>	Functional Specifications: Used to contain the readily mounted and ready to view object/specimen for examination under a microscope.		

	Performance Specifications: Must be able to show the specimen when viewed under a microscope.		
	Design Specifications:		
	1. Quantity: Set of 25 pieces glass slides		
	2. Dimensions (Width x Length) minimum: 25 mm x 75 mm		
	3. Thickness (minimum) : 1.0 mm		
	4. Individually sealed and protected by a cover slip/glass cover;		
	5. Clear, distinct and colorful slides of the following: insects (4); plants (7); animals/microbes (7); Human tissues (7)		
	6. Either of the following insects: wing of housefly, mosquito larvae, Drosophila melanogaster, housefly head, aphids.		
	7. Either of the following plants: Volvox, stem of monocotyledon c.s, stem of dicotyledon c.s., monocot leaf epidermis, dicot leaf epidermis, germinated pollen, Hydrilla leaf w.m.		
	8. Either of the following animals/microbes: Hydra budding, Euglena, diatoms, Daphnia w.m., Amoeba proteus, Paramecium w.m., Planaria w.m., Planaria c.s., Ascaris mitosis, Vorticella, lancelet w.m., Escherichia coli, Staphylococcus aureus, Lactobacillus spp.		
	9. Either of the following human tissues: skeletal muscle c.s., small intestine c.s., human white blood cell, cardiac muscle; motor neurons cell w.m., spinal cord c.s., lung section, liver section, nerve cell w.m., meiosis of human sex cells, stomach villi		
	10. Writing the scientific name with correct spelling shall be properly observed.		

		11. Individually and permanently labeled for specimen identification.		
		12. Slides are packed in a fitted plastic storage box that contains interior padding to avoid breakage; with a numbered list that coincides with the arrangement of the specimens being stored.		
		13. No finger-smudged and no chipped edges slide		
		14. Includes instructions on how to clean and properly store the slide in a coated paper-glossy finish minimum 105 mm x 140 mm, Font style: Arial, Font size(minimum): 10, written in American English.		
		15. Must be branded and brand new. The brand shall be permanently marked on the storage box.		
<b>15</b>	<b>Prepared Slide Set, Mitosis and Meiosis</b>	Functional Specifications: Used to guide students through the events of cell division.		
		Performance Specifications: Must be able to compare mitosis and meiosis, and their role in the cell-division cycle.		
		Design Specifications:		
		1. A set of 6 rectangular microscope glass slides with polished edges; with clear and distinct sample specimen.		
		a. <i>Ascaris megalocephala</i> embryology. Sec. of uteri showing maturation stages (meiosis). Polar bodies can be seen.		
		b. Giant chromosomes, smear from salivary gland of <i>Chironomus</i> , carefully fixed and stained		
		c. <i>Lilium</i> , anther t.s., microspore mother cells showing telophase of first and prophase of second (homeotypic) division		
	d. Meiotic and mitotic stages in sec. of <i>Salamandra</i> testis. Many			

		meiotic and mitotic stages can be observed.		
		e. Mitosis, l.s. from Allium root tips showing all stages of plant mitosis carefully stained with iron-hematoxyline		
		f. Mitotic stages in sec. through red bone marrow of mammal		
		2. Dimensions (Width x Length) minimum: 25 mm x 75 mm		
		3. Thickness (minimum): 1.0 mm		
		4. Individually sealed and protected by a cover slip/glass cover;		
		5. Each slide is permanently labeled for specimen identification;		
		6. Writing the scientific name with correct spelling shall be properly observed;		
		7. Slides are packed in a fitted plastic storage box that contains interior padding to avoid breakage; with a numbered list that coincides with the arrangement of the specimens being stored.		
		8. No finger-smudged and no chipped edges slide		
		9. Includes instructions on how to clean and properly store the slide in a coated paper-glossy finish (minimum 105 mm x 140 mm), Font style: Arial, Font size(minimum): 10, written in American English.		
		10. Must be branded and brand new. The brand shall be permanently marked on the storage box.		
<b>16</b>	<b>Reaction Plates with 6 Wells</b>	Functional Specifications: Used to contain small amount of samples of specimens under study		
		Performance Specifications: Should be able to contain small amount of samples of specimens under study		
		Design Specifications:		



		1. Made of clear, non-toxic plastic material that is free from sharp edges.		
		2. Plate Shape: Rectangular		
		3. Plate Length: 110-120mm		
		4. Plate Width: 85-100mm		
		5. Six Well per Plate		
		6. Well Shape: Circular/ Round		
		7. Well diameter: 30-35 mm		
		8. Well deep: 6-8mm		
		9. Well capacity: 1.6 mL -2.0mL		
		10. Used for soil and water testing		
		11. Must be branded and permanently marked on the item		
<b>17</b>	<b>Sedimentator Tube</b>	Functional Specifications: Used to demonstrate how soil sediments settle in water		
		Performance Specifications: Should be able to demonstrate how soil sediments settle in water		
		Design Specifications:		
		1. 10 1/2 inches - 12 inches height with a diameter of 1 - 1 1/2 inches		
		2. Sealed and leak free		
		3. The body made of clear, transparent plastic tube.		
		4. With different sediment and crystal clear water.		
		5. Functions:		
		a. Use for observing movement, deposition, and layering of sediments and organic materials.		
		b. Observations apply to sedimentary rock formation and fossil formation		
		6. With English User's Manual that includes		
		a. operation guide.		
		b. Guide on how to use		
		c. Student Activity Sheets		
		7. Brand must be permanently marked on the item.		
<b>18</b>	<b>Sling Psychrometer</b>	Functional Specifications: Used to measure relative humidity		

	Performance Specifications: Should be able to measure relative humidity		
	Design Specifications:		
	1. Composed of two red spirit thermometer in Celsius with temperature ranges: -5°C to +50 °C		
	2. Equipment Size: (7 -8 inches long x 1-2inches diameter)		
	3. Built -in Psychrometer Water Reservoir		
	4. Includes a wick for Wet Bulb		
	5. Wick Replacement Kit-containing 4 wicks		
	6. Build in Slide rule construction for quick conversion temperature reading to relative humidity		
	7. Includes additional two thermometers for replacement with individual plastic or hardboard case		
	8. Easy to rotate to determine the relative humidity.		
	9. With English User's Manual that includes:		
	a. Operation Guide		
	b. Maintenance		
	10. Comes with a training video that shows the actual equipment submitted and approved during the sample evaluation and shall contain the following:		
	I. Training Video Contents:		
	a. Name of the equipment b. Parts of the equipment c. Instruction on how to use the equipment d. Sample Experiment/Activity using the equipment e. Maintenance of the equipment f. Troubleshooting g. Storage and safekeeping (include cleaning) of the equipment		
	II. Training Video details:		

		<p>a. Shall be in MP4 format.</p> <p>b. Shall be saved in a USB 3.0 Flash Drive.</p> <p>c. Shall have a High-Definition resolution of at least 1080p.</p> <p>d. Shall have a readable subtitle (font style &amp; size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle.</p> <p>e. Shall comply an aspect ratio of 4:3.</p> <p>f. Shall have a cover video pane containing the equipment name and a video pane for each video content.</p> <p>g. The video, voiceover (audio), and subtitle shall be in sync.</p> <p>h. The training video shall cover all the above requirement (video contents).</p>		
		11. Must be branded and permanently marked on the item		
<b>19</b>	<b>Soil pH, Moisture, Sunlight Meter</b>	Functional Specifications: Used to measure pH, moisture content of soil and measure sunlight available to the soil sample in real time		
		Performance Specifications: Should be able to measure pH, moisture content of soil and measure sunlight available to the soil sample in real time		
		Design Specifications:		
		-		
		1. Compose of two electrodes, 7 inches -10 inches long		
		2. pH/ Moisture/ Sunlight Switch		
		3. pH Range: 3.5 - 8 pH (3.5-6.5 Acidic, 7-8 Alkaline)		
		4. Moisture Range: 1-10 (1-3 Dry; 4-6 Normal; and 7-10 Wet)		
		5. Light Range: 0 - 2000 lux (0-200 Low, 200-500 Low+, 500-1000 Normal, and 1000-2000 High)		

		6. With English User's Manual that includes:		
		a. Operation Guide		
		b. Procedure on the proper use, handling and storage.		
		c. Student Activity in using the item.		
		7. Comes with a training video that shows the actual equipment submitted and approved during the sample evaluation and shall contain the following:		
		I. Training Video Contents:		
		a. Name of the equipment b. Parts of the equipment c. Instruction on how to use the equipment d. Sample Experiment/Activity using the equipment e. Maintenance of the equipment f. Troubleshooting g. Storage and safekeeping (include cleaning) of the equipment		
		II. Training Video details:		
		a. Shall be in MP4 format. b. Shall be saved in a USB 3.0 Flash Drive. c. Shall have a High-Definition resolution of at least 1080p. d. Shall have a readable subtitle (font style & size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle. e. Shall comply an aspect ratio of 4:3. f. Shall have a cover video pane containing the equipment name and a video pane for each video content. g. The video, voiceover (audio), and subtitle shall be in sync. h. The training video shall cover all the above requirement (video contents).		
		8. Brand must be permanently marked on the item.		

<b>20</b>	<b>Soil/Test Sieve</b>	Functional Specifications: Used to separate and segregate different size soil particles		
		Performance Specifications: Should be able to separate and segregate different size soil particles		
		Design Specifications:		
		1. Diameter range: 8 inches - 10 inches		
		2. Mesh sizes: 5 Mesh, 10 mesh, 35 Mesh, 60 mesh, 120 mesh, and 230 mesh		
		3. Made of stainless steel metal		
		4. Set of Six Sieves		
		5. Includes lid and catch pan		
	6. Must be branded and permanently marked on the item			
<b>21</b>	<b>Thermometer, Classroom, wall-mount</b>	Functional Specifications: Used to determine the prevailing air temperature inside a room in real time		
		Performance Specifications: Should be able to determine the prevailing air temperature inside a room in real time		
		Design Specifications:		
		1. Alcohol filled red color, glass tube type		
		2. Overall length: 760 mm (minimum)		
		3. Tube containing liquid column: 23 inches (minimum)		
	4. Temperature range (dual): 4.1 Centigrade: -40°C to +50°C 4.2 Fahrenheit: -40°F to +120°F			
	5. Brand must be permanently marked on the item.			
<b>22</b>	<b>Tong, Beaker</b>	Functional Specifications: Used to hold heated beakers.		
		Performance Specifications: Must be able to secure hot beakers.		

		Design Specifications:		
		1. Scissor-like tool with plastic-coated jaws		
		2. Made of minimum 6.0 mm smooth finish chrome-plated steel		
		3. With flat riveted joint		
		4. Total length (minimum) : 254 mm		
		5. Holds beakers from 50mL to 1000 mL		
		6. Safely packed in a box		
		7. Must be branded and brand new. The brand shall be printed on the box.		
<b>23</b>	<b>Wash bottle, plastic, 250 mL</b>	Functional Specifications: Used to store and dispense water for diluting solutions, washing precipitates and rinsing glass wares.		
		Performance Specifications: Must be able to store and dispenses water in diluting, washing precipitates and rinsing activities.		
		Design Specifications:		
		1. Translucent and non-toxic plastic material (Certificate of non-toxicity is required)		
		2. Cylindrical body shape		
		3. Easy squeeze dispensing; no leaks		
		4. Capacity: 250 mL.		
		5. Screw type closure with its angled stem and draw tube molded in one piece		
		6. Must be brand new.		

### LOT 8: MATHEMATICAL MANIPULATIVES

<b>1</b>	<b>Algebra Tile Set, plastic</b>	Functional Specifications: Used to demonstrate algebraic concept up to second degree polynomial.		
		Performance Specifications: Must be able to represent mathematical expressions and equations to introduce and foster algebraic concepts, including adding and		

		subtracting polynomials, factoring trinomials, and the Zero Principle.		
		Design Specifications:		
		1. Algebra Tiles should come in a set of 30 that includes the following:		
		a. 6 pcs of Square Tile (Squared Variable Tile) about 89mm x 89mm x 1mm (minimum) in size and color blue		
		b. 16 pcs of Long Tile (Variable Tile) about 89mm x 21mm x 1mm (minimum) in size and color green		
		c. 24 pcs of Ones Tile (Constant Tile) about 21mm x 21mm x 1mm (minimum) in size and color yellow		
		Note: Each kind of tile should have RED back color to denote the Negative side of the tiles.		
		2. Made of plastic and has no sharp edges.		
		3. Must be stored in a plastic storage box with a capacity to store 1,300 pcs of Algebra Tiles.		
		4. Shall be free from toxic materials.		
		5. Brand must be permanently marked on the plastic storage.		
<b>2</b>	<b>Base Ten Blocks</b>	Functional Specifications: Used to demonstrate abstract mathematical concept of the number system such as one-to-one correspondence, place value, and basic addition and subtraction		
		Performance Specifications: Must be able to demonstrate a number's value and place value and vice versa.		
		Design Specifications:		
		1. Made of plastic, smooth surface and edges, and free from toxic materials		

		2. The set includes 100 units (1 cm x 1 cm x 1 cm [minimum]), 10 rods (1 cm x 1 cm x 10 cm [minimum]), 10 flats (1 cm x 10 cm x 10 cm [minimum]), and 1 cube (10 cm x 10 cm x 10 cm [minimum]).		
		Note: Each block should have distinct color from each other (e.g.: Unit - Red, Rod - Yellow, Flat - Green, Cube - Blue).		
		3. Comes with a plastic container with cover to accommodate all the items.		
		4. Shall be free from toxic materials.		
		5. Brand must be permanently marked on the plastic container.		
<b>3</b>	<b>Beads, Ø16mm</b>	Functional Specifications: Used to reinforce counting, sorting, patterning and sequencing.		
		Performance Specifications: Must be able to scaffold learners in counting and grouping of numbers, colors, patterns, etc.		
		Design Specifications:		
		1) Bead Material: Plastic, spherical, smooth surface		
		2) With a hole that passes through the center		
		3) Bead diameter: 15 mm to 18 mm		
		4) Assorted color, at least 5 colors consisting of 60 pieces each color.		
		5) Comes with a plastic transparent storage container with cover		
		6) The items shall be free from toxic materials.		
		7) Comes with nylon string of 5-6 meters long that fit loosely to beads hole		
<b>4</b>	<b>Circle Area Demonstrator</b>	Functional Specifications: Used to demonstrate area of a circle.		
		Performance Specifications: Performance: Must be able to show/demonstrate derivation of circle's area and how		



		dimensions of a parallelogram is related to it.		
		Design Specifications:		
		1. Material: Plastic		
		2. Circle Diameter: 196 mm (minimum) - Each half comes in different colors		
		3. Thickness: 5 mm (minimum)		
		4. Dissectible into at least 12 sectors		
		5. Comes with base for mounting the circle and the sectors.		
		6. Shall be free from toxic materials.		
<b>5</b>	<b>Compass, Drawing, student type</b>	Functional Specifications: Used to draw/construct arcs, semi-circles and circles.		
		Performance Specifications: Must be able to draw/construct arcs, semi-circles and circles.		
		Design Specifications:		
		1. Compass, two legs, stainless steel;		
		2. Length: 120mm - 150mm;		
		3. With pencil adaptor attached at or integrated on one end of one of the legs. The said adaptor must be able to adapt, also, to any kind of pencil available in the local market;		
		4. Stainless Steel: Well-polished and smooth;		
		5. Comes with transparent plastic case or box; and		
		6. Brand must be permanently printed on the case.		
<b>6</b>	<b>Cuisenaire Rods, set of 5</b>	Functional Specifications: Used to provide an interactive, hands-on way to explore mathematics and learn mathematical concepts, such as the four basic arithmetical operations, working with fractions and finding divisors.		

		Performance Specifications: Must be able to demonstrate four fundamental operations, part-to-whole concept, decimals and other concepts related to number sense and measurement.		
		Design Specifications:		
		1) Made of hard, smooth finish plastic materials.		
		2) One (1) set is composed of 74 cuisenaire rods of different colors.		
		3) Each color represents a specific rod length.		
		4) Rod Lengths are: 1cm -white, 2cm - red, 3cm - gray, 4cm - pink, 5cm - yellow, 6cm - green, 7cm - dark green, 8cm - brown, 9cm - blue, and 10cm - orange.		
		5) Comes in a plastic storage container with cover that accomodates 5 sets of cuisenaire rods.		
		6) The item shall be free from toxic materials.		
		7) Brand must be permanently printed on the case.		
<b>7</b>	<b>Elapsed Time (Clock) Set</b>	Functional Specifications: Used to demonstrate time and other related concepts.		
		Performance Specifications: Must be able to represent and demonstrate time using hour hand and minute hand.		
		Design Specifications:		
		1. A set includes:		
		a. Two Twelve (12) hour demonstration clock, magnetic		
		b. Segmented timeline, 24-hour timeline (AM and PM) which makes up of 4 segments		
		c. Removable guide numbers		
		d. Start and End arrows		
		2. Dial diameter measures 24-26 cm		
		3. The hour number must be printed in Hindu Arabic numeral and with		

		corresponding minute(s) number in the same numeral format.		
		4. The item shall be free from toxic materials.		
		5. Brand must be permanently printed on the case.		
<b>8</b>	<b>Geoboard, 11 x 11</b>	Functional Specifications: Used to explore basic concepts in plane geometry such as perimeter, area and the characteristics of triangles and other polygons.		
		Performance Specifications: Must be able to demonstrate or visually represent different kinds of polygons and circles and how to compute their respective area, perimeter, and circumference.		
		Design Specifications:		
		1. Double sided geoboard - square pattern on one side (11 x 11), circle on the other;		
		2. Made of plastic material and comes in any color;		
		3. The surfaces and edges must be smooth, no warps, must sits flat when laid on the table;		
		4. Board Dimensions (W x L): 229 mm x 229 mm (minimum);		
		5. Edging Height (all sides): 6 mm from the board (minimum);		
		6. Board and Edging Thickness: 3 mm (minimum);		
		7. Array Pin Diameter: 3 mm (Minimum);		
		8. Array Pin Height: 5 mm (Minimum);		
		9. Comes with a transparent plastic case;		
		10. Comes with Instruction Manual in English with illustrations;		
		11. Comes with assorted size and color rubber bands (25 pcs); and		
		12. Brand must be permanently printed on the case		
<b>9</b>	<b>Geoboard, 5 x 5</b>	Functional Specifications: Used to explore basic concepts in plane geometry such as		

	perimeter, area and the characteristics of triangles and other polygons		
	Performance Specifications: Must be able to demonstrate or visually represent different kinds of polygons and circles and how to compute their respective area, perimeter, and circumference.		
	Design Specifications:		
	1) Enables the students to perform different kinds of shapes (like square, triangle, circle, etc.) using rubber bands.		
	2) On the top surface is the Square Geoboard with 25 guiding posts arranged 5 x 5 (forming a square) at 40mm distance apart between centers.		
	3) On the bottom surface is the Circle Geoboard with 13 guiding posts. Twelve (12) of these guiding posts are arranged at 30° apart on a circle of 150mm diameter while the remaining one (1) guiding post is on the center of the said circle.		
	4) Made of plastic, color blue.		
	5) Board Dimensions (W x L): 200mm x 200mm (minimum)		
	6) Guiding post approximate Diameter: 6mm (minimum)		
	7) Guiding post approximate Height: 20mm (minimum)		
	8) Approximate Height of the Base (Edging Height): 25mm (minimum)		
	9) Board Thickness: 3-5mm		
	10) Comes with a plastic case with content description on its cover.		
	11) The surfaces and edges of the Geoboard and its Case must be smooth.		
	12) Comes with Instruction Manual in English.		
	13) Brand must be permanently printed on the case.		

		Note: There must be no warping of the board and base. The Geoboard must be flat when laid on a table.		
<b>10</b>	<b>Geostrips</b>	Functional Specifications: Used to make and represent different shapes.		
		Performance Specifications: Must be able to show/demonstrate different kinds of angles and shapes.		
		Design Specifications:		
		1. The strips are made of plastic minimum of 1.8 mm thickness and minimum of 18 mm wide in assorted colors with rounded ends;		
		2. Comes in various lengths ranging from 50 mm to 350 mm. Example: Red: Blue: a) Shortest: 93-94mm a) Shortest: 124-125mm b) Shorter: 169-170mm b) Longest: 233-234mm c) Longest: 323-324mm  Yellow: White: a) Shortest: 150-151mm a) Shortest: 175-176mm b) Longest: 283-284mm b) Longest: 233-234mm		
		3. They are designed to be fastened together with a plastic coated brads or plastic coated round head fasteners to form plane geometric figures.		
		4. One (1) set consists of 68 strips, a minimum of 100 pieces plastic coated brads and a protractor.		
		5. The set comes in a transparent plastic case for proper storage.		
	6. The items shall be free from toxic materials.			
	7. Brand must be permanently marked on the plastic case.			

<b>11</b>	<b>Ghost Grid Whiteboard, Mobile Magnetic, 72-inch x 40-inch</b>	Functional Specifications: Used to aid classroom instructions especially in graphical representations such as linear, quadratic, polynomial, histogram, normal curve, etc.		
		Performance Specifications: Must be able to move from one place to another and to clearly show illustrations that do not exceed from 1 meter vertically and 1.2m horizontally guided with lines with 20mm spacing (horizontally and vertically).		
		Design Specifications:		
		1. Mobile Magnetic Ghost Grid Whiteboard;		
		2. Material: Painted Steel		
		3. Frame: Aluminum, 1" edging;		
		4. Surface Material: Magnetic Painted Steel;		
		5. Grid Pattern: 2" x 2", ghost grid;		
		6. Full Dimensions: 74-75"W x 23-24"D x 69-70"H;		
		7. Board Dimensions: 72-73"W x 40-41"H;		
		8. Base Dimensions: 74-75"W x 23-24"D;		
		9. Tray Style: Full length		
	10. Casters: 4 pieces, 2-inch casters, two with locking brakes;			
	11. Must be properly packed using shipping carton.			
<b>12</b>	<b>Linking Cubes</b>	Functional Specifications: Used to assist with the understanding of mathematical concepts		
		Performance Specifications: Must be able to interlock together to build various shapes and structures		
		Design Specifications:		
		1) Linking plastic cubes: a. Dimension: 1 cm x 1 cm x 1 cm (minimum)		

		b. Material: Non-toxic plastic that comes in assorted colors (5 colors with at least a minimum of 100 pieces per color)		
		c. With interlocking feature for connecting the cubes.		
		2) Comes with plastic transparent storage bucket with cover.		
		3) Fitting is push fit which can be assembled or disassembled without extra effort.		
		4) Shall be free from toxic materials.		
		5. Brand must be permanently marked on the storage.		
<b>13</b>	<b>Model, Basic 3D Geometrical Collapsible</b>	Functional: Used to demonstrate relational geometric concepts between polygons and polyhedrons; aid derivation of formula (surface area and volume) of polyhedrons.		
		Performance: Must be able to demonstrate geometrical relationships between polygons (2D) and polyhedrons (3D) in terms of deriving formula on surface area and volume.		
		Design Specifications:		
		1. Set includes 12 solids made of clear plastic with rounded corners and edges, and 12 folding nets in 5 or 6 colors made from soft plastic to fit inside the corresponding solids:		
		2. Base size of solids: 7.8 to 10.5cm		
		Height of solids: 9.5 to 10.5 cm		
		3. Pairs of solid prism and pyramid shall of the same base and height the following:		
		a,b) Cube and Square pyramid		
		c,d) Cylinder and Cone		
		e,f) Triangular prism and Triangular pyramid		
		g,h) Rectangular prism and Rectangular pyramid		
		i,j) Pentagonal prism and Pentagonal pyramid		

		k.l) Hexagonal prism and Hexagonal pyramid		
		4. With activity guide.		
		5. Comes with a plastic transparent storage container with cover that can accommodate all the solids and the activity guide.		
		6. Shall be free from toxic materials.		
<b>14</b>	<b>Model, Basic 3D Geometrical Solids</b>	Functional Specifications: Used to represent basic three-dimensional figures.		
		Performance Specifications: Must be able to demonstrate geometrical concepts related to properties of geometrical solids.		
		Design Specifications:		
		1.) At least 17 types of Geometrical Solids which includes these core shapes:		
		a) Cube: 9.5-10.5cm x 9.5-10.5cm x 9.5-10.5cm		
		b) Cone: Height = 9.5-10.5cm; Base diameter = 9.5-10.5cm		
		c) Cylinder: Height = 9.5-10.5cm; Base diameter = 9.5-10.5cm		
		d) Hexagonal prism: Height = 9.5-10.5cm; Length of sides (Base) = 5-6cm		
		e) Hexagonal pyramid: Height = 9.5-10.5cm; Length of sides (Base) = 5-6cm		
		f) Pentagonal prism: Height = 9.5-10.5cm; Length of sides (Base) = 6-7cm		
		g) Pentagonal pyramid: Height = 9.5-10.5cm; Length of sides (Base) = 6-7cm		
		h) Rectangular prism: 9.5-10.5cm x 5-6cm x 9.5-10.5cm		
i) Square pyramid: Height = 9.5-10.5cm; Base diameter = 9.5-10.5cm				
j) Triangular prism: Height = 9.5-10.5cm; Length of sides (Base) = 9.5-10.5cm;and				
h) Triangular pyramid: Height = 9.5-10.5cm; Length of sides (Base) = 9.5-10.5cm				



		i) Sphere: Diameter of Great Circle = 9.5-10.5cm		
		j) Hemisphere: Diameter of Great Circle = 9.5-10.5cm		
		k) Square prism: 9.5-10.5cm x 5-5.5cm x 5-5.5cm		
		l) Small cube: 5-5.5cm x 5-5.5cm x 5-5.5cm		
		m) Small Triangular Prism: Height = 9.5-10.5cm; Length of sides (Base) = 5-6cm		
		n) Small Cylinder: Height = 9.5-10.5cm; Base diameter = 5-6cm		
		3) Made of hard plastic		
		4) Comes in a transparent plastic container with cover to accommodate the 17 or more types of geometric solids.		
		5) Surface finish is smooth on all items.		
		6) Brand must be permanently printed on the case.		
<b>15</b>	<b>Pattern Blocks, 250 pcs/set</b>	Functional Specifications: Used to explore mathematical concepts, including congruence, similarity, symmetry, area, perimeter, patterns, functions, fractions, and graphing		
		Performance Specifications: Used to demonstrate different kinds of polygons.		
		Design Specifications:		
		1. One (1) set of pattern blocks contains a total of 250 pieces of six geometrical shapes and six colors - 25 each of hexagons and squares; 50 each of trapezoids, triangles, parallelograms, and rhombi.		
		2. Made of smooth surface plastic material.		
		3. Minimum thickness: 5 mm		
		4. Comes with a plastic transparent storage container with cover.		
		5. The items shall be free from toxic materials.		
		6. Brand must be permanently marked on the storage container.		

<b>16</b>	<b>Pentominoes</b>	Functional Specifications: Used to develop spatial thinking		
		Performance Specifications: Must be able to demonstrate concepts pertaining to perimeter and area using the 12 kinds of 5-squared geometric shape.		
		Design Specifications:		
		1. Geometry puzzle consists of 12 pentominoes, each are made up of 5 equal-sided squares connected edge-to-edge. Dimension of square is 2.54cm x 2.54cm (minimum).		
		2. Twelve (12) pentominoes are classified as the letters F, I, L, N, P, T, U, V, W, X, Y, and Z; each are made up of sturdy plastic. Comes in assorted colors that are free from toxic materials.		
		3. Comes in set of 6 equivalent to 72 pieces (minimum) contained in a plastic storage box.		
	4. Shall be free from toxic materials.			
	5. Brand must be permanently marked on the storage.			
<b>17</b>	<b>Plastic Two-colored Counters, 1-inch diameter, 200 pcs/set</b>	Functional Specifications: Used to represent integers and demonstrate fundamental operations on integers.		
		Performance Specifications: Must be able to demonstrate/represent set of numbers, skip counting and integers; perform fundamental operations on integers.		
		Design Specifications:		
		1) Material: Hard Plastic		
		2) Minimum of 200 pieces per set (double-sided color)		
		3) Must have smooth surface and edges		
	4) Chip's diameter: 22mm (minimum)			

		5) Chip's thickness: 1mm (minimum)		
		6) Comes with a transparent plastic container with cover		
		7) Shall be free from toxic materials.		
		8) Brand must be permanently marked on the item.		
<b>18</b>	<b>Probability Kit</b>	Functional Specifications: A set of mathematical manipulative used to demonstrate different concept-formation activities in probability.		
		Performance Specifications: Must be able to demonstrate probability concepts using cards, counters, dice, spinners, coins, bills and/or combination of these mathematical manipulatives.		
		Design Specifications:		
		1. Demonstrate probability, random and selective sampling.		
		2. Class kit, at least 180 pcs in a box for large group or individual learning.		
		Consist of the following:		
		a) 30 combination of activities and teacher demonstration on cards		
		b) 52 pcs (1 set) playing cards		
		c) 9 pcs different spinners;		
		d) 50 pcs coins;		
		e) 15 pcs polyhedral number dice;		
		f) 3 pcs dot dice;		
		g) 30 two-color (back-to-back) counters or red and yellow chips;		
		h) 5 pcs coin dice		
		i) 8 pcs number dice		
		3. Comes with transparent plastic container with cover.		
		4. Shall be free from toxic materials.		
		5. Brand must be permanently marked on the container.		
<b>19</b>	<b>Tangrams, set of 30</b>	Functional Specifications: Used to introduce spatial relationships		

		Performance Specifications: Must be able to use as an aid in developing mathematical concepts such as area, perimeter and patterns.		
		Design Specifications:		
		1) Tangram includes seven geometric shapes made up of five triangles (two small triangles, one medium triangle, and two large triangles), a square, and a parallelogram that are distinct in color.		
		2) The three different-size Tangram triangles are all similar, right isosceles triangles. Thus, the triangles all have angles of 45°, 45°, and 90°, and the corresponding sides of these triangles are proportional.		
		3) All the angles of the Tangram pieces are multiples of 45—that is, 45°, 90°, or 135°, and that the small Tangram triangle is the unit of measure that can be used to compare the areas of the Tangram pieces.		
		4) Material: Plastic that are free from toxic materials.		
		5) The size of the largest square that the 7 tangram pieces can form is 114 x 114 mm (minimum) with thickness of 7mm (minimum).		
		6) In this set, there is at least 6 distinct color.		
		7) Comes with a sturdy plastic that stores set of 30 tangram (210 pieces) and free from toxic materials.		
		8) Shall be free from toxic materials.		
		9) Brand must be permanently marked on the item.		

**LOT 9: MATHEMATICAL TOOLS & INSTRUMENT**

<b>1</b>	<b>Balance, Double-pan</b>	Functional Specifications: Used to compare object masses.		

		Performance Specifications: Must be able to measure mass of an object up to 1000 grams.		
		Design Specifications:		
		1) Used for comparative weighing to determine the difference in mass between two (2) objects, the double-platform beam balance comes equipped with built-in sliding masses.		
		2) Capacity: 2,000 grams		
		3) Readability: 2 grams		
		4) Weigh Beam Capacity x Readability: 10 g x 0.1 g, 200 g x 10 g		
		5) NTEP Resolution: 1 : 5,000		
		6) Platform size: Ø15-16 cm		
		7) Platform type: Plate (metal)		
		8) Dimensions (w x d x h): 35-37 cm x 24-26 cm x 17-19 cm		
		9) Comes with four (4) Weights as follows:		
		9.1) 1 pc. 1,000-gram Weight		
		9.2) 1 pc. 500-gram Weight		
		9.3) 1 pc. 200-gram Weight		
		9.4) 1 pc. 100-gram Weight		
		10) Comes with an Instruction Manual in English.		
		11) Comes with a storage plastic case.		
		12) Manufacturer of the country of origin shall issue certificate of calibration for every item.		
		13) Brand must be permanently marked on the item.		
<b>2</b>	<b>Blackboard Triangle, 30° x 60° and 45° x 45°</b>	Functional Specifications: Used to demonstrate special triangles.		
		Performance Specifications: Must be able to show relationship among sides and angles of special right triangles.		
		Design Specifications:		
		1. Material: Plastic, smooth, not flexible and with handle		
		2. Permanent graduation markings in cm in all sides		
		3. For 30° x 60°:		

		Base: 50 cm minimum		
		Thickness: 4 mm minimum		
		4. For 45° x 45°:		
		Base: 50 cm minimum		
		Thickness: 4 mm minimum		
		5. Individually packed in a sturdy plastic bag with zipper		
		6. The items shall be free from toxic materials.		
		7. Brand must be permanently marked on the item.		
<b>3</b>	<b>Calculator, Graphing, non-projectable</b>	Functional Specifications: Used to calculate, graph, and analyze mathematical concepts that has been programmed to it as one of its built-in functions.		
		Performance Specifications: Must be able to store, calculate, display, graph, input, analyze and interpret data, simple and complex equations/formula, graphs and/or charts using easy access function menus/keys.		
		Design Specifications:		
		1. Non-projectable Graphing Calculator;		
		2. Stores/calculates/displays input data, complex equations and formulas, graph and or chart;		
		3. Upgradeable operating system. Software is accessible via internet and may be downloaded upon receipt of the unit and thereafter;		
		4. Memory: 26 KB-RAM (minimum) and 450 KB-ROM (minimum);		
		5. Display size: at least 8 lines x 16 characters per line;		
		6. Seven (7) different graph styles for differentiating the look of each graph drawn;		
		7. Easy access function menus;		
		8. Readily connectable to Personal Computers (comes with connection accessories);		
		9. Operates on dry cells. Comes with dry cells and ready to use;		

		10. Comes with user's manual in English containing operation guide of the featured functions and in replacing the battery;		
		11. Must operate as stated above and in the manual; and		
		12. Brand must be permanently printed on the item.		
<b>4</b>	<b>Calculator, Scientific</b>	Functional Specifications: Used to show mathematical computations.		
		Performance Specifications: Must be able to show correct mathematical calculations using its built-in functions/formula.		
		Design Specifications:		
		1. Display: LCD, 2 line(s) X 10 characters (minimum), stably shows input-expressions/equation, calculation result, and various indicators;		
		2. Built-in functions not less than 240 inclusion of the following:		
		a) Basic Calculations: arithmetic, fraction, percentage, degrees, minutes, seconds, radian (including conversion of the mentioned Basic Calculations);		
		b) Memory calculation, Logarithm and Hyperbolic functions;		
		c) Statistical functions (e.g.: Statistical relationships, standard deviation, Permutation, Combination, etc.); and		
		d) Trigonometric functions: sin, cos, tan, sin <sup>-1</sup> , cos <sup>-1</sup> , tan <sup>-1</sup> ;		
		3. Basic keys and function keys are labeled permanently (resistant to finger rub and light acid (vinegar) contamination) and operates as such correspondingly;		
4. Power requirement: two way dual (battery, built-in solar system), the unit consistently operational after replacing the				

		battery for three trials, its solar system powers the unit normally in a well-lit room without the battery;		
		5. Brand must be permanently printed on the case.		
<b>5</b>	<b>Digital Clock, tabletop</b>	Functional Specifications: Used to show/display the time in numerals.		
		Performance Specifications: Must be able to display hh:mm format.		
		Design Specifications:		
		1. Font Height: 30mm to 40mm;		
		2. Dry Cell Battery operated		
		3. LCD display; With or without On/Off switch		
		4. Minimum Display: Time (hour, minutes & seconds);		
		5. Can be set in 12-hour setting;		
		6. The item shall be free from toxic materials;		
		7. Ready to use and comes with a new battery.		
<b>6</b>	<b>Measuring Kit (Volume)</b>	Functional Specifications: Used primarily to measure the volume of liquid or bulk solid		
		Performance Specifications: Must be able to measure volume of liquid using different types of measuring tools		
		Design Specifications:		
		1) Material: Plastic, translucent so that liquid inside can be seen easily		
		2) Kit includes the following measuring tools:		
		a. Set of Measuring Jars:		
		i) 1 gallon/4000 mL		
		ii) 1/2 gallon/2000 mL		
		iii) 1 quart/1000 mL		
		iv) 1 pint/500 mL		
v) 1 cup/250 mL				
b. Set of measuring pitchers:				
i) 1 quart = 32 oz/1000 mL				



		ii) 1 pint = 16 oz/500 mL		
		iii) 1 cup = 8 oz/250 mL		
		c. Set of measuring cups:		
		i) 1 cup/236 mL		
		ii) 1/2 cup/118 mL		
		iii) 1/3 cup/79 mL		
		iv) 1/4 cup/59 mL		
		v) 1/8 cup/29.5 mL		
		d. Set of measuring spoons:		
		i) 1 Tbsp (15mL)		
		ii) 1/2 Tbsp (7.5mL)		
		iii) 1 tsp (5mL)		
		iv) 1/2 tsp (2.5mL)		
		v) 1/4 tsp (1.25mL)		
		3) Features include both customary and metric measurement showing appropriate graduations in each kind of measuring tools.		
		4) Permanent graduations and labels.		
		5) Materials used shall be free from toxic materials.		
		6) Brand must be permanently printed on the case.		
<b>7</b>	<b>Meterstick, plastic</b>	Functional Specifications: Used to measure length.		
		Performance Specifications: Must be able to measure length of objects in flat surfaces up to 1000mm in Metric and 39.37" in English standards of measurement.		
		Design Specifications:		
		1. Material: Plastic;		
		2. Thickness: 6 mm (minimum);		
		3. Width: 24 mm (minimum);		
		4. Length: 1,005 mm (minimum);		
		5. The front is scaled in centimeters, numbered in every centimeter with 0.1 cm (or 1 mm) divisions;		
		6. The back is scaled in inches, numbered in every inch with 1/8 inch divisions;		
		7. The numbers and division lines are in dark color;		

		8. Must be straight and flat; and free from toxic materials;		
		9. Edges and Surfaces should be smooth and even;		
		10. Comes with plastic jacket;		
		11. Standard abbreviation of the measurement unit/s must be followed.		
<b>8</b>	<b>Protractor (for student)</b>	Functional Specifications: Used to measure angles in degrees.		
		Performance Specifications: Must be able to draw/construct and measure angles and arcs up to 180°.		
		Design Specifications:		
		1. Protractor, student-type, plastic, transparent, semi-circular, 180°;		
		2. Ø150mm (or 75mm radius), 1mm thick (minimum);		
		3. Angular graduations are in degrees, from 0° to 180°. With two (2) sets of numerals, one reading clockwise and the other reading counterclockwise;		
		4. Linear graduations are in millimeters, from 0 to 100mm;		
		5. With a hole at vertex point enough for a fine string to pass through it;		
		6. Plastic Surface Finish: Smooth, clear, and free from scratches;		
		7. It must be horizontally level when laid flat on a table - no warping;		
		8. Comes with a plastic case; and shall be free from toxic materials.		
<b>9</b>	<b>Ruler, Plastic, 12 inches or 30 cm</b>	Functional Specifications: Used to measure length and draw straight lines		
		Performance Specifications: Must be able to measure length of objects in flat surfaces up to 30cm in Metric and 12" in English standards of measurement.		
		Design Specifications:		

		1. Ruler, plastic, transparent, smooth surface, and 1 mm thick (minimum);		
		2. Width x Length: 28 mm x 314 mm (minimum);		
		3. Graduations: Metric graduations on one side while English graduations on the other side:		
		*Metric graduations are in centimeters, from 0 cm to 30 cm, with every cm subdivided by 1mm graduation.		
		*English graduations are in inches, from 0 inches to 12 inches, with every inch subdivided by 1/16 graduation.		
		4. Clear, readable black, non-groove permanent prints (will not fade and cannot be scratched off);		
		5. Bendable up to U-shape when held at both ends; and		
		6. The item shall be free from toxic materials.		
<b>10</b>	<b>Scale, Spring, Hanging type</b>	Functional Specifications: Used to measure weight or force by hanging objects		
		Performance Specifications: Must be able to measure mass of an object up to 1,000 grams.		
		Design Specifications:		
		1. Maximum Capacity: 25 kilograms		
		2. Must conform with industry standard graduations for rated capacity.		
		3. Color: Any Color		
		4. Comes with an Instruction Manual in English		
		5. Manufacturer of the country of origin should issue certificate of calibration for every item.		
		6. Brand must be permanently printed on the item.		
<b>11</b>	<b>Scale, Weighing, analog, 10 kg. capacity</b>	Functional Specifications: Used to measure weight and/or mass of an object		

		Performance Specifications: Must be able to measure mass of an object up to 10 kilograms.		
		Design Specifications:		
		1. Weighing Scale, 10 kg. Capacity, starting from zero (0) to 10kg.		
		2. Dual mode English/metric display that displays weight in pounds and grams.		
		3. Has a large round dial display for easy use.		
		4. Includes a removable stainless steel bowl which is dishwasher safe. This weighing scale is a classic rotary dial mechanical kitchen scale		
		5. Color: Any Color		
		6. Format: Mechanical kitchen scale		
		7. Mechanism Type: Spring Lever		
		8. Measurement units: Pounds/Kilograms		
		9. Display Type: Round speedometer type dial		
		10. Scale Size: 210mm Width (minimum) x 235mm Height (minimum)		
		11. Dial Increments: 1 oz. / 50 g.		
		12. Manufacturer of the country of origin should issue certificate of calibration for every item.		
		13. Brand must be permanently marked on the item.		
<b>12</b>	<b>Scale, Weighing, bathroom-type</b>	Functional Specifications: Used to measure a person's weight		
		Performance Specifications: Must be able to measure weight from 0 to 120 kg		
		Design Specifications:		
		1) Mechanical Dual Reading lbs/kg bathroom scales (analog)		
		2) Comes with a free Body Mass Index Chart printed and laminated on glossy paper (Font Height: 1 cm. minimum, Style: Century Gothic or Arial)		

		3) Maximum Capacity: 120 kgs/264 lbs		
		4) With two years warranty		
		5) Should be made of metal and plastic combination with powder coating finish for metal parts.		
		6) Will remain stable when steps on it.		
		7) Manufacturer of the country of origin should issue certificate of calibration for every item.		
		8) The item should be free from toxic materials.		
		9) Brand must be permanently marked on the item.		
<b>13</b>	<b>Tape Measure, 1.5 meters</b>	Functional Specifications: Used to quantify the size of an object or the distance between objects		
		Performance Specifications: Must be able to measure size/distance of an object up to 1.5 meters.		
		Design Specifications:		
		1. Tape Measure, 12 mm width x 1.5 meter long (minimum)		
		2. Made of flexible fiberglass fabric with metal end pieces		
		3. Color: White with black graduation markings		
		4. Graduation: in cm on one side and inches on the other side, smallest graduation in mm, on the opposite side in 1/16 of an inch		
	5. Comes with a plastic case.			
<b>14</b>	<b>Template, shapes</b>	Functional Specifications: Used to scaffold drawing of basic geometrical shapes.		
		Performance Specifications: Must be able to aid drawing different geometrical shapes.		
		Design Specifications:		
	1. A transparent plastic template; minimum of 24 geometric shapes <i>Note: The kinds of geometric shapes approved during post qualification shall be the same</i>			

		<i>shapes to be approved during the pre-delivery inspection.</i>		
		2. Ideal for drawing geometric shapes.		
		3. Minimum dimensions: 14 cm x 20 cm		
		4. Minimum thickness: 2 mm		
		5. The items shall be free from toxic materials.		

**LOT 10: MODELS: EARTH AND OTHER HEAVENLY BODIES**

<b>1</b>	<b>Globe, Celestial</b>	Functional Specifications: Used to illustrate the relative locations of observable celestial objects with respect to the earth in the celestial sphere (celestial sphere is what we commonly called sky)		
		Performance Specifications: Should be able to illustrate the relative locations of observable celestial objects with respect to the earth in the celestial sphere (celestial sphere is what we commonly called sky)		
		Design Specifications:		
		1. Star Globe; diameter 11-13 inches, transparent plastic		
		2. Each rotates independently. The star map shows principal stars to the 5th magnitude, names of major stars and constellations, and includes the ecliptic, right ascension and declination scale.		
		3. Must include Names of Months and Days Scales around the globe for easy reference of constellation		
		4. All labels permanently marked on the item		
		5. The horizon mounting allows the Globe to be set for any location.		
	6. Globe is supported on a cradle base made of hard/tough plastic.			
	<b>7. The Nine Dash Line should not appear.</b>			

		8. With English User's Manual includes:		
		a. on the Guide on Using the Model and Sample Student Activity.		
		b. Guide on Using the Model		
		c. Student Activity Sheet and Teacher's Guide		
		9. Comes with a training video that shows the actual equipment submitted and approved during the sample evaluation and shall contain the following:		
		I. Training Video Contents:		
		a. Name of the equipment b. Parts of the equipment c. Instruction on how to use the equipment d. Sample Experiment/Activity using the equipment e. Maintenance of the equipment f. Troubleshooting g. Storage and safekeeping (include cleaning) of the equipment		
		II. Training Video details:		
		a. Shall be in MP4 format. b. Shall be saved in a USB 3.0 Flash Drive. c. Shall have a High-Definition resolution of at least 1080p. d. Shall have a readable subtitle (font style & size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle. e. Shall comply an aspect ratio of 4:3. f. Shall have a cover video pane containing the equipment name and a video pane for each video content. g. The video, voiceover (audio), and subtitle shall be in sync. h. The training video shall cover all the above requirement (video contents).		

		10. Brand must be permanently marked on the item.		
<b>2</b>	<b>Globe, Terrestrial</b>	Functional Specifications: Used to represent the earth in three dimensions and the locations and sizes of land masses and water bodies in scale accuracy		
		Performance Specifications: Should be able to represent the earth in three dimensions and the locations and sizes of land masses and water bodies in scale accuracy		
		Design Specifications:		
		1. Globe diameter: 11-13 inches		
		2. Shows the following:		
		(a) All continents, countries with their capitals, and important cities and places		
		(b) Updated with newly established countries, or re-named countries and cities.		
		(c) Illustrates the flow and directions of ocean currents		
		(d) Lines of Latitudes (0° to 90°), graduated both in Northern and Southern Latitudes and Longitudes (0° to 180°), graduated both in Eastern and Western Longitudes		
		(e) International Date Line, Arctic Circle, Tropic of Cancer, Tropic of Capricorn and Antarctic Circle		
		(f) Lines of Equator and Prime Meridian		
		(g) Names of mountain, mountain ranges, volcano, ocean floors, gulfs, seas and lakes		
		(h) Names of continents, seas and country boundaries should be according to international standard.		
		(i) Philippine territory emphasizing the "West Philippine Sea" as one of the Philippine territorial sea boundaries.		
<b>(j) The Nine Dashed Line should not appear.</b>				



		3. The globe which is made of plastic is mounted on a plastic meridian ring (C-shape) with movable magnifier.		
		4. The base stand is made of hard/tough plastic.		
		5. Brand must be permanently marked on the item.		
<b>3</b>	<b>Landform Demonstration Kit</b>	Functional Specifications: Used to represent the different landforms on the earth's surface in three-dimensions		
		Performance Specifications: Should be able to to represent the different landforms on the earth's surface in three-dimensions		
		Design Specifications:		
		1. Watertight demonstration tray 19-21 inches x 4-6 inches x 1-3 inches		
		2. Three pieces of flexible colored foam		
		3. Three pieces fault structures		
		a. Made of 6 colored layer of rubber or plastic		
		b. Dimension: 12-14 inches x 4-6 inches x 3-5 inches		
		c. can demonstrates normal, reverse and slide slip fault		
		4. Erupting 5-8 inches x 5-8 inches volcano base for demonstration		
		5. With English User's Manual that includes Guide on how to assemble and use the model.		
		6. For geological study		
		7. Must be branded and must be permanently marked on the item		
<b>4</b>	<b>Model, Earth Internal Structure, 1/4 part detachable</b>	Functional Specifications: Used to illustrate the external and internal parts of the earth in three dimensions		
		Performance Specifications: Should be able to illustrate the external and internal parts of the earth in three dimensions		
		Design Specifications:		

		1. Globe diameter: 11-13 inches inches		
		2. Shows the countries and ocean		
		3. 1/4 part detachable and shows the different layer		
		4. Must have correct permanent makings of the following parts as follows:		
		a. Crust		
		b. Mantle		
		c. Outer Core		
		d. Lower Core		
		5. Made of plastic		
		6. The base stand is made of hard/tough plastic.		
		7. The removable parts must be intact and not falling.		
		<b>8. The Nine Dash Line should not appear.</b>		
		9. Must be branded and permanently marked in the item.		
<b>5</b>	<b>Model, Seismograph</b>	Functional Specifications: Used to demonstrate how a seismograph records earthquakes and their comparative strengths		
		Performance Specifications: Should be able to demonstrate how a seismograph records earthquakes and their comparative strengths, specifically: 1. The recording pen is attached to a weight suspended from a support that is connected to a metal base stand. 2. The support moves with the vibrations & the pen records on a recording paper as the paper is manually pulled through a metal frame 3. Earthquakes are simulated by vibrating the table on which the model is mounted.		
		Design Specifications:		

		1. Consist of a roll of recording paper (63-65 mm wide) with mounting, recording pens, suspended weight, support with a painted metal base stand, recording frame, and table clamp (opening-63-65 mm). The metal stand rod (320-325 mm long) and metal support are chrome-plated. The metal frame is of galvanized iron sheet.		
		2. Base dimensions : 293-298mm x 152-157mm x 23-28mm		
		3. With English User's manual that includes the operation and guide on how to assemble the model.		
		4. Brand must be permanently marked in the item.		
<b>6</b>	<b>Model, Solar System</b>	Functional Specifications: Used to show the sun and the eight (8) major planets of the solar system in three dimensions, in correct order from the nearest to the farthest from the sun		
		Performance Specifications: Should be able to show the sun and the eight (8) major planets of the solar system in three dimensions, in correct order from the nearest to the farthest from the sun		
		Design Specifications:		
		1. shows the eight (8) major planets of the solar system namely: a) Mercury, b) Venus, c) Earth, d) Mars, e) Jupiter, f) Saturn, g) Uranus, and h) Neptune with each planet color code and shaded correctly		
		2. each planet can be manually operated to revolve around sun		
		3. Dimensions: Sun: 5.75-6.5" diameter, Total dimension: height 13.5-14.5 inches; length 20.5-21.5 inches, plated steel arm		
		4. Sun made of plastic material, support base made of metal		

		5. Must be branded and permanently marked on the item		
<b>7</b>	<b>Model, Sun-Earth-Moon</b>	Functional Specifications: Used to show the relative locations of the sun, the earth and the moon three dimensions, and the synchronous revolutions of the moon around the earth and the earth's revolution around the sun		
		Performance Specifications: Should be able to show the relative locations of the sun, the earth and the moon three dimensions, and the synchronous revolutions of the moon around the earth and the earth's revolution around the sun		
		Design Specifications:		
		1. Hand-operated gear drive that moves the Earth and moon in relation to the Sun. Shows the Earth's rotation, revolution, day and night, tilt of its axis, phases and eclipses of the Moon. Supported by a sturdy base and chrome-plated steel parts		
		2. Sun's sphere is illuminated with hole to focus a beam of light always to the globe; also indicates the month and phase of the moon in relation to the sun.		
		3. All spheres (Sun, Earth, Moon) made of plastic; sizes must reflect relative differences of sizes between Sun, Moon, and Earth. Sun's diameter 5.5-6.5 inches.		
		<b>4. The Nine Dash Line should not appear.</b>		
5. With English User's Manual that includes operation guide and guide on how to replace the bulb in the model				
<b>8</b>	<b>Model, Tectonics Demonstrator</b>	Functional Specifications: Used to simulate tectonic processes		

		Performance Specifications: Should be able to simulate tectonic processes		
		Design Specifications:		
		1. Tectonic container dimensions: Length Range: 10 range -13 inches		
		Width Range: 6 range -8 inches		
		Height Range: 3 range - 5 inches		
		Shape: Rectangular		
		2. The model contains the following:		
		a. Two pieces L-shaped plastic plates with screw type long push handles		
		b. One piece Rectangular / Square plastic plates with screw type short push handle used to flatten the sand inside the tectonic container.		
		c. 12 pieces of washers		
		d. 12 pieces of nuts		
		e. Includes 1 kilogram yellow sand and 1 kilogram green sand.		
		3. With English User's Manual that includes		
		a. Operation Guide		
		b. Guide on how to assemble the model.		
		c. Guide on how to use the model with pictures		
		d. Student Activity Sheets		
		6. Must be branded and must be permanently marked on the item		
<b>9</b>	<b>Model, Volcano, cross section</b>	Functional Specifications: Used to illustrate the major external and internal parts of a volcano in three dimensions		
		Performance Specifications: Should be able to represent the major external and internal parts of a volcano in three dimensions		
		Design Specifications:		

		1. Dimensions: 10-12 inches diameter x 10-12 inches height		
		2. The parts of the volcano correctly named: Sill, Strata, Dike, Crust, Magma Chamber, Upper Mantle, Lower Mantle, and Vent; permanently marked on the item		
		3. Detailed cross-section shows the inside of the volcano		
		4. With removable red tube		
		5. With 12.5-13 inches clear, circular, plastic tray which fit in the entire model		
		6. It simulates the volcano eruption		
		7. Easy to clean and reusable.		
		8. With English Users' Manual that includes operation guide with easy-to-prepare lava recipe		
		9. Must be branded and permanently marked on the item		
<b>10</b>	<b>Rock Samples, 24 pcs/set, (minerals of 3 rock types)</b>	Functional Specifications: Used to show actual samples of most common rocks found on the earth's crust		
		Performance Specifications: Should be able to show actual samples of most common rocks found on the earth's crust		
		Design Specifications:		
		1. Samples/references for in identifying and classifying rocks		
		2. Boxed mineral and rock collection. Should have at least 24 samples comprising minerals: 8 types igneous, 8 types sedimentary, and 8 types metamorphic rocks. There should be colored pictures of the rocks for reference.		
		3. Rock size: 8 cm <sup>3</sup> -20cm <sup>3</sup> (8 mL - 20mL by water displacement)		
		4. Rock should be placed in a plastic packing and properly labelled with its name.		

		5. Samples are individually bagged in appropriate size transparent plastic and numbered and correspond to the description in the lid of the box. Each rock name should be accompanied with rock type, Example: "Basalt" (igneous)		
		6. The box is made of sturdy plastic, compartmentalized for each sample		
		7. Made up of non-toxic material, free from any sharp edges.		
		8. Brand permanently marked on the container box		
<b>11</b>	<b>Telescope, Astronomical (Reflecting)</b>	Functional Specifications: Used to enhance the appearance of details of celestial objects not visible to the unaided eye		
		Performance Specifications: Should be able to enhance the appearance of details of celestial objects not visible to the unaided eye		
		Design Specifications:		
		1. Equatorial Reflector Telescope Features		
		a) 112-114mm Aperture		
		b) Focal Length: 900-1000 mm		
		c) Rack-and-Pinion Focuser		
		d) Equatorial Mount with manual control cables		
		e) Setting Circles		
		f) Latitude Control with Scale		
		g) Two Eyepieces - 8.5-9.5mm and 23-27mm diameter each, multi coated		
		h) Tripod <ul style="list-style-type: none"> <li>i. Maximum Height: 125 cm</li> <li>ii. Adjustable-height</li> <li>iii. Aluminum-alloy legs</li> <li>iv. Tray to hold eyepieces, lights, and accessories</li> <li>v. Spiked feet add stability on uneven/soft ground</li> </ul>		
2. With English User's Manual that includes Operation Guide and Guide on how to assemble the model.				

		3. With permanent marking at the bottom of each eyepiece stating the model, focal length, and diameter.		
		4. Comes with a training video that shows the actual equipment submitted and approved during the sample evaluation and shall contain the following:		
		I. Training Video Contents:		
		a. Name of the equipment b. Parts of the equipment c. Instruction on how to use the equipment d. Sample Experiment/Activity using the equipment e. Maintenance of the equipment f. Troubleshooting g. Storage and safekeeping (include cleaning) of the equipment		
		II. Training Video details:		
		a. Shall be in MP4 format. b. Shall be saved in a USB 3.0 Flash Drive. c. Shall have a High-Definition resolution of at least 1080p. d. Shall have a readable subtitle (font style & size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle. e. Shall comply an aspect ratio of 4:3. f. Shall have a cover video pane containing the equipment name and a video pane for each video content. g. The video, voiceover (audio), and subtitle shall be in sync. h. The training video shall cover all the above requirement (video contents).		
		5. Must be branded and permanently marked on the item		



**LOT 11: MODELS: THE HUMAN ANATOMY**

<b>1</b>	<b>Model, Human Circulatory System</b>	Functional Specifications: Used to show details of blood flow.		
		Performance Specifications: Must be able to illustrate how the respiratory and circulatory systems work together to transport nutrients, gases, and other molecules to and from the different parts of the body;		
		Design Specifications:		
		1. Life-size, colored relief model.		
		2. Frontal plane is cutaway so blood circulation can be traced to the major organs and extremities.		
		3. Made of non-toxic plastic material (Certificate of non-toxicity is required)		
		4. With arterial system: aorta artery, brachial artery, iliac artery, renal artery, mesenteric artery, pulmonary artery, carotid artery, tibial artery, femoral artery, palmar digital artery, ulnar artery, radial artery, popliteal artery, subclavian artery		
		5. With venous system: basilic vein, renal vein, iliac vein, pulmonary vein, femoral vein, popliteal vein, brachial vein, subclavian vein, palmar digital vein, tibial vein, dorsal venous arch, superior vena cava and inferior vena cava		
		6. With heart, lung, liver, spleen, kidneys, partial skeleton		
	7. The model is washable and must be free from any labels.			
	8. Paint shall be permanent and not be removed when washed with soap and water.			
	9. With name of the model: HUMAN CIRCULATORY SYSTEM MODEL (Font style: Arial, Font size: 32, UPPERCASE, BOLD) permanently marked on the baseboard.			

		10. With no sharp parts and defects.		
		11. Mounted on a stable baseboard.		
		12. Dimensions (minimum): 80cm H x 30cm L x 5cm W		
		13. Safely packed in a box		
		14. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.		
		15. Key card details:		
		a. A4 size copy paper		
		b. Margin of 1/2 inch on all sides; with 2 pt width border line		
		c. Layout Orientation: Portrait		
		d. Lamination thickness: minimum 0.30mm		
		e. Title: HUMAN CIRCULATORY SYSTEM MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 24, UPPERCASE, BOLD)		
		f. The model picture in white background shall be big enough to occupy the center part of the card.		
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized, )		
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled		
		16. Must be branded and brand new. The brand shall be permanently marked on the baseboard.		
<b>2</b>	<b>Model, Human Endocrine System</b>	Functional Specifications: Used as a visual representation of the endocrine glands in a human body.		
		Performance Specifications: Must be able to illustrate the hormones involved in the female and male reproductive systems; and other hormones present in the human body.		

		Design Specifications:		
		1. Exhibits frontal section of the human body showing all the glands in the endocrine system.		
		2. Both male and female glands are present.		
		3. Features: Pineal, hypothalamus, pituitary, thyroid, parathyroid, thymus, adrenal cortex, kidney, pancreas, testes, ovary, and uterus		
		4. Colorful relief model made of non-toxic plastic material (Certificate of non-toxicity is required)		
		5. With no sharp parts and defects.		
		6. The model is washable and must free from any labels.		
		7. Paint shall be permanent and not be removed when washed with soap and water.		
		8. With name of the model: HUMAN ENDOCRINE SYSTEM MODEL (Font style: Arial, Font size: 28, UPPERCASE, BOLD) permanently marked on the baseboard.		
		9. Mounted on a stable baseboard.		
		10. Dimensions (minimum): 38cm L x 24cm W x 6cm H		
		11. Safely packed in a box		
		12. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.		
		13. Key card details:		
		a. A4 size copy paper		
		b. Margin of 1/2 inch on all sides; with 2 pt width border line		
		c. Layout Orientation: Landscape		
		d. Lamination thickness: minimum 0.30mm		
		e. Title: HUMAN ENDOCRINE SYSTEM MODEL KEY CARD shall be placed at the top-		

		center (Font style: Arial, Font Size: 26, UPPERCASE, BOLD)		
		f. The model picture in white background shall be big enough to occupy the center part of the card.		
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).		
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.		
		14. Must be branded and brand new. The brand shall be permanently marked on the baseboard.		
<b>3</b>	<b>Model, Human Nervous System</b>	Functional Specifications: Used to illustrate the schematic representation of the central and peripheral nervous system.		
		Performance Specifications: Must be able to show the complex network of nerve cells and the motor nerves pathways.		
		Design Specifications:		
		1. One-half life-size, colored, relief model made of non-toxic plastic material (Certificate of non-toxicity is required).		
		2. The model shows the structure of the nervous system (brain, cerebrum, cerebellum, spinal cord, radial nerve, ulnar nerve, median nerve, lumbar plexus, femoral nerve, sacral plexus, sciatic nerve, brachial plexus, intercostal nerve, common peroneal nerve, tibial nerve, saphenous nerve, finger nerve and toe nerve).		
		3. The pathway of the main nerves is well illustrated in relation to the skeleton.		
		4. The model is washable, free from any label, sharp parts and defects.		
		5. Paint shall be permanent and not be removed when washed with soap and water.		

		6. With name of the model: HUMAN NERVOUS SYSTEM MODEL (Font style: Arial, Font size: 30, UPPERCASE, BOLD) permanently marked on the base.		
		7. Mounted on a stable baseboard.		
		8. Dimensions (minimum): 80cm H x 30cm L x 5 cm W		
		9. Safely packed in a box.		
		10. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name; labeled with the required parts.		
		11. Key card details:		
		a. A4 size copy paper		
		b. Margin of 1/2 inch on all sides; with 2 pt width border line		
		c. Layout Orientation: Portrait		
		d. Lamination thickness: minimum 0.30 mm		
		e. Title: HUMAN NERVOUS SYSTEM MODEL KEY CARD shall be placed at the top- center (Font style: Arial, Font Size: 20, UPPERCASE, BOLD)		
		f. The model picture in white background shall be big enough to occupy the center part of the card.		
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).		
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.		
		12. Must be branded and brand new. The brand shall be permanently marked on the baseboard.		
<b>4</b>	<b>Model, Human Nose (Nasal- Throat Anatomy)</b>	Functional Specifications: Used to illustrate the anatomy of the human nose.		
		Performance Specifications: Must be able to show the parts of the sense organs of the human body, specifically the human nose.		

		Design Specifications:	
		1. Life-size, colorful model that features nasal throat anatomy.	
		2. Shows frontal sinus, sphenoid sinus, conchae, nasal vestibule, hard palate, soft palate, oral cavity, tongue, hyoid bone, epiglottis, pharynx, larynx and vocal fold.	
		3. Made of non-toxic plastic material (Certificate of non-toxicity is required)	
		4. The model is washable, free from any label, sharp parts and defects.	
		5. Paint shall be permanent and not be removed when washed with soap and water.	
		6. With name of the model: HUMAN NOSE MODEL (Font style: Arial, Font size: 26, UPPERCASE, BOLD) permanently marked on the base.	
		7. Mounted on a stable base.	
		8. Dimensions (minimum): 12 cm x 21 cm (width x full height)	
		9. Safely packed in a box.	
		10. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.	
		11. Key card details:	
		a. A4 size copy paper	
		b. Margin of 1/2 inch on all sides; with 2 pt width border line	
		c. Layout Orientation: Portrait	
		d. Lamination thickness: minimum 0.30 mm	
		e. Title: HUMAN NOSE MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 26, UPPERCASE, BOLD)	
		f. The model picture in white background shall be big enough to occupy the center part of the card.	

		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).		
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.		
		12. Must be branded and brand new. The brand shall be permanently marked on the base.		
<b>5</b>	<b>Model, Human Skeleton</b>	Functional Specifications: Used as a visual representation of the internal framework of the body.		
		Performance Specifications: Must be able to show the different types of bones.		
		Design Specifications:		
		1. Life-size model made of non-toxic, hard plastic material in natural bone color (Certificate of non-toxicity is required).		
		2. Mounted on stable metal stand, stainless steel rod, Ø minimum of 12 mm., with 4 or 5 legged unbreakable plastic with roller coasters as support to the skeleton.		
		3. All joints properly articulated and wired; all metal materials that interconnect the bones shall be stainless steel.		
		4. Features: frontal, parietal, temporal, occipital, maxilla, mandible, hyoid bone, vertebral column, clavicle, scapula, sternum, xiphoid process, ribs, humerus, radius, ulna, carpals, metacarpals, phalanges, ilium, sacrum, coccyx, pubis, ischium, femur, patella, tibia, fibula, calcaneus, tarsals, metatarsals and phalanges		
		5. The model is washable, free from any label, sharp parts and defects.		
	6. Minimum height of the human skeleton: 158 cm			
	7. Minimum height after mounting on the stand: 168 cm			

		8. Some bones can be assembled or detached.		
		9. Enclosed in a plastic and packed in a sturdy box.		
		10. Provided with a dust cover.		
		11. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.		
		12. Key card details:		
		a. A4 size copy paper		
		b. Margin of 1/2 inch on all sides; with 2 pt width border line		
		c. Layout Orientation: Portrait		
		d. Lamination thickness: minimum 0.30mm		
		e. Title: HUMAN SKELETAL SYSTEM MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 26, UPPERCASE, BOLD)		
		f. The model picture in white background shall be big enough to occupy the center part of the card.		
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).		
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled		
		13. Must be branded and brand new. The brand must be permanently marked on the item.		
<b>6</b>	<b>Model, Human Torso</b>	Functional Specifications: Used to visualize the structures/organs found in the human body.		
		Performance Specifications: Must be able to illustrate how the organs are connected in a system.		
		Design Specifications: 1. Life-size, smooth-finish, plastic material mounted on a stable base.		



		2. Detachable head;		
		3. Open back, exposed spine with 2 to 4 removable vertebra and spinal cord		
		4. With interchangeable male and female reproductive organs		
		5. (Minimum) 32 dissectible parts that include:		
		a.) removable head (parts of mouth and nasopharynx exposed) b.) with brain exposed (1 to 8 part), with arteries c.) eye with optic nerve d.)female breast plate with plate rib; e) right and left lung (2 to 4 part) f.) 2-part heart g) 2-part stomach h.) liver with gall bladder, i.) 3 to 4 part intestinal tract with appendix flap j.) kidney half k.) 3-part female genital organ with removable fetus l.) 4-part male genital organ		
		6. Height (minimum): 845 mm.		
		7. True to life color and free from toxic materials (Certificate of non-toxicity is required).		
		8. Will be able to stand upright with removable parts intact and not falling.		
		9. The model is washable, free from any labels and sharp parts.		
		10. Paint shall be permanent and not be removed when washed with soap and water.		
		11. With name of the model: HUMAN TORSO MODEL (Font style: Arial, Font size: 36, UPPERCASE, BOLD) permanently marked on the base.		
		12. Enclosed in a polystyrene foam and packed in a sturdy box		
		13. With English User's manual that includes description of the model, diagram with labels, and guide on how to assemble/disassemble the model.		
		14. Manual details:		

		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)		
		Cover: Paper board, 280 gsm (minimum 0.30 mm)		
		b. Size (minimum): 165 mm x 215 mm Fold;		
		(minimum): 330 mm x 215 mm Spread		
		c. Binding: Saddle Staple		
		d. Font type: Arial and Font size (minimum): 10		
		e. Pictures shall be in full color		
		15. Must be branded and brand new. The brand shall be permanently marked on the base.		
<b>7</b>	<b>Model, Lung Demonstration</b>	Functional Specifications: Used to demonstrate how the lungs work and the concept of respiration.		
		Performance Specifications: Must be able to demonstrate the process of respiration.		
		Design Specifications:		
		1. This interactive, model consists of the following:		
		a. clear plastic enclosure		
		b. two (2) rubber balloons		
		c. elastic rubber membrane		
		d. rubber stopper (with one hole) that snugly fits the mouth of the bell jar		
		e. y-tube whose diameter fits the hole on the rubber stopper		
		2. Made of non-toxic materials (Certificate of non-toxicity is required)		
		3. Minimum base diameter : 17 cm		
		4. Minimum height (including stopper): 29 cm		
		5. Safely packed in a box		
		6. With English User's manual that shall provide description of the model, it's operation and maintenance guide.		
		7. Manual details:		

		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)		
		Cover: Paper board, 280 gsm (minimum 0.30 mm)		
		b. Size (minimum): 165 mm x 215 mm Fold		
		(minimum): 330 mm x 215 mm Spread		
		c. Binding: Saddle Staple		
		d. Font type: Arial and Font size (minimum): 10		
		e. Pictures shall be in full color		
		8. Must be branded and brand new. The brand shall be permanently marked on the item.		
<b>8</b>	<b>Model, Pumping Heart</b>	Functional Specifications: Used to simulate blood flow through the heart chambers.		
		Performance Specifications: Must be able to demonstrate basic heart and pulmonary blood flow.		
		Design Specifications:		
		1. An interactive model that illustrates how the heart and lungs work together for oxygen exchange		
		2. With heart chambers, main artery, veins and lungs labeled clearly		
		3. Made of non-toxic plastic material; with a rubber pump (Certificate of non-toxicity is required)		
		4. The liquid is sealed in the model		
		5. Inclusion: Two (2) extra stopper screws and dye		
		6. Dimensions (minimum): 29 cm L x 27 cm W x 12 cm D		
		7. Safely packed in a box		
		8. With User's manual that shall provide guide on how it works; with heart study/activity instructions		
		9. Manual details:		

		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)		
		Cover: Paper board, 280 gsm (minimum 0.30 mm)		
		b. Size (minimum): 165 mm x 215 mm Fold		
		(minimum): 330 mm x 215 mm Spread		
		c. Binding: Saddle Staple		
		d. Font type: Arial and Font size (minimum): 10		
		e. Pictures shall be in full color		
		10. Must be branded and brand new. The brand shall be permanently marked on the item.		
<b>9</b>	<b>Model, Reproductive System, Female (Pelvic Anatomy)</b>	Functional Specifications: Used to visually represent the female reproductive system.		
		Performance Specifications: Must be able to show the parts of the female reproductive and genitourinary system.		
		Design Specifications:		
		1. Shows a longitudinal section of one-piece, life-size female pelvis.		
		2. Exhibits colored internal structures of the genitourinary system: urinary bladder, urethra, vagina, cervix, uterus, ovary, fallopian tube, fimbria, rectum, labium minus and labium majus.		
		3. Made of non-toxic plastic material (Certificate of non-toxicity is required)		
		4. The model is washable, free from any labels and sharp parts.		
		5. Paint shall be permanent and not be removed when washed with soap and water.		
	6. With name of the model: FEMALE REPRODUCTIVE SYSTEM (PELVIC ANATOMY) MODEL (Font style: Arial, Font size: 16, UPPERCASE, BOLD)			

		permanently marked on the base		
		7. Dimensions (minimum): 25 cm L x 18 cm W x 28 cm H		
		8. Mounted on a stable base.		
		9. Safely packed in a box.		
		10. Comes with a plastic laminated key card that shall contain the actual colored picture of the model including the name and labeled with the required parts.		
		11. Key card details:		
		a. A4 size copy paper		
		b. Margin of 1/2 inch on all sides; with 2 pt width border line		
		c. Layout Orientation: Landscape		
		d. Lamination thickness: minimum 0.30 mm		
		e. Title: FEMALE REPRODUCTIVE SYSTEM (PELVIC ANATOMY) MODEL KEY CARD shall be placed at the top- center (Font style: Arial, Font Size: 22, UPPERCASE, BOLD)		
		f. The model picture in white background shall be big enough to occupy the center part of the card.		
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized).		
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.		
		12. Must be branded and brand new. The brand shall be permanently mark on the base.		
<b>10</b>	<b>Model, Reproductive System, Male</b>	Functional Specifications: Used to visually represent the male reproductive system.		
		Performance Specifications: Must be able to show the parts of the male urology and reproductive system.		
		Design Specifications:		

		1. Shows a longitudinal section of one-piece, life-size male pelvis.		
		2. Exhibits bladder, prostate, rectum, seminal vesicle, testicle, epididymis, penis, vas deferens and urethra		
		3. Made of non-toxic plastic material (Certificate of non-toxicity is required)		
		4. The model is washable, free from any label, sharp parts and defects.		
		5. Paint shall be permanent and not be removed when washed with soap and water.		
		6. With name of the model: MALE REPRODUCTIVE SYSTEM MODEL (Font style: Arial, Font size: 26, UPPERCASE, BOLD) permanently marked on the base.		
		7. Mounted on a stable base		
		8. Dimensions (minimum): 26 cm H x 15 cm W x 25 cm L		
		9. Safely packed in a box		
		10. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.		
		11. Key card details:		
		a. A4 size copy paper		
		b. Margin of 1/2 inch on all sides; with 2 pt width border line		
		c. Layout Orientation: Landscape		
		d. Lamination thickness: minimum 0.30mm		
		e. Title: MALE REPRODUCTIVE SYSTEM MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 26, UPPERCASE, BOLD)		
		f. The model picture in white background shall be big enough to occupy the center part of the card.		
		g. Labels shall be without frame (Font style: Arial, Font		

		size: 14, First letter of the label is capitalized, )		
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled		
		12. Must be branded and brand new. The brand shall be permanently marked on the base.		

**LOT 12: MODELS: OTHER BIOLOGICAL STRUCTURES AND SPECIES**

<b>1</b>	<b>Model, Animal Cell</b>	Functional Specifications: Used as a visual representation of an animal cell.		
		Performance Specifications: Must be able to illustrate structures in an animal cell.		
		Design Specifications:		
		1. Three-dimensional model with colorful cell structures and raised-relief organelles.		
		2. Features: nucleus, nucleolus, nuclear pore, nucleoplasm, nuclear envelope, smooth endoplasmic reticulum, rough endoplasmic reticulum, mitochondrion, ribosome, Golgi apparatus, centriole, lysosome, peroxisome, cytoplasm, cell membrane and chromatin		
		3. Dimensions (minimum): 304 mm L x 393 mm H x 113 mm W		
		4. Made of non-toxic plastic material (Certificate of non-toxicity is required)		
		5. Mounted on two post stand with stable base.		
		6. The model is washable, free from any label, sharp parts and defects.		
		7. Paint shall be permanent and not be removed when washed with soap and water.		
		8. With name of the model: ANIMAL CELL MODEL (Font style: Arial, Font size: 40, UPPERCASE, BOLD) permanently marked on the base.		
	9. Safely packed in a box			

		10. Comes with a plastic laminated key card that shall contain the actual colored picture of the model including the name and labeled with the required parts.		
		11. Key card details:		
		a. A4 size copy paper		
		b. Margin of 1/2 inch on all sides; with 2 pt width border line		
		c. Layout orientation: Landscape		
		d. Lamination thickness: minimum 0.30 mm		
		e. Title: ANIMAL CELL MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 32, UPPERCASE, BOLD).		
		f. The model picture in white background shall be big enough to occupy the center part of the card.		
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).		
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.		
		12. Must be branded and brand new. The brand shall be permanently marked on the base.		
<b>2</b>	<b>Model, Animal Meiosis</b>	Functional Specifications: Used to visualize the different phases of animal meiosis.		
		Performance Specifications: Must be able to make a comparison between meiosis and mitosis phases and their role in the cell-division cycle.		
		Design Specifications:		
		1. Three-dimensional relief model made of non-toxic plastic material (Certificate of non-toxicity is required)		
		2. A set depicting 10 phases of meiosis namely:		
		a) Interphase (G1-phase),		



	b) Prophase I (leptotene),		
	c) Prophase I (Zygotene and pachytene),		
	d) Prophase I (diplotene),		
	e) Prophase I (diakinesis),		
	f) Metaphase I		
	g) Anaphase I,		
	h) Telophase I, Cytokinesis I,		
	Interkinesis, Prophase II, and		
	Metaphase II,		
	j) Anaphase II,		
	i)Telophase II and Cytokinesis II		
	3. Labels of the phases must bear the correct spelling as stated above		
	4. Shows the nucleus, centrioles, centrosome, chromatin, chromosomes, spindle fiber and aster;		
	5. The color of the cell models shall be in accordance with the coloring methods of microscopy;		
	6. Individual cell model is magnetic and detachable;		
	7. Each model rests in a magnetic board/frame;		
	8. Magnets shall not separate from the cell model;		
	9. Cell models must not fall when the frame is vertically mounted		
	10. Product measures (minimum ): 598 mm long x 58 mm thick x 398 mm wide		
	11. With a stable 45° metal stand		
	12. With name of the model: ANIMAL MEIOSIS MODEL (Font style: Arial, Font size: 36, UPPERCASE, BOLD) permanently marked on the board/frame.		
	13. Safely packed in a box		
	14. With English User's manual that includes the description in each phase of meiosis and storage instructions.		
	15. Manual details:		
	a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)		

		Cover: Paper board, 280 gsm (minimum 0.30 mm)		
		b. Size (minimum): 165 mm x 215 mm Fold		
		(minimum): 330 mm x 215 mm Spread		
		c. Binding: Saddle Staple		
		d. Font type: Arial and Font size (minimum): 10		
		e. Pictures shall be in full color		
		16. Must be branded and brand new. The brand shall be permanently marked on the board/frame.		
<b>3</b>	<b>Model, Animal Mitosis</b>	Functional Specifications: Used to visualize the different phases of animal mitosis.		
		Performance Specifications: Must be able to make a comparison between meiosis and mitosis phases and their role in the cell-division cycle.		
		Design Specifications:		
		1. Three-dimensional relief model made of non-toxic plastic material (Certificate of non-toxicity is required)		
		2. A set depicting 9 phases of mitosis namely:		
		a) Interphase,		
		b) Prophase,		
		c) Early Prometaphase,		
		d) Late Prometaphase,		
		e) Metaphase,		
		f) Early Anaphase		
		g) Late Anaphase,		
		h) Telophase		
		i) Cytokinesis		
		3. Labels of the phases must bear the correct spelling as stated above		
		4. Shows the nucleus, centrioles, centrosome, chromatin, chromosomes, spindle fiber and aster;		
		5. The color of the cell models shall be in accordance with the coloring methods of microscopy;		



		Design Specifications:		
		1. Colored 3D model with cut-away section to reveal internal structure.		
		2. Made of non-toxic plastic material (Certificate of non-toxicity is required)		
		3. Features: ribosome, DNA, starch granule, outer membrane, inner membrane, stroma, thylakoid, granum, lamellae, and lumen.		
		4. The model is washable, free from any label, sharp parts and defects.		
		5. Paints shall be permanent and not be removed when washed with soap and water		
		6. With name of the model: CHLOROPLAST MODEL (Font style: Arial, Font size: 36, UPPERCASE, BOLD) permanently marked on the base.		
		7. Mounted on two posts stand with a stable base.		
		8. Dimensions (minimum): 20 cm H x 25 cm L x 23 cm W		
		9. Safely packed in a box.		
		10. Comes with a plastic laminated key card that shall contain the actual colored picture of the model including the name and labeled with the required parts.		
		11. Key card details:		
		a. A4 size copy paper		
		b. Margin of 1/2 inch on all sides; with 2 pt width border line		
		c. Layout Orientation: Landscape		
		d. Lamination thickness: minimum 0.30 mm		
		e. Title: CHLOROPLAST MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 36, UPPERCASE, BOLD).		
		f. The model picture in white background shall be big enough to occupy the center part of the card.		

		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized).		
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.		
		12. Must be branded and brand new. The brand shall be permanently marked on the base.		
<b>5</b>	<b>Model, DNA</b>	Functional Specifications: Used as a visual representation of the different components of a DNA structure.		
		Performance Specifications: Must be able to illustrate accurately the phosphate, deoxyribose, and base pairs components of a DNA structure.		
		Design Specifications:		
		1. Depicts a minimum of 16 base pair section/layer DNA		
		2. Pre-assembled DNA made of attractive, color-coded, non-toxic, abstract shaped plastic parts that represents each bases (Thymine, Adenine, Guanine & Cytosine), the sugar and phosphate components; (Certificate of non-toxicity is required)		
		3. Stands upright with a support rod mounted on a stable rotatable base/stand		
		4. Minimum model height : 58 cm		
		5. The phosphate and deoxyribose can be removed and separated along with individual base pairs		
		6. Double helix structure		
		7. The model can also be uncoiled and "unzipped" to produce two strands.		
		8. Must be free from sharp parts and defects		
		9. With name of the model: DNA MODEL (Font style: Arial, Font size: 24, UPPERCASE,		



		b. Plastic Scorpion - Length (minimum): 15 cm		
		c. Plastic Crayfish or Shrimp - Length (minimum): 12 cm		
		7. Each invertebrate model comes with a plastic laminated key card that shall contain the actual-colored picture of the model labeled with the required parts		
		8. Key card details:		
		a. A4 size copy paper		
		b. Margin of 1/2 inch on all sides; with 2 pt width border line		
		c. Layout Orientation: Landscape		
		d. Lamination thickness: minimum 0.30mm		
		e. Titles of the key card as stated below: Shall be placed at the top-center (Font style: Arial, Font Size: 28, UPPERCASE, BOLD)		
		e.1 INVERTEBRATE: CENTIPEDE MODEL KEY CARD		
		Features: Tail-like rear pair of legs, segmented trunk, many legs, head, eye, antennae and maxilliped with poison fang		
		e.2 INVERTEBRATE: SHRIMP MODEL KEY CARD		
		SHRIMP features: Eye, antennae, rostrum, carapace, abdomen, swimming legs, walking legs, telson, tail		
		e.3 INVERTEBRATE: SCORPION MODEL KEY CARD		
		Features: Pedipalp (pincer), eyes, legs, carapace, chelicerae, anus, telson, stinger		
		f. The model picture in white background shall be big enough to occupy the center part of the card.		
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized)		
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled		
		9. Must be brand new.		

		9. Must be brand new.		
<b>7</b>	<b>Model, Mitochondrion</b>	Functional Specifications: Used as a visual representation of the working organelles that keep the cell in full energy.		
		Performance Specifications: Must be able to visually represent the structure of mitochondrion as the main organelle involved in respiration.		
		Design Specifications:		
		1. One-piece 3D model made of non-toxic plastic material (Certificate of non-toxicity is required)		
		2. Features: Inner membrane, outer membrane, cristae, matrix, intermembrane space, DNA, ribosome and granule		
		3. Shall be in cross-section longitudinal structure		
		4. The model is washable, free from any label, sharp parts and defects.		
		5. Paint shall be permanent and not be removed when washed with soap and water.		
		6. With name of the model: MITOCHONDRION MODEL (Font style: Arial, Font size: 40, UPPERCASE, BOLD) permanently marked on the base.		
		7. Mounted on a stable base		
		8. Dimensions (minimum): 40 cm L x 20 cm W x 12 cm H		
		9. Safely packed in a box		
		10. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.		
	11. Key card details:			
	a. A4 size copy paper			
	b. Margin of 1/2 inch on all sides; with 2 pt width border line			
	c. Layout Orientation: Landscape			



		d.Lamination thickness: minimum 0.30 mm		
		e. Title: MITOCHONDRION MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 32, UPPERCASE, BOLD)		
		f. The model picture in white background shall be big enough to occupy the center part of the card.		
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized).		
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.		
		12. Must be branded and brand new. The brand shall be permanently marked on the base		
<b>8</b>	<b>Model, Plant Cell</b>	Functional Specifications: Used as a visual representation of a plant cell.		
		Performance Specifications: Must be able to illustrate structures in a plant cell.		
		Design Specifications:		
		1. Two-piece plant cell 3D model		
		2. Shape: Irregular		
		3. With colorful cell structures and raised-relief organelles		
		4. Features: cell wall, cytoplasm, ribosome, Golgi apparatus, mitochondrion, chloroplast, nucleus, nucleolus, nuclear envelope, nuclear pore, peroxisome, plasmodesma, smooth endoplasmic reticulum, rough endoplasmic reticulum and vacuole.		
		5. Dimensions (minimum): 195 mm L x 110 mm W x 325 mm H		
		6. Made of non-toxic plastic material (Certificate of non- toxicity is required)		
		7. The model is free from any label, sharp parts and defects.		

		8. Paint shall be permanent and not be removed when washed with soap and water.		
		9. With name of the model: PLANT CELL MODEL (Font style: Arial, Font size: 20, UPPERCASE, BOLD) permanently marked on the model itself or onto the base if the model is supplied with a base.		
		10. Safely packed in a box		
		11. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including name and labeled with the required parts.		
		12. Key card details:		
		a. A4 size copy paper		
		b. Margin of 1/2 inch on all sides; with 2 pt width border line		
		c. Layout Orientation: Landscape		
		d. Lamination thickness: minimum 0.30mm		
		e. Title: PLANT CELL MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 34, UPPERCASE, BOLD)		
		f. The model picture in white background shall be big enough to occupy the center part of the card.		
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).		
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled		
		13. Must be branded and brand new. The brand shall be permanently marked on the item or base whenever applicable.		
<b>9</b>	<b>Model, Vertebrates</b>	Functional Specifications: Used to provide information on the anatomy of vertebrate animals.		

	Performance Specifications: Must be able to show the major parts of the vertebrate animals.		
	Design Specifications:		
	1. No sharp parts, non-toxic, true-to-life color, 3D replicas of vertebrates (Certificate of non-toxicity is required)		
	2. With life-like shapes		
	3. The models are washable and must be free from any labels.		
	4. Paint shall be permanent and not be removed when washed with soap and water.		
	5. Each is packed in a resealable plastic bag.		
	6. Vertebrate models:		
	a. Soft rubber SNAKE - Length (minimum): 50 cm.		
	b. Plastic balancing eagle with transparent pyramid tower		
	Eagle (minimum): 12.8 cm L x 9.8 cm W x 1.8 cm H		
	Tower (minimum): 3.8 cm L x 3.8 cm W x 4.8 cm H		
	c. Plastic Shark - Length (minimum): 15 cm		
	7. Each vertebrate model comes with a plastic laminated key card that shall contain the actual-colored picture of the model and labeled with the required parts.		
	8. Key card details:		
	a. A4 size copy paper		
	b. Margin of 1/2 inch on all sides; with 2 pt width border line		
	c. Layout Orientation: Landscape		
	d. Lamination thickness: minimum 0.30mm		
	e. Titles of key cards as stated below: Shall be placed at the top-center (Font style: Arial, Font Size: 28, UPPERCASE, BOLD)		
	e.1 VERTEBRATE: SHARK MODEL KEY CARD		
	Features: Snout, eye, mouth, nostril, gill slit, first dorsal fin,		

		second dorsal fin, pectoral fin, pelvic fin, and caudal fin		
		e.2 VERTEBRATE: BIRD MODEL KEY CARD		
		Features: Head, feather, tail, body, beak, eye, and wing		
		e.3 VERTEBRATE: SNAKE MODEL KEY CARD		
		Features: Head, eye, mouth, tongue, body, scales, and tail		
		f. The model picture in white background shall be big enough to occupy the center part of the card before inserting labels.		
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized).		
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.		
		9. Must be brand new		

### LOT 13: MODELS: MOLECULAR GEOMETRY

<b>LOT 13: MODELS: MOLECULAR GEOMETRY</b>				
<b>1</b>	<b>Model, Atomic Orbital, 82-pc</b>	Functional Specifications: Used as a model/visual three dimensional (3D) representation of the shapes of the 14 different atomic orbitals		
		Performance Specifications: A) Must be able to		
		a) represent visually the 14 different atomic orbitals		
		b) assemble/build the 14 atomic orbitals (basic s, p and d atomic orbitals )		
		i) one (1) pc 1s-orbital, unhybridized		
		ii) one (1) pc 2s-orbital, unhybridized		
		iii) three (3) pc 2p-orbital unhybridized		
		iv) five (5) 3d-orbital-unhybridized		
		v) one unit with one 2s plus three 2p- orbitals as well		
		vi) as one sp hybrid orbital		

		vii) one (1) pc sp unhybridized change to one pc sp hybridized		
		viii) one (1) pc sp <sup>2</sup> unhybridized change to one pc sp <sup>2</sup> hybridized		
		ix) one (1) pc sp <sup>3</sup> unhybridized change to one pc sp <sup>3</sup> hybridized.		
		Design Specifications:		
		1. The pink & purple pear-shaped lobes to represent the 2-wave (positive and negative) phases of the s, p & d atomic orbitals. The pink and purple, pear-shaped lobes represent the phase Material : Plastic		
		2. Opaque white spheres represent atomic nuclei. Material : Plastic		
		3. With <b>14</b> easy-to-assemble atomic orbitals ((basic s, p and d atomic orbitals) a) 1 pc - 1s, Unhybridized b) 1 pc - 2s, Unhybridized c) 3 pc - 2p, Unhybridized d) 5 pc - 3d, Unhybridized e) 1 pc with one 2s plus three 2p orbitals, Unhybridized f) 1 pc sp, hybrid orbital, Hybridized g) 1 pc sp <sup>2</sup> hybrid orbital, Hybridized h) 1 pc sp <sup>3</sup> hybrid orbital, Hybridized		
		4. Approximate model heights including clear, colorless base range from 50–90 mm. a) 50 mm (s orbital), b) 90 mm (p orbital), and c) 80 mm (d orbital).		
		5. The set is composed of the following:		
		a) 9 pc Grey atomic orbital parts		
		b) 17 pc Purple atomic orbital parts		
		c) 19 pc Pink atomic orbital parts		
		d) 2 pc White octahedral atom parts		

		e) 1 pc Black octahedral 23-24 mm carbon atom part		
		f) 1 pc Pink monovalent 17-18 mm atom part		
		g) 1 pc Pink monovalent 23-24 mm atom part		
		h) 1 pc Purple d atomic disc-shaped orbital part		
		i) 1 pc Black tetrahedral 23-24 mm carbon atom part		
		j) 1 pc Black trigonal bipyramidal 23-24 mm carbon atom part		
		k) 1 pc Pink octahedral 23-24 mm atom part		
		l) (1) Hydrogen H- Bond 17-18 mm atom part		
		m) 2 pc White 3-hole 17-18 mm atom parts		
		n) 2 pc White 7-hole atom parts		
		o) 8 pc Grey rigid 27-28 mm bonds		
		p) 14 pc clear transparent Pedestal Stand/ bases		
		6. With durable storage case with four compartments for segregation of parts a) Material of storage box: ABS plastic b) Color: Grey c) Submission of the <b>original copy of the Test certificate/s issued by the testing unit</b> , like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the compartmentalized storage box, is <b>Acrylonitrile butadiene styrene (ABS)</b> , to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier.		
		7.) For Contents/ List of materials, In Table form a) For atoms: quantity,		

		name of element(symbol), color code, (number of holes, type of bond angles), diameter of the sphere		
		b) For links; bond types and use		
		8. With assembly guides, individual worksheets and instructional sheets/leaflets in English		
		9. With User's Manual/Teacher's manual in English with full background information		
		10. For numbers #8-9, the technical specifications (a- e) must be followed:		
		a) For Contents/ List of materials, In Table form		
		b) for User's Manual, Instruction Sheets/Assembly Guides, In sentences format		
		i) With sentences, grammatically correct and		
		ii) With correct spelling and terminologies, punctuations and others		
		c) In original print, not photocopied		
		d) In colored pictures, drawings/illustrations		
		e) in 0.3 mm minimum thickness plastic laminated User's Manual/Teacher's Manual/Assembly Guides/ instructional leaflets that shall contain the actual colored picture of the model including the name: labeled with the required parts with details as follows:		
		i) Paper Size : A4 size , 80 gsm		
		ii) Font : Times New Roman		
		iii) Font size : 12		
		iv) Margins on all sides with 2 point width border line		
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled		
		11. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities		

		and all other defects not stated herein.		
		12. Comes with a brand marked permanently in the box		
		13. Must be brand new		
<b>2</b>	<b>Model, Biochemistry Molecular, (262 atom parts)</b>	Functional Specifications: Used as a model/visual 3D representation of some biomolecules: proteins, nucleic acids, lipids, and carbohydrates, their structures		
		Performance Specifications: A) Must be able to visually		
		a) represent some biomolecules proteins, nucleic acids, lipids, and		
		carbohydrates, their structures, and relate them to their function.		
		b) observe the chemical bonding		
		c) determine whether the biomolecule is polar or non polar given its structure		
		B) Assemble all the different biomolecules and study them		
		Design Specifications:		
		1. Type : Compact/Semi-space filling models		
		2. Shape of atom parts : Solid spheres		
		3. Material of spheres : Plastic		
		4. Diameter of sphere/atom		
		a) Hydrogen atom : 16-17mm		
		b) Carbon, nitrogen and oxygen atom: 22-23.5 mm		
		5. For compact models, bonds are represented by		
		a) short links		
		b) v-bonds links		
6. Material of links : Plastic				
7. Length of links				
a) short link : 2 mm-11 mm				
b)v-bonds links : 13-14 mm				
8. Color of links:				
a) short link : white/translucent				
b) v-bonds link : white links				



		9. With 262 color-coded plastic atoms and 260 links		
		10. The Biochemistry Molecular Model set includes the following:		
		A. 262 color-coded plastic atom parts		
		Quantity(pc) Element Color Number of holes Shape		
		i) 68 Black Carbon atoms		
		42 pc Carbon Black Four holes Tetrahedral		
		24 pc Carbon Black Three holes Trigonal.		
		2 pc Carbon Black Two holes Linear		
		ii) 34 Blue nitrogen atoms		
		12 pc Nitrogen Blue Four holes Tetrahedral		
		12 pc Nitrogen Blue Three holes Trigonal		
		10 pc Nitrogen Blue Two hole Angular		
		iii) 40 red oxygen atoms		
		20 pc Oxygen Red Two hole Angular		
		10 pc Oxygen Red Two hole Linear		
		10 pc Oxygen Red Single hole		
		iv) 110 White Hydrogen atom parts		
		100 pc White molydome links		
		10 pc Hydrogen White Two hole Linear		
		v) Two (2) Yellow two hole angular sulfur atoms		
		2 pc Sulfur Yellow Two hole Angular		
		vi) Six (6) purple tetrahedral atoms		

	6 pc Phosphorus Purple Four hole Tetrahedral		
	vii) 2 grey metal atoms		
	One (1) pc Metal Grey Four hole Tetrahedral		
	One (1) pc Metal Grey Six hole Octahedral		
	viii) 150 NV-links, colorless		
	ix) 100 Short white links		
	x) 10 V-links, grey		
	C. With two pc link remover tool		
	Color : cream		
	11. With two durable large storage boxes a) Material of storage boxes: ABS plastic b) Color: Grey c) Submission of the <b>original copy of the Test certificate/s</b> issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the two large storage boxes, is <b>Acrylonitrile butadiene styrene (ABS)</b> , to validate the conformity of the material the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier, with the following dimensions:		
	Length : 238-239 mm		
	Width : 167-169 mm		
	Thickness : 6.0-9.0 mm		
	12. With contents/ list of materials in table form, as to:		
	a) For atoms: quantity, name of element(symbol), color code, (number of holes, type of bond angles), diameter of the sphere		

		b) For links; bond types and use		
		13. With Assembly Guides, individual worksheets and instructional leaflets in English		
		14. With User's Manual/Teacher's instruction manual in English with full background information		
		15. For numbers #13 to 14; technical specifications(a-e) must be followed:		
		a) For Contents List of materials, In Table form		
		b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format		
		i) With sentences grammatically correct and		
		ii) With correct spelling and terminologies, punctuations and others		
		c) In original print, not photocopied		
		d) In colored pictures, drawings/illustrations		
		e) in 0.3 mm minimum thickness plastic laminated Assembly guides/instructional leaflets that shall contain the actual colored picture of the model including the name labeled with the required parts with details as follows:		
		i) Paper Size : A4 size , 80 gsm		
		ii) Font : Times New Roman		
		iii) Font size : 12		
		iv) Margins on all sides with 2 point width border line		
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled		
		16. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein		
		17. Must be have a brand printed permanently on the box		
		18. Must be brand new		

<b>3</b>	<b>Model, Crystal Structures Set (Graphite, diamond, sodium chloride, carbon dioxide)</b>	Functional Specifications: Used as a model/ visual 3D representation of five crystal compounds		
		Performance Specifications: A) Must be able to visually:		
		a) represent the five different types of crystals and their properties: ionic, covalent, molecular, and metallic		
		b) describe the difference in structure of crystalline (diamond) and amorphous (graphite) solids and		
		d) observe the difference of the ionic, covalent and metallic bonds and		
		e) determine whether a crystal molecule is polar or non-polar given its structure		
		B) Assemble the four crystal structures		
		Design Specifications:		
		1. Type : Open/Ball and stick		
		2 Shape of atom parts :Solid spheres		
		3 Material of spheres : Plastic with the following dimensions:		
		a)Sodium, carbon: 22-23.5 mm		
		b) Copper : 25-25.5 mm		
		c) Chlorine : 32-32.5 mm		
		4. Types of links/bonds		
		a) Medium (Single, rigid) links		
		b) Long (double/triple, flexible) links		
		5. Material of links: Flexible plastic low density plastic		
		6. Length of solid links/rods		
	a)Medium: 19-27 mm			
	b) Long : 43-44 mm			
	7. Color of links/bonds			
	Medium links: grey white/purple			
	Long links : gray			
	8. The Crystal structure set is composed of the following:			

		a) <b>Diamond</b> - covalent crystal model (30 atoms) + links = <b>70 pc</b>		
		I. Element    Number of holes Angle    Shape    Color Quantity(pc)		
		i) Carbon    (4 hole) 109.5° Tetrahedral    Black 30		
		ii) Placed in resealable plastic bag		
		II. Links/Bonds Color    Quantity (pc)		
		i) Medium links/ Bonds Grey white    40		
		ii) Placed in resealable plastic bag		
		b) <b>Sodium chloride (NaCl)</b> - ionic crystal model (27 atoms)+links= <b>81 pc</b>		
		I. Element    Number of holes    Shape    Color Quantity(pc)		
		i) Chlorine    6 hole Octahedral    Green 13		
		ii) Sodium    6 hole Octahedral    Silver gray/grey 14		
		iii) Placed in two (2) separate resealable plastic bags		
		II. Links/Bonds Color    Quantity (pc)		
		i) Medium    Grey white    54		
		ii) Placed in resealable plastic bag		
		c) <b>Graphite</b> - covalent crystal model (45 atoms ) + links = <b>100 pc</b>		
		This kit is designed to make a three layer model of graphite having 15 carbon atoms in each layer.		
		I. Element    Number of holes    Color Quantity (pc)		
		i) Carbon    5 hole    Black 39		
		ii) Placed in resealable plastic bag		

		II. Links/Bonds Color                      Quantity (pc)		
		i) Long connectors Grey/ white                      15		
		ii) Medium connectors(single, rigid) Grey/ white                      46		
		iii) Placed in two (2) separate resealable plastic bag		
		d) <b>Copper</b> - metallic crystal model/ 14 atoms + links = <b>50 pc</b>		
		Crystal structure : face center cubic		
		I. Element                      Number of holes      Color                      Quantity (pc)		
		i) Copper                      8 hole Red                      8		
		ii)Copper                      6 hole Red                      6		
		iii) Placed in two (2) separate Ziploc plastic bag		
		II. Links/Bonds - 36 pc		
		Links/Bonds                      Color Length      Quantity (pc)		
		i) Medium                      Grey white                      65 mm                      24		
		ii) Long                      Grey white                      100 mm                      12		
		iii) Placed in two (2) separate resealable plastic bag		
		9. With Link remover tool/Assembly tool		
		10. With <b>1</b> pc durable plastic storage box a) Material: ABS plastic b) Color: Grey c) Submission of the <b>original copy of the Test certificate/s</b> issued by the testing unit, like <b>DOST</b> material testing facilities or at any DOST-accredited testing institution attesting that the material of the compartmentalized storage box, is <b>Acrylonitrile butadiene styrene (ABS)</b> , to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to		

	testing facility. All expenses for the said test shall be shouldered by the Supplier, with the following dimensions:		
	11. Package Dimensions		
	a) Length : 235-239 mm		
	b) Width : 167-171 mm		
	c) Thickness : 68-71 mm		
	12. With contents/ list in table form, as to:		
	a) For atoms: quantity, name of element(symbol), color code, (number of holes, type of bond angles), diameter of the sphere		
	b) For links; bond types and use		
	13. With Assembly Guides, individual worksheets and instructional leaflets in English		
	14. With User's Manual/Teacher's instruction manual in English with full background information		
	15. For numbers #12 to 14; they must follow technical specifications a-e:		
	a) For Contents List of materials, In Table form		
	b) for User's Manual, Instruction Sheets/Assembly Guides, In sentences format		
	i) With sentences grammatically correct and		
	ii) With correct spelling and terminologies, punctuations and others		
	c) In original print, not photocopied		
	d) In colored pictures, drawings/illustrations		
	e) in 0.3 minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name: labeled with the required parts with details as follows:		
	i) Paper Size : A4 size , 80 gsm		
	ii) Font : Times New Roman		

		iii) Font size : 12		
		iv) Margins on all sides with 2 point width border line		
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled.		
		16. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein		
		17. Comes with a brand marked permanently in the box		
		18. Must be brand new		
<b>4</b>	<b>Model, Molecular, Inorganic/Organic (307-pc)</b>	Functional Specifications: Used as a model/visual three dimensional (3D) representation of the different inorganic/organic compounds		
		Performance Specifications: Must be able to :		
		a) visually represent the molecular structures of many inorganic/organic molecules and		
		b) assemble inorganic/organic compounds to show covalent and ionic bonding and c) determine whether a molecule is polar or non-polar given its structure		
		Design Specifications:		
		1. Type : Ball and stick		
		2. Shape of atom parts : Solid spheres		
		3. Material of spheres : Plastic		
		4. Diameter of sphere/atom		
		a) Hydrogen and chlorine atoms : 17-17.5 mm		
		b) Other atoms : 23-23.5 mm		
		5. Material of links: Flexible plastic low density polyethylene (LDPE) solid links		
		6. Length, color and quantity of solid links/rods		
		a) Short links		
		i) Type : For space filling		



		ii) Length : 11-12 mm		
		ii) Color : Translucent/white		
		iii)Quantity: 60 pc		
		b) Medium links		
		i) Type : Single, rigid		
		ii) Length : 27-28 mm		
		iii) Color : Grey		
		iv)Quantity: 60 pc		
		c) Long links		
		i) Type : Double/triple/flexible		
		ii) Length : 43-44 mm		
		iii) Color : Grey		
		iv) Quantity : 30 pc		
		7. With 126 atoms, 30 orbitals, 150 links and 1 short link remover tool		
		8. The inorganic/organic molecular model set is composed of the following:		
		I. Shape No. of holes Angles Element/atom Color Qty(pc)		
		a) Tetrahedral 4 holes 109°28' Carbon Black 30		
		b) Trigonal 5 holes 90°/120° Carbon Black 8		
		bipyramidal		
		c)Linear 2 holes 180° Carbon Black 2		
		d) Trigonal 3 holes 120° Carbon Black 6		
		e) Divalent 2 holes 105° Oxygen Red 14		
		f) Monovalent 1 hole Hydrogen White 45		
		g)Tetrahedral 4 holes 109°28' Nitrogen Blue 4		
		h)Divalent 2 holes 105° Sulfur Yellow 1		
		i) Tetrahedral 4 holes 109°28' Sulfur Yellow 1		

		j) Tetrahedral 4 holes 109°28' Phosphorus Purple 4		
		k) Monovalent 1 hole 180° Chlorine Green 8		
		l) Octahedral 6 holes 90° Metal Silver/grey 2		
		m) Divalent atom Grey 1		
		II. Orbitals: 30 pc		
		Orbitals Lengths Color Quantity (pc)		
		a) Pi orbitals 38 mm purple 6		
		b) Pi orbitals 38 mm pink 6		
		c) P orbitals 38 mm purple 6		
		d) P orbitals 38 mm pink 6		
		e) P orbitals 38 mm beige 6		
		III. Links (represented the bonds): 150 links		
		Material of bonds/links : Rigid, non-toxic Flexible plastic (LDPE)		
		Links Type/Kind of bonds Length Color Quantity(pc)		
		a) Medium links (single, rigid) 27 mm Grey 60		
		b) Long links double/triple/flexible 43 mm Grey 30		
		c) Short links 11 mm Translucent/ 60		
		(for space filling) White		
		9. One (1) pc Link remover tool/Assembly tool		

	<p>10. With durable storage box</p> <p>a) Material of storage box: ABS plastic</p> <p>b) Color: Grey</p> <p>c) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the compartmentalized storage box, is Acrylonitrile butadiene styrene (ABS), to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier, with the following dimensions :</p>		
	a) Length : 238-239 mm		
	b) Width : 167-168 mm		
	c) Thickness : 68-70 mm		
	11. With contents/ list of materials, in table form, as :		
	a) For atoms: quantity, name of element(symbol), color code, (number of holes, type of bond angles), diameter of the sphere		
	b) For links; bond types and		
	12. With Assembly guides, Individual Worksheets and Instructional leaflets		
	13. With User's Manual/Teacher's Manual in English with full background information		
	14. For numbers #12 to 13; technical specifications (a-e) must be strictly followed:		
	a) For Contents/ List of materials, In Table form		

		b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format		
		i) With sentences grammatically correct and		
		ii) With correct spelling and terminologies, punctuations and others		
		c) In original print, not photocopied		
		d) With colored pictures, drawings/illustrations		
		e) in 0.3 mm minimum thickness plastic laminated that shall contain the actual colored picture of the model including the name labeled with the required parts with details as follows:		
		i) Paper Size : A4 size , 80 gsm		
		ii) Font : Times New Roman		
		iii) Font size : 12		
		iv) Margins on all sides with 2 point width border line		
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled		
		15. Comes with a brand marked permanently on the box		
		16. Must be brand new		
<b>5</b>	<b>Model, Sublevel Orbitals of the Atom (Quantum)</b>	Functional Specifications: Used as a visual representation of the spatial three-dimensional (3D) model of the shapes of the orbitals ( azimuthal quantum number) of the sublevels of the major energy levels of the first ten elements of the Periodic Table		
		Performance Specifications: Must be able to :		
		A)visually represent the spatial three-dimensional (3D) model of the shapes of the orbitals to describe the quantum mechanical model (azimuthal		

	quantum model) of the first ten elements in the Periodic Table		
	a) two (2) p orbitals		
	i) 1s-orbital and		
	ii) 2s-orbital,		
	b) the three (3) p orbitals		
	i) 2p <sub>x</sub> -orbital		
	ii) 2p <sub>y</sub> -orbital, and		
	iii) 2p <sub>z</sub> -orbital		
	c) the position and number of electrons along the x, y and z axis		
	d) the orbitals of the sublevels of the major energy levels		
	B) Assemble the sublevel orbital of the first ten elements of the Periodic Table based on the electronic configuration of each, to review on the four (4) quantum numbers and rules in filling up the orbitals ( the Aufbau Principle, Pauli's exclusion principle, and Hund's rule) , to study and learn the correct position and number of electrons along the x, y and z axis, as well as the orbitals of the sublevels of the major energy levels		
	Design Specifications:		
	1. With 12 Models of the Sublevel orbitals of the atom		
	2. With color-coded components which include the following:		
	3. ORBITALS		
	a) 1s-orbitals (K shell)		
	Shape of 1s orbital: Small sphere		
	Material :		
	Plastic		
	Color :		
	Blue		
	Quantity :		
	12 pc		
	b) 2s-orbitals (L shell)		
	Shape of 2s orbital : Large sphere		
	Material :		
	Plastic		

	Color : Orange		
	Quantity : 12 pc		
	c) p-orbitals (M shell)		
	i) $p_x$ -orbitals		
	Shape of orbital : Pear shaped lobes		
	Material : Plastic		
	Color : Red		
	Quantity : 24 pc		
	ii) $p_y$ -orbitals		
	Shape of orbital: Pear shaped lobes		
	Material : Plastic		
	Color : Yellow		
	Quantity : 24 pc		
	iii) $p_z$ -orbital		
	Shape of orbital : Pear shaped lobes		
	Material : Plastic		
	Color : Green		
	Quantity : 24 pc		
	d) Bases		
	Shape : Spherical		
	Material : Plastic		
	Color : White		
	Quantity : 12 pc		
	e) Crossbars (x and z axes)		
	Shape : Cross-shaped		
	Material : Durable non- toxic plastic		
	Color : White		
	Quantity : 12 pc		
	f) Electrons		
	Shape : Small circular cutouts in a plastic sheet		
	Material : Plastic		
	Color : Black		
	Quantity : 1 whole plastic sheet with cut out 128 pc electrons		
	g) Uprights (y axes)		

	Shape : Long, cylindrical sticks		
	Material : Plastic		
	Color : Cream		
	Quantity: 12 pc		
	4. Individually packed per item as segregated above in separate resealable plastic bags		
	5. With durable plastic storage box a) Material: ABS plastic b) Color: Grey c) Submission of the <b>original copy of the Test certificate/s</b> issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the storage box, is <b>Acrylonitrile butadiene styrene (ABS)</b> , to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier.		
	6. With List of Contents in the set		
	7 With Teacher's Guide		
	8. With 30 Student Worksheets and Guides, Part I and Part II		
	9. With quantum numbers chart provided on each student worksheet to help students assemble the models starting with the 1s orbitals.		
	10. Detailed instructions provided.		
	11. For numbers 6-10, the following technical specifications from (a-e) must be followed:		
	a) For Contents/ List of materials, In Table form		
	b) For User's Manual, Teacher's Guide, Student Worksheets, Instruction Sheets/Assembly Guides, In sentences format		

		i) With sentences grammatically correct and		
		ii) With correct spelling and terminologies, punctuations and others		
		c) In original print, not photocopied		
		d) In colored pictures, drawings/illustrations		
		e) in 0.3 mm minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name: labeled with the required parts with details as follows:		
		i) Paper Size : A4 size , 80 gsm		
		ii) Font : Times New Roman		
		iii) Font size : 12		
		iv) Orientation: Portrait		
		v) Margins on all sides with 2 point width border line		
		vi) Line with arrow head of 1.25 point with width shall point to the specific part being labeled		
		12. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein		
		13. Comes with a brand marked permanently on the box		
		14. Must be brand new		
<b>6</b>	<b>Model, VSEPR, 14 shapes (50-pc)</b>	Functional Specifications: a) Used as a visual 3D representation of the 14 different shapes of simple molecules with corresponding angles to perform exercises on VSEPR theory using models		
		b) describe the geometry of simple compounds		
		Performance Specifications: A) Must be able to visually:		
		a) represent all the 14 different shapes of simple molecules with corresponding angles to perform exercises on VSEPR theory		



	b) describe the geometry of simple compounds		
	B) Assemble the 14 different shapes of VSEPR Models and study them		
	Design Specifications:		
	1. Type : Ball and stick		
	2. Shape of atom parts : Solid spheres		
	3. Material of spheres : Plastic		
	4. Diameter of sphere/atom		
	a) Hydrogen, halogen, and metal sphere/atom:-16-17.5 mm		
	b) Other atoms : 22-23.5 mm		
	5. The VSEPR Theory model set is composed of the following:		
	I. With central atoms to construct 14 VSEPR shapes;		
	Color Number of holes Shape Example		
	metallic grey 2 hole linear (e.g., beryllium in BeCl <sub>2</sub> )		
	yellow 3 hole trigonal planar (e.g., sulfur in SO <sub>3</sub> )		
	yellow 3 hole trigonal (e.g., sulfur in SO <sub>2</sub> )		
	black 4 hole tetrahedral (e.g., carbon in CH <sub>4</sub> )		
	yellow 4 hole tetrahedral (e.g., sulfur in SO <sub>3</sub> <sup>2-</sup> )		
	red 4 hole tetrahedral (e.g., oxygen in H <sub>2</sub> O)		
	light green 4 hole tetrahedral (e.g., fluorine in HF)		
	light brown 5 hole trigonal bipyramidal (e.g., phosphorus in PCl <sub>5</sub> )		
	yellow 5 hole trigonal bipyramidal (e.g., sulfur in SF <sub>4</sub> )		
	green 5 hole trigonal bipyramidal (e.g., chlorine in ClF <sub>3</sub> )		

		purple 5 hole trigonal bipyramidal (e.g., xenon in XeF2)		
		grey 6 hole octahedral (e.g., metal complexes)		
		brown 6 hole octahedral (e.g., bromine in BrF5)		
		copper 6 hole octahedral (e.g., copper complexes)		
		b. With the following links/bonds:		
		Quantity(pc) Color Links Bonds		
		50 grey medium links single bonds		
		15 purple medium links lone pairs		
		6 white short links cyanide group		
		6. Comes with short link remover tool		
		7. With durable plastic storage box a) Material: ABS plastic b) Color: Grey c) Submission of the <b>original copy of the Test certificate/s</b> issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the four compartmentalized storage box, is <b>Acrylonitrile butadiene styrene (ABS)</b> , to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier		
		8. With contents/ list of materials in table form		
		9. With detailed assembly guides and instructional leaflets s provided.		

		10. With assembly guides, individual worksheets and instructional leaflets		
		11. With User's Manual/Teacher's instruction manual in English with full background information.		
		12. For numbers #8 to 10 technical specifications (a-e) must be strictly followed:		
		a) For Contents List of materials, In Table form		
		b) for User's Manual, Instruction Sheets/Assembly Guides, In sentences format		
		i) With sentences grammatically correct and		
		ii) With correct spelling and terminologies, punctuations and others		
		c) In original print, not photocopied		
		d) In colored pictures, drawings/illustrations		
		e) in 0.3 mm minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name: labeled with the required parts with details as follows:		
		i) Paper Size : A4 size , 80 gsm		
		ii) Font : Times New Roman		
		iii) Font size : 12		
		iv) Orientation: Portrait		
		v) Margins on all sides with 2 point width border line		
		vi) Line with arrow head of 1.25 point with width shall point to the specific part being labeled.		
		13. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein		
		14. Comes with a brand printed permanently onto the box		
		15. Must be brand new		

**LOT 14: FORCE, MOTION, AND ENERGY KITS**

<b>1</b>	<b>Advanced Electromagnetism Kit</b>	Functional Specifications: used to demonstrate the relationship between electricity and magnetism		
		Performance Specifications: should be able to demonstrate the relationship		
		between electricity and magnetism		
		Design Specifications:		
		1. The kit contains the following:		
		a. 2 -Bar Magnets: 148-155 mm X 10-12 mm X 7-8 mm; magnet strength: can suspend load 2 times its weight suspended end-to-end at north or south pole of the magnet, correctly labeled and or color coded to indicate North and south poles		
		b. 6 -Magnetic compass, 18-20 mm diameter, correct orientation of N-S poles		
		c. 2 -U-Magnets, 5.98-6 mm X 15-16 mm cross section X 98-100 mm long, jaw opening: 48-50 mm; magnet strength: can suspend 2 times its weight suspended at north or south pole of the magnet; correctly labeled and or color coded to indicate North and south poles		
		d. 1 -Magnetic field mapper-8.5-9 cm X 15.5-16 cm clear transparent casing contains iron filings immersed in non mold forming viscous liquid, should clearly show magnetic lines		
		e. 1 -spool magnet wire (insulation coated) #20, 500 g.		
		f. 1 - steel rod 10.5-12 mm dia x 98-100 mm long		
	g. 2 -copper wire solid, #14, insulated,14.5-15 cm long each wire			
	h. 3- wood blocks 23-25 mm X 73-75 mm X 98-100 mm			

		with pilot holes that run through center of block		
		2. Comes with plastic container that can accommodate the items indicated above.		
		3. Brand permanently marked on plastic container		
<b>2</b>	<b>Air Blower</b>	Functional Specifications: Used to blow air into light balls to keep them airborne to demonstrate Bernoulli's principle.		
		Performance Specifications: Should be able to blow air into light balls to keep them airborne to demonstrate Bernoulli's principle		
		Design Specifications:		
		1. Electric air blower with variable speed control from 0 to 14000 RPM, volute type, 400 W motor rating, 220 to 240 VAC 60 Hz power supply,		
		2. With English User's Manual that includes operation guide		
		3. With cartoon transport box		
		4. Brand permanently marked on the item		
<b>3</b>	<b>Archimedes Principle Set</b>	Functional Specifications: Used to visually demonstrate that objects immersed in a liquid like water displaces volume of liquid equal to the volume of the immersed object and that the apparent lost of weight of the immersed object is equal to the weight of the displaced liquid		
		Performance Specifications: Should be able to visually demonstrate that objects immersed in a liquid like water displaces volume of liquid equal to the volume of the immersed object and that the apparent lost of weight of the immersed object is equal to the weight of the displaced liquid		
		Design Specifications:		

		1. The item consists of:		
		a) Bucket and Plummet: Transparent		
		bucket with handle stainless steel/brass, plummet white color with hook;		
		Capacity: 100 mL		
		Compose of bucket and plummet with graduation. Permanently marked accurate divisions on plummet and bucket representing different volume levels. Divisions should be aligned when the plummet is inserted into the bucket.		
		Overflow can 450 mL capacity		
		Catch bucket		
		spring scale 2N/200g		
		Material: transparent plastic		
		2. Fixations and supports should be stable during activity		
		3. With English Manual that includes User's Guide		
		4. Contained in a styropor storage box, styropor box in transport packaging		
		5. Brand permanently marked on packaging		
<b>4</b>	<b>Basic Electronics Kit</b>	Functional Specifications: Used to perform activities on resistors, capacitance, ohmic and non-ohmic resistance and other basic electronics concepts		
		Performance Specifications: Should be able to perform activities on resistors, capacitance, ohmic and non-ohmic resistance and other basic electronics concepts		
		Design Specifications:		
		1. Each component is mounted on individual plastic board with color coded binding post terminals depending on mounted components (see No. 4 for color code of binding post terminals) Dimensions: 58-60 mm width x 78-80 mm length x 4.5-5 mm height		
		2. Component name and symbol should be permanent		

		(embossed or etched) and painted black on conspicuous location on board.		
		3. With external binding post connectors that can accommodate 4 mm banana plugs, color coded encapsulation: black for negative, red for positive, yellow for non-polar terminals		
		4. The Kit should contain the following:		
		a. 5-Resistors: (2-100 $\Omega$ , 2 watts; 1-1000 $\Omega$ , 2 watts; 1-10 k $\Omega$ , 2 watts; 1-100 k $\Omega$ , 2 watts), binding post terminals: all yellow 2-Rectifier Diodes, IN 4002, binding post terminals: black for negative, red for positive 1-LED, large size, binding post terminals: black for negative, red for positive b. 1-NPN transistor, 2N3440 or 2N3439 or equivalent, binding post terminals: black for negative, red for positive c. 2-Capacitor 1000 $\mu$ F (standard), 25 V, binding post terminals: black for negative, red for positive d. 1-Variable Resistor, large, rotary, carbon, 5 k $\Omega$ mono, binding post terminals: all yellow NOTE: industry standard tolerances applicable in all values of resistance and capacitance)		
		5. Items placed in plastic storage box, 1 box per set		
		6. Brand permanently marked on the item		
<b>5</b>	<b>Basic Lens Set, acrylic</b>	Functional Specifications: Used to demonstrate refraction of light		
		Performance Specifications: Should be able to demonstrate refraction of light		
		Design Specifications:		
		1. Set of 7 lenses, acrylic material (subject to material testing at DOST or any DOST accredited testing facilities),		

		secured in compartmentalized plastic storage box, with the following types and diameters:		
		1-double convex, 48-52 mm diameter		
		1-plano convex, 48-52 mm diameter		
		1-double concave, 48-52 mm diameter		
		1-plano concave, 48-52 mm diameter		
		1-convex-concave lens, 48-52 mm diameter		
		1-concave-convex lens, 48-52 mm diameter		
		1-double convex lens, 73-77 mm diameter		
		2. Must be contained in one plastic storage box.		
		3. No sharp edges.		
		4. Free from toxic materials certification		
		5. Brand name permanently marked on storage box		
<b>6</b>	<b>Coefficient of Linear Expansion</b>	Functional Specifications: Used to verify coefficient of linear expansion of some metals		
		Performance Specifications: Should be able to verify coefficient of linear expansion of some metals		
		Design Specifications:		
		1. With steam jacket pipe, made of brass, 498-500 mm long x 23-25 mm dia., with steam inlet and outlet, with attachment tube for inserting rubber stopper which in turn is inserted with thermometer		
		2. Steam jacket pipe supported by a rigid metal base; with alignment and lock mechanism when inserting expanding rod under study, 26.9-27.2 in X 4.375-4.5in X 1.375-1.5in (L x W x T)		
		3. With dial dial gauge 0-10 mm range, 0.01 mm readability		
		4. Supplied with 3.8-4 mm x 498-500 mm brass, copper,		



		steel rods; rods should be free from sharp, pointed edges		
		5. With English User's Manual that includes operation guide		
		6. Brand permanently marked on the item		
<b>7</b>	<b>Connector, Black (# 18 copper, AWG stranded) with alligator clip on one end and banana plug on the other end</b>	Functional Specifications: Used to effectively interconnect components in an electrical circuit		
		Performance Specifications: Should be able to effectively interconnect components in an electrical circuit		
		Design Specifications: # 18 copper, AWG stranded, end to end 345-450 mm gross length, with insulated brass alligator clip, 18 mm - 20 mm jaw length, on one end and 4 mm brass banana plug, on the other end soldered; all black		
<b>8</b>	<b>Connector, Red (# 18 copper, AWG stranded) with alligator clip on one end and banana plug on the other end</b>	Functional Specifications: Used to effectively interconnect components in an electrical circuit		
		Performance Specifications: Should be able to effectively interconnect components in an electrical circuit		
		Design Specifications: # 18 copper, AWG stranded, end to end 345-450 mm length, with insulated brass alligator clip, 18 mm-20 mm jaw length, on one end and 4 mm brass banana plug, on the other end, soldered, all red		
<b>9</b>	<b>Connector, Yellow (# 18 copper, AWG stranded) with alligator clip on one end and</b>	Functional Specifications: Used to effectively interconnect components in an electrical circuit		

	<b>banana plug on the other end</b>			
		Performance Specifications: Should be able to effectively interconnect components in an electrical circuit		
		Design Specifications: # 18 copper, AWG stranded, end to end 345-450 mm length , with insulated brass alligator clip, 18 mm-20 mm jaw length, on one end and 4 mm brass banana plug, on the other end soldered, all yellow		
<b>10</b>	<b>DC Ammeter</b>	Functional Specifications: Used to measure DC current in electrical circuit		
		Performance Specifications: Should be able to measure DC current in an electrical circuit		
		Design Specifications:		
		1. Analog, dual range selectable:-0.2 - 0 - +0.6A/0.02 read;-1.0 -0- +3.0A/0.1 read, ± 2.5% full scale, analog		
		2. Dial plate dimensions: 93-95 mm width x 83-85 mm length,		
		3. Overall encasement dimensions : 93-95 mm width x 128-130 mm depth x 93-95 mm height encasement material: plastic, any color		
		4. Binding post terminals, threaded, can accommodate 4 mm banana plug, brass material, color coded plastic insulation (black for negative or common terminal, red for positive terminal)		
		5. External zero-adjust calibration		
		6. With English User's Manual that includes operation guide		
		7. Brand permanently marked on the item		

<b>11</b>	<b>DC String Vibrator, string included</b>	Functional Specifications: Used to demonstrate standing waves on a string		
		Performance Specifications: Should be able to demonstrate standing waves on a string		
		Design Specifications:		
		1. Utilizes an offset-weighted shaft on a DC motor		
		2. Input voltage (0 volts -6 volts DC)		
		3. Vibration Frequency: controlled by stepless attenuator		
		4. With steel mounting platform, binding posts for external wire connection		
		6. With Operation Manual in English		
		7. Brand permanently marked on the item		
<b>12</b>	<b>DC Voltmeter</b>	Functional Specifications: Used to measure DC voltage across components in an electrical circuit		
		Performance Specifications: Must be able to measure DC voltage across components in an electrical circuit		
		Design Specifications:		
		1. Analog, dual range selectable -1V -0- +3V/0.1 read-5 0- +15V/ 1.0 read ±2.5% full scale, analog		
		2. Dial plate dimensions: 93-95 mm width x 83-85 mm length,		
		3. Overall encasement dimensions : 93-95 mm width x 128-130 mm depth x 93-95 mm height encasement material: plastic, any color		
		4. Binding post terminals, threaded, can accommodate standard 4 mm banana plug, brass material, color coded plastic insulation (black for negative or common terminal, red for positive terminal		

		5. External zero-adjust calibration		
		6. With English User's Manual that includes operation guide		
		7. Brand permanently marked on the item		
<b>13</b>	<b>Diffraction slits &amp; Diffraction grating Set</b>	Functional Specifications: Used to investigate the concept of diffraction of light and to calculate wavelength of light of certain color through diffraction		
		Performance Specifications: Should be able to investigate the concept of diffraction of light and to calculate wavelength of light of certain color through diffraction		
		Design Specifications:		
		The set is composed of:		
		1) Diffraction slits consist of:		
		1 frame single slit, 1 frame double slits; grating size: 34-36 mm x 16-18 mm; frame size: 48-50 mm x 48-50 mm x 1.98-2 mm thick		
		2) Diffraction Gratings consist of:		
		1 frame single slit, 1 frame double slits; grating size: 34-36 mm x 16-18 mm; frame size: 48-50 mm x 48-50 mm x 1.9-2.5 mm thick		
		3) Each frame placed in compartmentalized storage box		
4) Brand permanently marked on the item				
<b>14</b>	<b>Digital Geiger-Muller Counter with radioisotopes samples</b>	Functional Specifications: is used to measure alpha, beta, and gamma radiation		
		Performance Specifications: should be able to measure alpha, beta, and gamma radiation		
		Design Specifications:		
		<b>MAIN UNIT</b>		

		1. Main unit: Digital Geiger-Muller Counter; measures alpha, beta, gamma radiation;		
		2. Manufacturer should be accredited by their respective Nuclear Regulatory Institute/Agency and shall provide calibration certificate for each item issued by the Nuclear Institute/Agency of its country of origin.		
		3. Units of Measurement: milli Roentgen per hour (mR/hr), micro Sievert per hour ( $\mu$ Sv/hr), Counts per Minute (CPM), digital readout		
		4. Range: 0.001 mR/hr to 1000 mR/hr		
		5. With provision for connecting to desktop/laptop PC, comes with software and appropriate connectors		
		6. Dimensions: 4-7inches long x 3-4 inches wide x 1-2 inches thick		
		7. Runs on dual power supply: dry cell and external power, comes with dry cell and adapter for external DC input		
		8. With English User's Manual that includes operation guide		
		9. Comes with a training video that shows the actual equipment submitted and approved during the sample evaluation and shall contain the following:		
		I. Training Video Contents:		
		a. Name of the equipment b. Parts of the equipment c. Instruction on how to use the equipment d. Sample Experiment/Activity using the equipment e. Maintenance of the equipment f. Troubleshooting g. Storage and safekeeping (include cleaning) of the equipment		
		II. Training Video details:		

	<p>a. Shall be in MP4 format.</p> <p>b. Shall be saved in a USB 3.0 Flash Drive.</p> <p>c. Shall have a High-Definition resolution of at least 1080p.</p> <p>d. Shall have a readable subtitle (font style &amp; size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle.</p> <p>e. Shall comply an aspect ratio of 4:3.</p> <p>f. Shall have a cover video pane containing the equipment name and a video pane for each video content.</p> <p>g. The video, voiceover (audio), and subtitle shall be in sync.</p> <p>h. The training video shall cover all the above requirement (video contents).</p>		
	10. The offered brand of the item must be an international brand.		
	11. Brand permanently marked on the item.		
	Functional Specifications: is used to provide sources of alpha, beta, and gamma radiations		
	Performance Specifications: should be able to provide sources of alpha, beta, and gamma radiations		
	Design Specifications:		
	<b>SET OF LEGAL RADIOISOTOPE SAMPLES</b>		
	1. Set of sample legal radioactive sources, each is enclosed in a permanently shield disk: 2.98-3 mm thick x 23-25 mm dia.		
	2. Each disk is identified by radio nuclide, amount of activity in microcuries, half-life and type of radiation		

		<p>The words "Caution - Radioactive Material" appear on the label of each source</p> <p><i>0.1 microcurie - alpha source: Polonium 210 as per Appendix A (EXEMPT QUANTITIES OF RADIOACTIVE MATERIALS) of Philippine Nuclear Research Institute (PNRI) Licensing of Radioactive Material (CPR Part 02)</i></p> <p><i>0.1 microcurie - beta source: Strontium 90 as per Appendix A (EXEMPT QUANTITIES OF RADIOACTIVE MATERIALS) of Philippine Nuclear Research Institute (PNRI) Licensing of Radioactive Material (CPR Part 02)</i></p> <p><i>1 microcurie -gamma source: Cobalt 60 as per Appendix A (EXEMPT QUANTITIES OF RADIOACTIVE MATERIALS) of Philippine Nuclear Research Institute (PNRI) Licensing of Radioactive Material (CPR Part 02)</i></p> <p>All 3 radioisotope samples stored in a safe box and properly labeled</p>		
		3. Brand permanently marked on the item; with English User's Manual that includes operation guide (Permanent and properly labeled; labels are scratch-resistant)		
<b>15</b>	<b>Dry Cell Holder (size D)</b>	Functional Specifications: Used to securely mount size D dry cell in place		
		Performance Specifications: Should be		
		able to securely mount size D dry cell in place		
		Design Specifications:		
		1. Single Holder for size D dry cell, snap-on type;		
		2. With built-in nickel plated brass plate connectors;		
3. Holders can be interconnected in series or parallel;				

		4. Plastic body, should be sturdy, thickness: 1.98-2 mm		
		5. Crack resistant when dropped from 91 cm height, mounted with dry cell;		
		6. Any color		
		7. Brand name permanently marked on the item		
<b>16</b>	<b>Dry Cell, 1.5 volts, size D</b>	Functional Specifications: Used to provide 1.5 volts DC power source for a basic electrical circuit		
		Performance Specifications: Should be able to provide 1.5 volts DC power source for a basic electrical circuit		
		Design Specifications: 1. industry standard size D 1.5 volt dry cell		
<b>17</b>	<b>Engine Model (Internal Combustion)</b>	Functional Specifications: Used to simulate the operation of a 4-stroke cycle gasoline engine		
		Performance Specifications: Should be able to simulate the operation of a 4-stroke cycle gasoline engine		
		Design Specifications:		
		1. Cross section model of a 4-stroke cycle gasoline engine model, Size: 13.5 -14 inches x 7.8-8 inches x 6.8-8 inches		
		2. Material: cast alloy construction, mounted on stable base		
		3. Internal sections in different colors to indicate air, fuel, and gas mixtures and exhaust gas contents. The carburetor is shown in section.		
4. The crankshaft can be rotated by hand wheel to simulate the operating cycle of 4-stroke cycle gasoline engine; with electrical contact for illuminating a 3-volt lamp as spark plug to simulate ignition				



		5. Base with illustration and correct part names and show the following parts correctly: crank case, crank shaft, connecting rod, cylinder block, piston, intake valve, exhaust valve, push rod, spark plug, rocker arm, exhaust manifold, crank shaft gear, cam shaft gear, cam shaft, contact point, carburator, needle valve, float, throttle valve, intake manifold		
		6. Comes with a training video that shows the actual equipment submitted and approved during the sample evaluation and shall contain the following:		
		I. Training Video Contents:		
		a. Name of the equipment b. Parts of the equipment c. Instruction on how to use the equipment d. Sample Experiment/Activity using the equipment e. Maintenance of the equipment f. Troubleshooting g. Storage and safekeeping (include cleaning) of the equipment		
		II. Training Video details:		
		a. Shall be in MP4 format. b. Shall be saved in a USB 3.0 Flash Drive. c. Shall have a High-Definition resolution of at least 1080p. d. Shall have a readable subtitle (font style & size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle. e. Shall comply an aspect ratio of 4:3. f. Shall have a cover video pane containing the equipment name and a video pane for each video content. g. The video, voiceover (audio), and subtitle shall be in sync. h. The training video shall cover		

		all the above requirement (video contents).		
		7. Brand name permanently marked on the item		
<b>18</b>	<b>Flask, Florence, glass, 500 mL</b>	Functional Specifications: Used to contain liquids with unobstructed view of liquid inside; for activity on 'how eye focusses light rays to create an image in the retina'		
		Performance Specifications: Should be able to contain liquids with unobstructed view of liquid inside; for activity on 'how eye focusses light rays to create an image in the retina'		
		Design Specifications:		
		1. standard 500 mL capacity		
		2. Round bottom		
		3. NO Graduations		
		4. Made of glass		
		5. Brand name permanently marked on the item		
<b>19</b>	<b>Force Table</b>	Functional Specifications: Used to demonstrate the vector nature of forces		
		Performance Specifications: Should be able to demonstrate the vector nature of forces		
		Design Specifications:		
		1. Table: material-cast iron, diameter: 39.5-40 cm, with stable stand support, 29.5-30 cm height		
		2. With leveling screw		
		3. 360° protractor scale, 1° resolution		
		4. Can demonstrate combination of at least 3 coplanar forces in equilibrium		
		5. Includes the following accessories:		
		a. 3 pieces load hangers -100 grams each		
b. additional slotted masses to be loaded on each load hanger: 3 pieces-100 grams, 3 pieces-				

		50 grams, 3 pieces- 20 grams, 3 pieces- 10 grams		
		c. 3 pieces pulley clamps with guide pulley to be clamped on the Force Table		
		d. 1 piece center rod/ post, nickel plated metal, threaded to be mounted on the center of the Force Table		
		e. 1 piece center/ fastening ring, 33-35 mm diameter x 1.98-2 mm thickness, nickel plated metal		
		f. 4 meters string for hanging loads (crochet type), can suspend 500 grams load without breaking		
		6. With English User's Manual that includes Assembly and Operation Guide		
		7. Comes with a training video that shows the actual equipment submitted and approved during the sample evaluation and shall contain the following:		
		I. Training Video Contents:		
		a. Name of the equipment b. Parts of the equipment c. Instruction on how to use the equipment d. Sample Experiment/Activity using the equipment e. Maintenance of the equipment f. Troubleshooting g. Storage and safekeeping (include cleaning) of the equipment		
		II. Training Video details:		
		a. Shall be in MP4 format. b. Shall be saved in a USB 3.0 Flash Drive. c. Shall have a High-Definition resolution of at least 1080p. d. Shall have a readable subtitle (font style & size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for		

		<p>subtitle.</p> <p>e. Shall comply an aspect ratio of 4:3.</p> <p>f. Shall have a cover video pane containing the equipment name and a video pane for each video content.</p> <p>g. The video, voiceover (audio), and subtitle shall be in sync.</p> <p>h. The training video shall cover all the above requirement (video contents).</p>		
		8. Brand name permanently marked on the item.		
<b>20</b>	<b>Fuse Holder w/ Fuse</b>	Functional Specifications: Used to demonstrate the function of fuses		
		Performance Specifications: Should be able to demonstrate the function of fuses		
		Design Specifications:		
		1. Fuse: 0.3 amperes, maximum, slow-blow, glass-tube type, Rating should be engrave/etched on metal cap		
		2. Fuse detachable from holder, holder brass nickel plated, holder mounted on black plastic base w/ dimensions: 10-18 mm x 58-65 mm x 93-95 mm, thickness of material: 1.8-3 mm		
		3. Binding post terminals mounted on base, threaded, can accommodate 4 mm banana plug, brass material, with yellow plastic insulation		
		4. Connecting wires properly soldered to eyelet of binding posts		
		5. Each set comes with at least 50 spare fuses		
	6. Brand name permanently marked on item			
<b>21</b>	<b>Galvanometer</b>	Functional Specifications: Used to measure small electrical current		
		Performance Specifications: Should be able to measure small electrical current		

		Design Specifications:		
		1. Analog, general purpose galvanometer;		
		2. -500 to +500 $\mu\text{A}$ full scale/10 $\mu\text{A}$ read, full scale accuracy of $\pm 2.5\%$ ;		
		3. Dial plate dimensions: 93-95 mm width x 83-85 mm length, ;		
		4. Overall encasement dimensions : 93-95 mm width x 128-130 mm depth x 93-95 mm height encasement material: plastic, any color;		
		5. Binding post terminals, threaded, can accommodate 4 mm banana plug, brass material, color coded plastic insulation (black for negative or common terminal, red for positive terminal);		
		6. External zero-adjust calibration;		
		7. With English User's Manual that includes operation guide; and		
		8. With molded styrofoam as part of its packaging		
		9. Brand name permanently marked on item		
<b>22</b>	<b>Helical Spring</b>	Functional Specifications: Used to demonstrate transverse waves		
		Performance Specifications: Should be able to demonstrate transverse waves		
		Design Specifications:		
		1. Wire material: Galvanized Spring Steel Wire;		
		2. Unstretched Length range: 1.6 meter to 1.9 meter;		
		3. Can be stretched to 3 times its length without deformation;		
		4. Coil Outside Diameter: 19 mm to 22mm;		
		5. Wire Diameter: 1.2 mm to 1.4 mm;		
		6. Number of turns per centimeter: 7 to 8 turns;		
		7. With circular hooks (on both ends), hook diameter is 18-20 mm		

<b>23</b>	<b>Iron Core Rod (non-corrugated)</b>	Functional Specifications: Used to perform activities on electromagnet		
		Performance Specifications: Should be able to perform activities on electromagnet		
		Design Specifications: 1. Iron rod diameter: 10.5-12 mm, length: 98-100 mm		
<b>24</b>	<b>Laser Light</b>	Functional Specifications: Used to produce laser beam for diffraction activities		
		Performance Specifications: Should be able to produce laser beam for diffraction activities		
		Design Specifications:		
		1. Pen type laser, red output		
		2. Powered by, 1.5 volts size AA or AAA dry cells		
		3. With ON-OFF switch		
		4. Body dimensions: 12-14 mm diameter x 135-155 mm length		
		5. Laser spot can be projected to a distance of at least 5 meters		
	6. Brand permanently marked on the item			
<b>25</b>	<b>Long Nose Pliers, 1 pair/set</b>	Functional Specifications: Used to bend tiny solid wire connectors		
		Performance Specifications: Should be able to bend tiny solid wire connectors		
		Design Specifications: Long Nose Pliers with side cutter, 6 inches minimum long, chrome vanadium material, 1 pair/set		
	Brand name permanently marked on the item			
<b>26</b>	<b>Magnet Wire</b>	Functional Specifications: Used to perform activities on electromagnet		
		Performance Specifications: Should be able to perform activities on electromagnet		

		Design Specifications: 1 spool magnet wire (insulation coated) #20, 100 g. spool, brand name permanently marked on spool		
<b>27</b>	<b>Manometer, Open U-tube with Nakamura-type Water Pressure Apparatus</b>	Functional Specifications: Used to measure pressure difference of fluids		
		Performance Specifications: Should be able to measure pressure difference of fluids		
		Design Specifications:		
		1. Open U-tube glass manometer tube with a 49.8-50 cm arm with tube diameter of 7.5-8mm with funnel top on one arm and a 2.2-2.5 cm rifted tip on another arm for easy connection with silicone-rubber tubing that fits to the rifted tip		
		2. A millimeter scale is fitted between the arms of the tube		
		3. U-tube is mounted on a wooden board, fixed on a wooden stand for vertical U-tube is mounted on a wooden board, fixed on a wooden stand for vertical mounting		
		4. Includes SIMPLE WATER PRESSURE APPARATUS (Nakamura type) -its body can be made to rotate around a rigid tube. The rigid tube is L-bent to be inserted into the pressure apparatus, so that the pressure apparatus can be rotated -with 10 pcs spare diaphragms per set		
		5. Includes 99-110 cm silicone-rubber tubing for interconnecting U-Tube manometer and the simple water pressure apparatus		
<b>28</b>	<b>Miniature Light Bulb</b>	Functional Specifications: Used to demonstrate the conversion of electrical energy to light		
		Performance Specifications: Should be able to demonstrate		

		the conversion of electrical energy to light		
		Design Specifications:		
		1. Miniature, incandescent, screw type base		
		2. Bulb rating: 2.2 V to 2.5 V, 0.3 A, handling current; engraved on base of bulb		
		3. Operational Specs:		
		a) should fit with bulb socket in bulb holder assembly		
		b) should light with one fresh dry cell connected (1.5 volts)		
<b>29</b>	<b>Miniature Light Bulb Holder</b>	Functional Specifications: Used to securely mount light bulb in place		
		Performance Specifications: Should be able to securely mount light bulb in place		
		Design Specifications:		
		1. Socket to match the miniature incandescent light bulb, socket in plastic housing;		
		2. Socket housing is mounted on black, plastic base: Base dimensions : 10-20 mm x 58-65 mm x 93-95 mm, Material thickness: 1.8-2.5 mm		
		3. Binding post terminals, threaded, can accommodate 4 mm banana plug, brass material, with yellow plastic insulation;		
		4. Connecting wires properly soldered to eyelet of binding posts.		
		5. Brand name permanently marked on the item		
<b>30</b>	<b>Mirror Set, acrylic</b>	Functional Specifications: Used to demonstrate the formation of image by reflection of light		
		Performance Specifications: Should be able to demonstrate the formation of image by reflection of light		
		Design Specifications:		



		1. Set of 3 spherical mirrors, acrylic, secured in compartmentalized storage box with the following types and diameters:		
		a) 1-plane mirror, 48 to 52 mm diameter		
		b) 1-concave mirror, 48 to 52 mm diameter		
		c) 1-convex mirror, 48 to 52 mm diameter		
		2. All mirrors free from sharp edges;		
		3. Should be clear and no sign of cloudiness		
<b>31</b>	<b>Motor-Generator Model Experiment Set</b>	Functional Specifications: Used to demonstrate the conversion of electrical energy to mechanical energy when set to motor function and vice versa when set to generator function		
		Performance Specifications: Should be able to demonstrate the conversion of electrical energy to mechanical energy when set to motor function and vice versa when set to generator function		
		Design Specifications:		
		1. DC motor mode, runs on 6 volts -12 volt DC		
		2. Can function as generator when the armature is rotated; AC-DC generator output is determined by commutator configuration;		
		3. Selectable split-ring and slip-ring commutator that enables AC-DC output w/o changing the direction of rotation of the rotor;		
		4. Binding posts, for external connections, labeled with "motor input: 6 V-12 VDC" and "generator output"		
		5. Rotor is free to rotate unimpeded inside the stator without any parts of the rotor and stator in contact		

		6. Stator is activated by a permanent magnet. Stator assembly should have one color except blue and red; Example all yellow, all white or all black stator assembly.		
		7. Includes spare: 4 pcs belt, 1 set magnet;		
		8. Armature diameter: 66-68 mm , Armature shaft diameter: Ø 7.5-8 mm , w/ rigid mounting;		
		9. Drive pulley, plastic, diameter: 166-170 mm , driven pulley diameter: 24-26 mm , steel nickel plated; 10. Base wooden board dimensions: 195-200 mm x 295-300 mm x 18-20 mm		
		11. Brand name permanently marked on the item		
<b>32</b>	<b>Multimeter, digital</b>	Functional Specifications: Used to provide digital readouts of measurements of AC/DC currents and voltages,		
		resistance, capacitance, frequency		
		Performance Specifications: Should be able to provide digital readouts of measurements of AC/DC currents and voltages, resistance, capacitance, frequency		
		Design Specifications: Measurement Coverage, or smaller values in lower range and larger values in upper range::		
		1. DC Voltage: 60mV , 6V , 60V, 600V, 1000V ±0.7%+2.		
		2. AC Voltage: 600mV, 6V, 60V, 600V, 750V ±0.8%+3.		
		3. DC Current: 600µA , 6000µA, 60mA, 600mA ±1.2%+3 / 6A , 10A ±2.0%+10.		
		4. AC Current: 600µA , 6000µA , 60mA, 600mA ±1.5%+3 / 6A, 10A ±3.0%+10.		
5. Resistance: 600Ω , 6kΩ, 60kΩ, 600kΩ , 6MΩ , 60MΩ ±1.2%+5.				

		6. Capacitance: 10nF, 100nF , 1000nF, 10µF, 100µF, 1000µF , 10mF, 100mF±3.0%+3.		
		7. Frequency : 10Hz , 100Hz, 1000Hz, 10kHz, 100kHz, 1000kHz, 10MHz ±1.0%+5.		
		8. Duty Cycle :0.1%-99.99% ±3.0%+2. 9. Temperature: - 20~1000 Centigrade degree / - 4~1832 F 10. Display: 6000 counts		
		11. Auto range		
		12. USB Interface function. The measured data stored in the instrument can be uploaded to computer for display, record and analysis		
		13. Comes with: 1*Pair Test Leads, 1*English Operating Manual. 1*Temperature Probe, 1*USB Data Cable		
		14. Brand permanently marked on the item		
<b>33</b>	<b>Optical Bench Set</b>	Functional Specifications: Used for mounting lenses, mirrors, screen, light source and other optics components		
		Performance Specifications: Should be able to mount lenses, mirrors, screen, light source and other optics components in place		
		Design Specifications:		
		1. This Complete Set includes:		
		a) 1-meterstick, with centimeter and millimeter graduations		
		b) 1-lens support for the 50 mm diameter lenses and 50 mm diameter mirrors; should be stable when mounted on meterstick, smooth sliding		
		c) 1-lens support for 75 mm lens, should be stable when mounted on meterstick, smooth sliding		
		d) 1- screen support, should be stable when mounted on meterstick, smooth sliding		
		e) 5-white board screens: 9.5-11 cm x 11.5-13.5 cm each		

		f) 2-metal supports for meter stick, should be stable, meterstick should not tip off 1-candle holder, should be stable when mounted on meterstick, smooth sliding		
		g) 1-paraffin candle		
		2. Stand supports for meter stick, holders for lenses, mirrors, screens, and candle should be placed inside one compartmentalized casing;		
		3. With English User's Manual that includes operation guide.		
		4. Brand permanently marked on packaging box		
<b>34</b>	<b>Pair of Bar Magnets</b>	Functional Specifications: Used to demonstrate that some things can make objects move and describe forces exerted by magnets		
		Performance Specifications: Should be able to demonstrate that some things can make objects move and describe forces exerted by magnets		
		Design Specifications: Pair of Bar Magnets:		
		1. Dimensions of each: 148-150 mm x 10-12 mm x 7-8 mm		
		2. Magnet strength: can suspend loads at least 2 times its weight when suspended end-to-end at north-south pole of the magnet,		
		3. Color Code: north pole of the magnet should be colored red and the south pole colored blue		
<b>35</b>	<b>Prism Set</b>	Functional Specifications: Used to demonstrate characteristics of refraction of light		
		Performance Specifications: Should be able to demonstrate characteristics of refraction of light		
		Design Specifications:		
		1. Set is composed of:a) 1-Rectangular block, solid acrylic,		

		clear on one side and frosted on other side with the following dimensions:		
		length = 68-70 mm		
		width = 48-50 mm		
		thickness = 18-20 mm		
		b) 1-Right angle prism, solid acrylic, clear on one side and frosted on other side with the following dimensions:		
		thickness: 8-10 mm ,		
		base = 38-40 mm		
		height = 63-65 mm		
		c) 1-Semi-circular block, solid acrylic, clear on one side and frosted on other side with the following dimensions:		
		diameter=98-100 mm,		
		thickness 8-10 mm		
		2. Secured in reusable plastic storage casing;		
		3. Brand name permanently marked on the reusable storage casing.		
<b>36</b>	<b>Resistance Board</b>	Functional Specifications: Used to investigate factors affecting resistance of a conductor		
		Performance Specifications: Should be able to investigate factors affecting resistance of a conductor		
		Design Specifications:		
		1. Board: dimensions-height: 28 mm-30 mm , width: 118 mm-120 mm length: 645 mm-650 mm, material plastic, channel type, thickness of material: 2.9 mm-3.2 mm free of warpage and other imperfection like flushes etc.		
		2. Board is mounted with the following wires:		
		a) 2 - Nichrome wires of 2 different diameters: 0.23-0.25 mm & 0.48-0.5 mm; length: 598-600 mm		
		b) 1 - Stainless steel wire diameter: 0.48-0.5 mm, length: 598-600 mm		

		c) 1 - Copper wire diameter: 0.48-0.5 mm, length : 598-600 mm		
		3. Board should be marked by decimeter graduations that only span along entire wires' length		
		4. All wires should be rigidly fasten to stainless steel terminal posts		
		5. Brand name permanently marked on the item		
<b>37</b>	<b>Ring and Ball Apparatus</b>	Functional Specifications: Used to demonstrate thermal expansion (and contraction) of a metal		
		Performance Specifications: Should be able to demonstrate thermal expansion (and contraction) of a metal		
		Design Specifications:		
		1. The ring and ball set demonstrates thermal expansion.		
		2. Comprising of a captive brass ball secured to a mounted brass ring by a chain.		
		3. Diameter of Ball : 24.99-25.01mm, smooth surface		
		4. Inside Diameter of Ring : 25.03-25.06 mm, smooth surface		
		5. Outside Diameter of Ring: of 36-38 mm		
		6. Thickness of Ring: 4-6 mm		
		7. Diameter of Brass Stem: 4-5mm		
		8. Handle of brass ring made of wood.		
9. Chain is made of stainless steel with a 3-turn stainless wire ring to keep the ball in the chain during heating.				
<b>38</b>	<b>Ripple Tank Set</b>	Functional Specifications: Used to demonstrate properties of transverse waves		
		Performance Specifications: Should be able demonstrate properties of transverse waves		
		Design Specifications:		

	1. Tank: 54.5-55 cm x 54.5-55 cm , with foam beaches perimeter to damp reflections, with 4 detachable legs with leveling screws, height of legs: 54.5-50 cm,		
	2. Glass bottom: 39.5-55 cm x 39.5-55 cm		
	3. Should include the following accessories:		
	a) 1-ripler bar with electronic frequency controller (digital)		
	b) 1-hand rippler bar		
	c) 2-spherical dippers, removable		
	d) 4-parafin blocks		
	e) 1-glass plate, 21.5-22 cm x 29.5-30 cm		
	f) 1-parabolic reflector 1-plastic viewing screen, white, 61.5-62 cm x 61.5-62 cm		
	4. Light Source:		
	a) LED light source 12 volts, 5 watts		
	b) with electronic controlled strobe to synchronize with frequency controller		
	c) detachable and adjustable mounting unto the tank		
	d) black shielded with ventilation		
	5. With frequency display unit that indicates synchronizing frequency between the controller and the strobe		
	6. With English User's Manual that includes Assembly and Operation Guide		
	7. Branded and permanently marked on the item		
	8. Comes with a training video that shows the actual equipment submitted and approved during the sample evaluation and shall contain the following:		
	I. Training Video Contents:		

		<ul style="list-style-type: none"> <li>a. Name of the equipment</li> <li>b. Parts of the equipment</li> <li>c. Instruction on how to use the equipment</li> <li>d. Sample Experiment/Activity using the equipment</li> <li>e. Maintenance of the equipment</li> <li>f. Troubleshooting</li> <li>g. Storage and safekeeping (include cleaning) of the equipment</li> </ul>		
		II. Training Video details:		
		<ul style="list-style-type: none"> <li>a. Shall be in MP4 format.</li> <li>b. Shall be saved in a USB 3.0 Flash Drive.</li> <li>c. Shall have a High-Definition resolution of at least 1080p.</li> <li>d. Shall have a readable subtitle (font style &amp; size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle.</li> <li>e. Shall comply an aspect ratio of 4:3.</li> <li>f. Shall have a cover video pane containing the equipment name and a video pane for each video content.</li> <li>g. The video, voiceover (audio), and subtitle shall be in sync.</li> <li>h. The training video shall cover all the above requirement (video contents).</li> </ul>		
<b>39</b>	<b>Slinky Coil, metal</b>	Functional Specifications: Used to demonstrate longitudinal waves		
		Performance Specifications: Should be able to demonstrate longitudinal waves		
		Design Specifications:		
		<ul style="list-style-type: none"> <li>1. 2.875-3 inches diameter x 3.875-4 inches long</li> <li>2. zinc or nickel plated</li> </ul>		
<b>40</b>	<b>Sound Resonance Set: Loud Speaker</b>	Functional Specifications: Used to provide continuous sound tone of certain frequency		



		Performance Specifications: Should be able to provide continuous sound tone of certain frequency		
		Design Specifications:		
		1. For connection to the sound signal generator, 1.875-2 inches cone diameter		
		2. 1 watt, all frequency, 4 Ohms to 8 Ohms impedance		
		3. No enclosure, mounted on an open board with stand to match height of resonance tube Height of loudspeaker with stand: center of loudspeaker 50-52 mm height from table surface to match with height of resonance tube (please see resonance tube specifications)		
		4. Binding post terminal connectors conveniently located, should not block opening of resonance tube during activity, color coded encapsulation red for positive, black for negative		
		5. Brand name permanently marked on the item		
<b>41</b>	<b>Sound Resonance Set: Resonance Tube, close-ended</b>	Functional Specifications: Used to vary the length of air column to produce resonance of sound coming out from the loudspeaker		
		Performance Specifications: Should be able to vary the length of air column to produce resonance of sound coming out from the loudspeaker		
		Design Specifications:		
		1. With plastic stopper fixed on one end of inner tube		
		2. Outer tube: OD: 61-70 mm diameter, 1025-1035 mm long: with detachable rubber plug on free end for safe transport of inner-outer tube assembly 3. Inner tube: OD: 48-50 mm, 1095-1100 mm long, With permanent graduation with mm scale at 1 mm division to		

		indicate length of air column as the inner tube is pushed or pulled along the outer tube; print should resist rubbing, no sign of fade after 100 slides; inner tube with good quality air sealing material (felt cloth)		
		4. With rigid and stable stand to make effective height of outer tube align with loudspeaker cone (please see loudspeaker specifications)		
		5. Height including stand: center of outer tube elevated by 50-52 mm from the surface)		
		6. With English User's Manual that includes Operation Guide		
		7. Brand name permanently marked on the item		
<b>42</b>	<b>Sound Resonance Set: Tone Generator</b>	Functional Specifications: Used to control the frequency, loudness and quality of electrical signal fed to the		
		loudspeaker to produce sound tone		
		Performance Specifications: Should be able to control the frequency, loudness and quality of electrical signal fed to the loudspeaker to produce sound tone		
		Design Specifications:		
		1. Should be able to generate 20 Hz-20 kHz frequency sine waves; with digital display readout of frequency setting		
2. Frequency setting on unit should match to measured sound output coming out from connected loudspeaker within 3%. Example if the sound generator is set to produce sound of 256 Hz the measured sound frequency coming out from loudspeaker should be in the range 248-264 Hz.				
3. Should be able to produce pure tones free from unwanted signals (smooth sine waves without harmonics)				

		4. Maximum sound output from connected loudspeaker: 55 dB to 65 dB at 1kHz measured at 8-12 cm distance between loudspeaker and sound measuring instrument		
		5. With terminals for external connection to loudspeaker and to oscilloscope		
		6. Power supply: 4.5 volts -12 volts DC internal by way of dry cells or external by way of appropriate adapter		
		7. With English User's Manual that includes Operation Guide		
		8. Comes with a training video that shows the actual equipment submitted and approved during the sample evaluation and shall contain the following:		
		I. Training Video Contents:		
		a. Name of the equipment b. Parts of the equipment c. Instruction on how to use the equipment d. Sample Experiment/Activity using the equipment e. Maintenance of the equipment f. Troubleshooting g. Storage and safekeeping (include cleaning) of the equipment		
		II. Training Video details:		
		a. Shall be in MP4 format. b. Shall be saved in a USB 3.0 Flash Drive. c. Shall have a High-Definition resolution of at least 1080p. d. Shall have a readable subtitle (font style & size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle. e. Shall comply an aspect ratio of 4:3. f. Shall have a cover video pane containing the equipment name and a video pane for each video content.		

		g. The video, voiceover (audio), and subtitle shall be in sync. h. The training video shall cover all the above requirement (video contents).		
		8. Brand name permanently marked on the item.		
<b>43</b>	<b>Strobe Light</b>	Functional Specifications: Used to provide flashes of light so that fast rotating objects appear to freeze		
		Performance Specifications: Should be able to provide flashes of light so that fast rotating objects appear to freeze		
		Design Specifications:		
		1. Light source: white LED		
		2. Variable frequency range: 2.5 Hz-250 Hz, variable		
		3. Power source: Rechargeable alkaline/li-ion/li-po batteries with corresponding charger (both included in package) AND/OR unit operates directly from DC adapter, DC adapter should be included		
		4. With English User's Manual that includes operation guide		
	5. Brand name permanently marked on the item			
<b>44</b>	<b>Switch, Knife type, Single Pole Single Throw</b>	Functional Specifications: Used to open and close an electrical circuit		
		Performance Specifications: Should be able to open and close an electrical circuit		
		Design Specifications:		
		1. Single pole Single Throw Knife type switch Knife dimensions : 0.7- 0.8 mm x 7-8 mm x 53-55 mm, nickel plated brass Plastic handle dimensions : 8-10 mm x 8-10 mm x 20-25 mm		
2. Contact plates for knife dimensions : 7-8 mm x 18-20 mm, nickel plated brass,				

		thickness of material 0.48-0.5 mm		
		3. Knife switch-contact plates assembly mounted on black plastic base: 10-20 mm x 58-65 mm x 93-95 mm, thickness of base: 1.8-3 mm		
		4. Binding post terminals, threaded, can accommodate standard 4 mm banana plug, brass material, with yellow plastic encapsulation		
		5. Internal connectors properly soldered to eyelet of binding posts;		
		6. Switch fixations should survive 100 continuous on-off operation cycles, without signs of wear and tear		
		7. Brand name permanently marked on the item		
<b>45</b>	<b>Ticker Timer Set</b>	Functional Specifications: Used to measure and record short time intervals by marking "ticks" on paper tape		
		Performance Specifications: Should be able to measure and record short time intervals by marking "ticks" on paper tape		
		Design Specifications:		
		1. Operates on 6 to 12V a.c. power supply. Has a plastic base and screw type binding posts;		
		2. Supplied with: a) 38-40 mm diameter carbon paper disc, 100 pcs; b) 13-15 mm wide ticker tape, 3 rolls; c) C-clamp		
		3. Brand name permanently marked on the item		
<b>46</b>	<b>Toy Car, non-friction, non-battery</b>	Functional Specifications: Used to demonstrate that some things like people can make objects move		
		Performance Specifications: Should be able to demonstrate that some things like people can make objects move		
		Design Specifications:		

		1. Dimensions: 49.5-60 cm x 29.5-30 cm x 24.5-34 cm (L x W x H)		
		2. Material: plastic, any color or color combination		
		3. 4-wheels free to turn		
		4. not driven by any power source or winding mechanism except by pushing or pulling by people		
<b>47</b>	<b>Tuning Fork Set</b>	Functional Specifications: Used to produce sound tones of fixed frequencies that correspond to the frequencies of the first octave in the diatonic scale		
		Performance Specifications: Should be able to produce sound tones of fixed frequencies that correspond to the frequencies of the first octave in the diatonic scale		
		Design Specifications:		
		1. 8 piece tuning forks with standard Scale Letter and Frequencies: C=256 Hz, D=288 Hz, E=320 Hz, F=341 Hz, G=384 Hz, A=426 Hz, B=480 Hz, C=512 Hz		
		2. Aluminum alloy, non-magnetic, handle: 4-4.5 cm length		
		3. Frequency and scale letter stamped on each fork		
		4. With rubber mallet		
		5. Measured sound output frequency should be within 1% of frequency rating stamped on each tuning fork		
		6. Should be able to produce pure tones free from unwanted signals (smooth sine waves without harmonics)		
		7. Brand permanently marked on the storage box		
<b>48</b>	<b>Vacuum Tube and Manual Vacuum Pump</b>	Functional Specifications: Used to demonstrate the effect of air resistance on the motion of freely falling objects		
		Performance Specifications: Should be able to demonstrate		

	the effect of air resistance on the motion of freely falling objects		
	Design Specifications:		
	A. Vacuum tube:		
	1. 905-910 mm long x 53-60 mm diameter, transparent acrylic		
	2. With stopcock mounted in a rubber stopper on one end, and solid rubber stopper on the other end		
	3. Supplied with 12-13 inches long vinyl tubing for connection to vacuum pump		
	4. Includes metal disc and a feather as specimens		
	B. Vacuum pump:		
	1. Hand operated		
	2. With pressure gauge		
	3. Pump is sealed, self-lubricating, with removable cap, and elastic valve		
	4. Fixed on outer port to provide quick vacuum release		
	5. Nozzle fits standard 1/4 inch diameter tubing		
	6. Brand permanently marked on the item		

**STATEMENT OF COMPLIANCE**

I hereby commit to provide the above specified requirements in compliance with the Technical Specifications for the Project: **Mass Production, Supply, and Delivery of Science and Mathematics Equipment Packages to Public Elementary for Grades 1 to 3 & Grades 4 to 6, Public Junior High Schools for Grades 7 to 10, and Public Senior High Schools for Grades 11 to 12 (CORE & STEM) (Early Procurement Activity)**

\_\_\_\_\_  
Name and Signature of Authorized representative

## ***Section VIII. Checklist of Technical and Financial Documents***





Republic of the Philippines  
Department of Education  
**Procurement Management Service**

**BIDS AND AWARDS COMMITTEE VI**  
*CHECKLIST FOR BID OPENING*  
*(GOODS AND SERVICES)*

**Project: Mass Production, Supply, and Delivery of Science and Mathematics Equipment Packages to Public Elementary for Grades 1 to 3 & Grades 4 to 6, Public Junior High Schools for Grades 7 to 10, and Public Senior High Schools for Grades 11 to 12 (CORE & STEM) (Early Procurement Activity)**

Project No.: **2024-BLR4(002)-BVI-CB-003**

ABC: **PhP2,073,024,444.04**

End-User/PMO:

Date, Time & Venue of Bid Opening:

Name of Bidder: \_\_\_\_\_

	DOCUMENT	REMARKS		
		Info / Details	Lead Partner	JV Partner
<b>I.</b>	<b>TECHNICAL COMPONENT</b>			
1	One (1) original copy, two (2) copies and (1) USB/flash drive			
2	Valid <b>Certificate of PhilGEPS Registration (Platinum Membership)</b>	Certificate No.		
		Date Issued		
		Valid Until		
3	Duly signed statement of <b>all ongoing government and private contracts</b> , including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid.	Total Amount		
4	The prospective bidder should have completed, within a period of <b>ten (10) years</b> immediately preceding the deadline for submission of bids, a duly signed statement of <b>Single Largest Completed Contract (SLCC)</b> similar to the contract to be bid and the value of which, adjusted, if necessary, by the Bidder to current prices using the Philippine Statistics Authority (PSA) consumer price index, must be <b>at least fifty percent (50%)</b> of the ABC of the lot bid for;  <b>OR</b>  <b>at least two (2) similar contracts</b> and the total of the aggregated contract amount should be equivalent to <b>at least fifty percent (50%)</b> of the ABC of the lot bid for, and the largest of these similar contracts must be equivalent to <b>at least twenty-five percent (25%)</b> of the ABC of the lot to be bid.  For the purpose of the track-record requirement, contracts similar to the Project shall refer to:	Year <i>(not earlier than _____)</i>		
		Name of Contract (SLCC) <i>at least 50% of the ABC of the lot bid for (PhP_____)</i>		
		Amount of SLCC		
		<i>Sufficient or Insufficient</i>		
		<b>OR</b>		
		Total No. of Aggregate Contracts		
		Total Amount of largest stated contract <i>at least 12% of the ABC of the lot bid for (PhP_____)</i>		

	a. For Mass Production Items (LOT 3: DEVELOPED STORAGE CABINETS): "Manufacture and Supply and Delivery of Metal Product"  b. For Market Items (LOTS 1, 2, 4 to 14): "Supply and Delivery of Science and/or Mathematics Equipment"	<i>Sufficient or Insufficient</i>		
5	Original copy of <b>Bid Security, OR</b>	Form		
		Issuing Firm		
		Amount		
		End of Validity		
		<i>Sufficient or Insufficient</i>		
6	Original notarized <b>Bid Securing Declaration</b> , an undertaking which states, among others, that the bidder shall enter into contract with the procuring entity and furnish the required performance security within ten (10) calendar days from receipt of NOA, and committing to pay the corresponding fine and be suspended for a period of time from being qualified to participate in any government procurement activity in the event it violates any of the conditions stated therein as required in the guidelines issued by the GPPB	Form		
		Issued By		
		Notary Public		
		PTR No.		
7	Bidder's Technical Specifications in conformity with <b>Section VI. Schedule of Requirements</b> and <b>Section VII. Technical Specifications</b> , with bidder's statement of compliance and original signature of bidder's authorized signatory	Schedule of Requirements		
		Technical Specifications		
8	Original duly signed <b>Omnibus Sworn Statement (OSS)</b> ; and if applicable, <b>Original Notarized Secretary's Certificate</b> in case of a corporation, partnership, or cooperative; or <b>Original Special Power of Attorney</b> of all members of the joint venture giving full power and authority to its officer to sign the OSS and do acts to represent the Bidder.  (Note: <b>For Partnership</b> , in case the owner of the company will sign, submit the bid documents, and personally participate in the bid, the <b>Special Power of Authority (SPA)</b> is <b>NOT</b> needed. In lieu of SPA, an <b>Affidavit</b> shall be submitted stating therein that he is the owner of the company, can sign documents, and transact business for his company. However, in case he is represented by an agent or authorized representative, a SPA shall be submitted).	Notary Public		
		PTR No.		
		Name of Authorized Representative		
		Position/ Designation		
		Notary Public		
		PTR No.		
9	Duly signed Computation of <b>Net Financial Contracting Capacity (NFCC)</b> which shall be at least equal to the ABC being bid; or	Current Assets		
		Current Liabilities		
		Ongoing Projects		
		TOTAL NFCC		
10	<b>Committed Line of Credit or Credit Line Certificate</b> at least equal to ten percent (10%) of the ABC to be bid.	Issuing bank		
		Amount of CLC		
		<i>Sufficient or Insufficient</i>		
11	If applicable, a duly signed <b>Joint Venture Agreement (JVA)</b> in case the joint venture is already in existence; <b>or</b> duly <b>notarized statements</b> from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful.	Official Representative and percentage of share and interest		

12	For foreign bidders claiming by reason of their country's extension of reciprocal rights to Filipinos] Certification from the relevant government office of their country stating that Filipinos are allowed to participate in government procurement activities for the same item or product.			
13	For foreign bidders, a Certificate of Authentication from the Department of Foreign Affairs shall be required for each document submitted, i.e. the Class "A" documents or its equivalent that are written in foreign language, translated to English, and duly authenticated by the appropriate Philippine foreign service establishment/post or the equivalent office having jurisdiction over the foreign bidder's affairs in the Philippines.			
<b>II</b>	<b>FINANCIAL COMPONENT</b>			
1	One (1) original copy, Two (2) copies, and One (1) USB/flash drive			
2	Duly signed original copy of <b>Financial Bid Form</b>	Amount		
		Valid Until		
3	Duly signed original copy of <b>Price Schedule Form</b> ( <i>Annex B</i> )			
<b>III</b>	<b>OPTIONAL (Section III, BDS Clause 20.1) in a separate envelope</b>			
1	Latest income and business tax returns:  Printed copies of the electronically filed Income Tax and Business Tax Returns with a copy of their respective Payment Confirmation Forms for the immediately preceding calendar/tax year from the authorized agent bank;  Only tax return filed and taxes paid through the BIR Electronic Filing and Payments Systems (EFPS) shall be accepted.	Taxpayer Identification Number		
		Tax Period		
		Date Filed		
		Revenue District Office		
		Reference No.		
		Date Received by BIR		
2	Registration certificate from SEC, DTI for sole proprietorship, or CDA for cooperatives, or any proof of such registration	OR No.		
		DTI Cert. No.		
		SEC Reg. No.		
		CDA Registry No.		
		Registration Date		
3	Mayor's permit issued by the city or municipality where the principal place of business of the prospective bidder is located	Expiration Date		
		Mayor's Permit No.		
		Place of Issue		
		Issuance Date		
4	Tax Clearance per Executive Order 398, Series of 2005	Expiration Date		
		TCC No.		
		Issuance Date		
5	Audited financial statements, stamped "received" by the BIR or its duly accredited and authorized institutions, for the preceding calendar year, which should not be earlier than two (2) years from bid submission, showing among others the total and current assets and liabilities	Expiration Date		
		Year		
		Auditor		

6	Post-Qualification documents (if Bidder opted to submit post-qualification documents during the submission and opening of bids)			
---	---	--	--	--

*Note: The bidder must carefully read the full description of the above requirements, and submit the said requirements as specified.*

*The bidders are required to provide a Table of Contents, and corresponding label for each submitted technical and financial component document to ensure that the submitted requirements are complete, and facilitate easier examination and/or evaluation of the documents by the BAC.*

**LIST OF ALL ONGOING GOVERNMENT & PRIVATE CONTRACTS INCLUDING CONTRACTS AWARDED BUT NOT YET STARTED**

Business Name : \_\_\_\_\_

Business Address : \_\_\_\_\_

Name of Contract/ Project Cost	Owner's Name a. Address b. Telephone Nos.	Nature of Work	Bidder's Role		Date Awarded a. Date Started b. Date of Completion	% of Accomplishment		Value of Outstanding Works / Undelivered Portion
			Description	%		Planned	Actual	
<u>Government</u>								
<u>Private</u>								

Note: (In case of no ongoing contract, the bidder shall submit this duly signed form and indicate **"No ongoing contracts" or "None" or "Not Applicable (N/A)"** under the Column for Name of Contract (first column from left)

Submitted by: \_\_\_\_\_  
Printed Name and Signature of Authorized Representative

Designation: \_\_\_\_\_

Date: \_\_\_\_\_

**STATEMENT IDENTIFYING THE SINGLE LARGEST COMPLETED CONTRACT**

Business Name : \_\_\_\_\_

Business Address : \_\_\_\_\_

Name of Contract	a. Owner's Name b. Address c. Telephone Nos.	Nature of Work	Bidder's Role		Amount at Award Amount at Completion c. Duration	Date Awarded Contract Effectivity Date Completed Contract Performance certified by End User
			Description	%		
<u>Government</u>						
<u>Private</u>						

Note: The bidder shall be able to support this statement with:

Duly signed Contracts/Purchase Orders (POs)/ Agreements/Memoranda of Agreement (MOA)/Notices of Award (NOA)/Job Orders or Notices to Proceed (NTP) with the corresponding

Certificates of Completion of Delivery (CCDs)/ Certificates of Final Acceptance (CFAs)/duly signed Delivery Receipts (DRs), or duly accomplished Inspection and Acceptance Reports (IARs)

Submitted by : \_\_\_\_\_

(Printed Name and Signature)

Designation : \_\_\_\_\_

Date : \_\_\_\_\_

## Joint Venture Agreement Form

\_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS:

That this JOINT VENTURE AGREEMENT is entered into By and Between \_\_\_\_\_, of legal age, (civil status), owner/proprietor of \_\_\_\_\_ and a resident of \_\_\_\_\_.

- and -

\_\_\_\_\_, of legal age, (civil status) \_\_\_\_\_, owner/proprietor of \_\_\_\_\_ and a resident of \_\_\_\_\_.

THAT both parties agree to join together their manpower, equipment, and what is needed to facilitate the Joint Venture to participate in the Eligibility, Bidding and Undertaking of the hereunder stated project to be conducted by the (Name of the Procuring Entity).

<i>NAME OF PROJECT</i>	CONTRACT AMOUNT

That both parties agree to be jointly and severally liable for the entire assignment.

That both parties agree that \_\_\_\_\_ and \_\_\_\_\_ own the share and interest of \_\_\_\_\_ and \_\_\_\_\_ [indicate percentage of shares) respectively

That both parties agree that \_\_\_\_\_ and/or \_\_\_\_\_ shall be the Official Representative of the Joint Venture, and is granted full power and authority to do, execute and perform any and all acts necessary and/or to represent the Joint Venture in the bidding as fully and effectively and the Joint Venture may do and if personally present with full power of substitution and revocation.

THAT this Joint Venture Agreement shall remain in effect only for the above stated Projects until terminated by both parties.

Done this \_\_\_\_\_ day of \_\_\_\_\_, in the year of our Lord \_\_\_\_\_.

\_\_\_\_\_

SIGNED IN THE PRESENCE OF:

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Witness

REPUBLIC OF THE PHILIPPINES) S.S.  
PASIG CITY, METRO MANILA )

A C K N O W L E D G M E N T

BEFORE ME, a Notary Public in and for Pasig City, Metro Manila,  
Philippines, this \_\_ day of \_\_\_\_\_, 201\_ personally appeared:

<u>NAME</u>	<u>GOVERNMENT-ISSUED IDENTIFICATION CARD</u>		
	<u>Number</u>	<u>Issued on</u>	<u>Issued at</u>
_____	_____	_____	_____
_____	_____	_____	_____

Known to me and to me known to be the same persons who executed the foregoing instrument and acknowledged to me that same is the free and voluntary act and deed of the entities which they respectively represent.

The foregoing instrument is a JOINT VENTURE AGREEMENT consisting of pages (exclusive of attachments), including this page on which this acknowledgment is written and signed by the parties hereto and their instrument witnesses on the left hand margin of each and every page hereof.

WITNESS MY HAND AND SEAL on the date and place first above written.

NOTARY PUBLIC  
Until December 31, 20\_\_

Doc. No.  
Page No.  
Book No.  
Series of 20\_\_\_\_



**NET FINANCIAL CONTRACTING CAPACITY (NFCC) FORM**

- A. Summary of the Applicant Supplier’s/Distributor’s/Manufacturer’s assets and liabilities on the basis of the attached income tax return and audited financial statement, stamped “RECEIVED” by the Bureau of Internal Revenue or its duly accredited and authorized institution, for the preceding calendar/tax year which should not be earlier than two (2) years from the date of submission.<sup>1</sup>

Year 20		
1.	Current Assets	
2.	Current Liabilities	
3.	Total Net Worth	
4.	Total Value of outstanding or ongoing Projects	

- B. The Net Financial Contracting Capacity (NFCC) based on the above data is computed as follows:

In case of a bid involving two or more line-items, the bidder shall indicate in the NFCC from the line items bid for, in their order of priorities or preferences.

The first line-item in the order shall follow the following formula:

$$\text{NFCC} = [(\text{current assets minus current liabilities}) \times (15)] - [\text{value of all outstanding or uncompleted portions of the projects under going contracts, including awarded contracts yet to be started.}]$$

For subsequent line-items, the formula shall be as follows:

$$\text{NFCC} = [(\text{current assets minus current liabilities}) \times (15)] - [\text{value of all outstanding or uncompleted portions of the projects under going contracts, including awarded contracts yet to be started} + \text{value of the prior line item/s bid for}]$$

- C. The following are the line-items that we are bidding for, stated in the order of preference.<sup>2</sup>

**1st:**

Package/Lot/Item	Description	ABC	NFCC Formula	NFCC
			[(current assets - current liabilities) x (15)] - [value of all outstanding or uncompleted portions of the projects under going contracts, including awarded contracts yet to be started]	

<sup>1</sup> In case of a joint venture, the NFCC shall be computed based on the Audited Financial Statement of the local lead partner, unless it is shown by clear proof that the other partners to the joint venture have infused capital investment to support the operation of the local lead partner to ensure compliance with the obligations under the contracts in this projection which case the NFCC of the foreign joint venture or the minority partner of the joint venture shall be computed.

<sup>2</sup> The bidder may add tables as may show the different lots bid for and their corresponding NFCC.

**2nd:**

Package/Lot/Item	Description	ABC	NFCC Formula	NFCC
			$[(\text{current assets} - \text{current liabilities}) \times (15)] - [\text{value of all outstanding or uncompleted portions of the projects under going contracts, including awarded contracts yet to be started} + \text{ABC of 1st Package/Lot/Item bid for}]$	

**3rd:**

Package/Lot/Item	Description	ABC	NFCC Formula	NFCC
			$[(\text{current assets} - \text{current liabilities}) \times (15)] - [\text{value of all outstanding or uncompleted portions of the projects under going contracts, including awarded contracts yet to be started} + \text{ABC of 1st and 2nd Package/Lot/Item bid for}]$	

This is to certify that the aforementioned NFCC computation is sufficient for all the packages / lots / items being bid for:

Submitted by:

\_\_\_\_\_  
Name of Supplier /Distributor/ Manufacturer

\_\_\_\_\_  
Name of Authorized Representative

**Performance Securing Declaration (Revised)**  
*[if used as an alternative performance security but it is not required to be submitted with the Bid, as it shall be submitted within ten (10) days after receiving the Notice of Award]*

---

REPUBLIC OF THE PHILIPPINES)  
CITY OF \_\_\_\_\_ ) S.S.

**PERFORMANCE SECURING DECLARATION**

Invitation to Bid: [Insert Reference Number indicated in the Bidding Documents] To:  
[Insert name and address of the Procuring Entity]

I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, to guarantee the faithful performance by the supplier/distributor/manufacturer/contractor/consultant of its obligations under the Contract, I/we shall submit a Performance Securing Declaration within a maximum period of ten (10) calendar days from the receipt of the Notice of Award prior to the signing of the Contract.
2. I/We accept that: I/we will be automatically disqualified from bidding for any procurement contract with any procuring entity for a period of one (1) year for the first offense, or two (2) years **for the second offense**, upon receipt of your Blacklisting Order if I/We have violated my/our obligations under the Contract;
3. I/We understand that this Performance Securing Declaration shall cease to be valid upon:
  - a. issuance by the Procuring Entity of the Certificate of Final Acceptance, subject to the following conditions:
    - i. Procuring Entity has no claims filed against the contract awardee;
    - ii. It has no claims for labor and materials filed against the contractor; and
    - iii. Other terms of the contract; or
  - b. replacement by the winning bidder of the submitted PSD with a performance security in any of the prescribed forms under Section 39.2 of the 2016 revised IRR of RA No. 9184 as required by the end-user.

**IN WITNESS WHEREOF**, I/We have hereunto set my/our hand/s this \_\_\_\_ day of [month] [year] at [place of execution].

*[Insert NAME OF BIDDER OR ITS  
AUTHORIZED REPRESENTATIVE]  
[Insert signatory's legal capacity]  
Affiant*

**[Jurat]**  
*[Format shall be based on the latest Rules on Notarial Practice]*



Republic of Philippines



## DEPARTMENT OF EDUCATION

*DepEd Complex, Meralco Avenue, Pasig City  
Trunk Line (08) 632-13-61, Website <http://www.deped.gov.ph>*

**PROJECT:**

**CONTRACT NO.:**

### CONTRACT

**THIS CONTRACT** made and entered into this \_\_\_\_ day of \_\_\_\_\_ 2023 by and between **DEPARTMENT OF EDUCATION**, located at DepEd Complex, Meralco Avenue, Pasig City, Philippines, represented herein by its \_\_\_\_\_, \_\_\_\_\_, as per Department Order No. 23, s. 2021 (hereinafter referred to as “**DEPED**”); and \_\_\_\_\_ represented herein by its \_\_\_\_\_, \_\_\_\_\_, with office address at \_\_\_\_\_, Philippines (hereinafter referred to as “\_\_\_\_\_”), as per Secretary’s Certificate dated \_\_\_\_\_ (hereto attached as Annex “A”).

**DEPED** and \_\_\_\_\_ are collectively called “**PARTIES.**”

**WHEREAS, DEPED** invited bids for the [**Project Name**] \_\_\_\_\_ with contract duration of \_\_\_\_\_, consisting of \_\_\_\_ ( ) **packages**, and received bids from \_\_\_\_ ( ) bidders for Package No. \_\_\_\_; **DEPED** opened, read, and evaluated the bids of the \_\_\_\_ ( ) bidders and declared \_\_\_\_\_ as having the lowest calculated bid for Lot No. \_\_\_\_; after evaluation, **DEPED** post-qualified and declared the bid of \_\_\_\_\_ as the lowest calculated responsive bid for Lot No. \_\_\_\_ in the sum of **PHILIPPINE PESOS** \_\_\_\_\_ **MILLION,** \_\_\_\_\_ **THOUSAND,** \_\_\_\_\_ **and 00/100 (PhP \_\_\_\_\_) ONLY**, (hereinafter called the “Contract Price”) detailed as follows:

Lot	Description	Quantity	Approved Budget for the Contract (ABC) In Php

### NOW THIS CONTRACT WITNESSETH AS FOLLOWS:

1. In this Contract, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to;

2. The following documents as required by the 2016 revised Implementing Rules and Regulations of Republic Act No. 9184 shall be deemed to form and be read and construed as part of this Agreement, viz:
  - i. Philippine Bidding Documents (PBD);
    - a. Invitation to Bid;
    - b. Instruction to Bidders;
    - c. Bid Data Sheet;
    - d. Technical Specifications;
    - e. General and Special Conditions of the Contract;
    - f. Schedule of Requirements; and
    - g. Bid Bulletin No. 1 dated \_\_\_\_\_.
  - ii. \_\_\_\_\_'s bid, including the Eligibility Requirements, Technical and Financial Proposals, and all other documents or statements submitted;
  - iii. Performance Security;
  - iv. Notice of Award of Contract and \_\_\_\_\_'s conforme thereto; and
  - v. Other contract documents required by existing laws and/or **DEPED** in the PBD. \_\_\_\_\_ agrees that additional contract documents or information prescribed by the GPPB that are subsequently required for submission after the contract execution, such as the Notice to Proceed, Variation Order, and Warranty Security, shall form part of the Contract.
3. \_\_\_\_\_ shall post a Performance Security within ten (10) calendar days from receipt of the Notice of Award in the form and amount prescribed therein. The performance security shall be posted in favor of **DEPED**, and shall be forfeited in the event it is established that \_\_\_\_\_ is in default of any of its obligation under this contract. \_\_\_\_\_ shall be responsible for the extension of its performance security and/or undertake to renew its performance security whenever necessary, and without need of prior notice or instruction from the **DEPED**, to ensure that it is in force and effect for the whole duration of the contract and until a Certificate of Final Acceptance is duly issued.
4. The goods shall be delivered within \_\_\_\_\_ **CALENDAR DAYS** from receipt of the Notice to Proceed or as may be indicated in the Notice to Proceed. Risk and title to the goods shall not be deemed to have passed to **DEPED** until its receipt and final acceptance at the delivery site (**Designated Schools**)
5. **DEPED** shall have the right to inspect and test or cause the testing of the goods covered by the Contract, at any time or stage of contract implementation.
6. Pre-delivery and Pre-implementation Conference shall be conducted prior to the inspection of goods by the designated DepEd Inspectorate Team.
7. Prior to and for purposes of inspection, \_\_\_\_\_ shall ensure convenient access to the goods for inspection. \_\_\_\_\_ shall assign personnel to undertake the handling, unpacking, assembly, commissioning, disassembly, repacking, resealing and sorting of the goods prior to, during and after the inspection.

8. The goods shall be inspected by the designated DepEd Inspectorate Team. A turnaround period of not more than **THIRTY (30) WORKING DAYS** from the time of the receipt of the request for Pre-Delivery Inspection shall be given to **DEPED** to schedule the inspection.
9. The goods should conform to and comply with the standards mentioned in Section VI. Schedule of Requirements of the Bidding Documents, or as amended by subsequently issued Bid Bulletin, if any, and must be in accordance with the final technical specifications as approved by the Bids and Awards Committee based on the samples submitted by \_\_\_\_\_, and reflected in the post-qualification report, which is hereto attached as Annex "B" and made an integral part hereof.

Any proposal by \_\_\_\_\_ to deliver goods of different technical specifications, in lieu of those of the approved bids or samples, shall not be allowed. However, under justifiable circumstances, delivery of goods of equivalent, higher or superior technical specifications may be permitted, subject to the evaluation and favorable recommendation of the **DEPED's** end-user or implementing unit, and the approval of the herein authorized signatory. In any such case, the proposal by \_\_\_\_\_ for substitution shall be in writing and shall not result in any additional cost or undue burden to **DEPED**.

10. Goods with defects or non-compliant with the required technical specifications upon delivery shall be rejected orally or in writing by **DEPED** and replaced by \_\_\_\_\_ in accordance with the warranty provisions in the bidding documents. The replacement goods for this reason shall be subject to re-inspection. Replacement and repair of test materials shall only be applicable if the printing defects and noncompliance in the technical specifications are discovered prior to test administration. Service provider shall replace or repair defective test materials before test administration.
11. \_\_\_\_\_ shall deliver the goods to the delivery site (**DepEd CO and Schools Division Offices**). Goods delivered to sites other than the designated delivery site without **DEPED's** written authorization and/or approval may be rejected by the latter. Violation of this provision, based on documents and reports submitted and validated by the authorized receiving personnel, may be a cause for the termination of the Contract.
12. In case \_\_\_\_\_ encounters condition(s) impeding timely delivery of the goods, \_\_\_\_\_ shall promptly notify **DEPED** in writing within **five (5) calendar days** from notice of such condition(s). Any request for work suspension and/or contract period extension shall be promptly done in writing as soon as circumstances for such request have become apparent. \_\_\_\_\_ must provide sufficient proof to support any request for work suspension and/or contract period extension.
13. The Contract Price shall be paid to \_\_\_\_\_ in accordance with the following disbursement procedures:
  - 12.1. \_\_\_\_\_ may submit a request for payment based on the following: (i) cumulative quantities of goods delivered based on the schedule of deliveries and other relevant terms and conditions of the Contract, (ii) duly signed Delivery Receipts, and (iii) Inspection and Acceptance Reports (IARs), including certification by \_\_\_\_\_, duly signed and dated by the authorized representative of the **DEPED** indicating that the goods have been

delivered in accordance with the Contract. Other documents in support of a request for payment may be prescribed by **DEPED** pursuant to existing disbursement, accounting and auditing rules and procedures.

- 12.2. Payment shall be made to \_\_\_\_\_ within sixty (60) days from submission of the documents specified in SCC Clause 2.2 and other documents as may be prescribed by **DEPED**, in the following manner:
  - 12.2.1. \_\_\_\_\_ percent (\_\_\_%) of the Contract Price shall be paid to \_\_\_\_\_ upon completion of printing, packaging, labeling of primers, and delivery and acceptance of the goods by **DEPED**'s authorized representative;
  - 12.2.2. Payment shall also constitute release of the retention money in case of expiry of the warranty period or the remaining amount in case it has been utilized pursuant to the warranty provision.
14. Payments shall be subject to the "Warranty" provision in the form of either retention money in an amount equivalent to five percent (5%) the payment, or a special bank guarantee in the amount equal to five percent (5%) of the Contract Price as provided under Section 62.1 of R.A. 9184 and its Revised IRR.
  - 13.1. The warranty period of three (3) months shall reckon from the date of issuance of Certificate of Final Acceptance by **DEPED**.
15. \_\_\_\_\_ shall be liable for liquidated damages for the delay in delivery of goods in an amount equal to one-tenth (1/10) of one percent (1%) of the cost of the delayed goods scheduled for delivery, for every day of delay until such goods are finally delivered to and accepted by **DEPED**. **DEPED** shall deduct the liquidated damages from any money due or which may become due to \_\_\_\_\_, or collect from any of the securities or warranties posted by \_\_\_\_\_, whichever is convenient to **DEPED**. Once the cumulative amount of liquidated damages reaches ten percent (10%) of the Contract Price, **DEPED** may rescind or terminate the Contract, without prejudice to other courses of action and remedies available under the circumstances.
16. \_\_\_\_\_ and its employees, as agents of **DEPED**, shall uphold strict confidentiality of any information relating to this Contract. \_\_\_\_\_ shall hold Proprietary Information in strict confidence. \_\_\_\_\_ agrees not to reproduce, transcribe or disclose Proprietary Information to third parties without prior written approval of **DEPED**.
17. The **PARTIES** shall make every effort to resolve amicably and by mutual consultation any and all disputes or differences arising between the **PARTIES** in connection with the implementation of the Contract. Should such dispute not be resolved amicably, it shall be submitted to Early Neutral Evaluation pursuant to R.A. No. 9285, or the "Alternative Dispute Resolution Act of 2004," and its Implementing Rules and Regulations.

**IN WITNESS WHEREOF**, the **PARTIES** hereto have caused this Contract to be executed in accordance with governing laws on the day and year first above written.

SIGNED, SEALED AND DELIVERED BY:

\_\_\_\_\_  
Department of Education  
THE PRESENCE OF:

\_\_\_\_\_  
SIGNED IN

\_\_\_\_\_  
DEPED's Witness

\_\_\_\_\_  
's Witness

CERTIFIED FUNDS AVAILABLE:

\_\_\_\_\_  
Chief Accountant

REPUBLIC OF THE PHILIPPINES)  
\_\_\_\_\_, METRO MANILA ) S.S

**ACKNOWLEDGMENT**

**BEFORE ME**, a Notary Public in and for \_\_\_\_\_, Philippines, this \_\_\_\_ day of \_\_\_\_\_ 2023 personally appeared:

**NAME**

**GOVERNMENT ISSUED ID**

(Number, Issued On, Issued By)

\_\_\_\_\_  
Department of Education

Known to me and to me known to be the same persons who executed the foregoing instrument and acknowledge to me that the same is the free and voluntary act and deed of the entities which they respectively represent.

The foregoing instrument is a CONTRACT consisting of six (6) pages (exclusive of attachments), including this page on which this acknowledgment is written and signed by the parties hereto and their instrument witness on the left-hand margin of each and every page hereof.



WITNESS MY HAND AND SEAL on the date and place first above written.

Doc. No. \_\_\_\_\_;  
Page No. \_\_\_\_\_;  
Book No. \_\_\_\_\_;  
Series of \_\_\_\_\_.

NOTARY PUBLIC

**Bid Security (Bank Guarantee) Form**

---

WHEREAS, *[insert name of Bidder]* (hereinafter called the "Bidder") has submitted its bid dated *[insert date]* for the *[insert name of contract]* (hereinafter called the "Bid").

KNOW ALL MEN by these presents that We *[insert name of Bank]* of *[insert name of Country]* having our registered office at *[insert address]* (hereinafter called the "Bank" are bound unto the *DEPARTMENT OF EDUCATION Central Office*, (hereinafter called the "Entity"), in the sum of *[insert amount]* for which payment well and truly to be made to the said Entity the Bank binds itself, its successors and assigns by these presents.

SEALED with the Common Seal of said Bank this \_\_\_ day of \_\_\_\_\_ 20\_\_.

THE CONDITIONS of this obligation are:

1. If the Bidder:
  - (a) withdraws its Bid during the period of bid validity specified in the Form of Bid; or
  - (b) does not accept the correction of arithmetical errors of its bid price in accordance with the Instructions to Bidder; or
  
2. If the Bidder having been notified of the acceptance of its bid by the Procuring Entity during the period of bid validity:
  - (a) fails or refuses to execute the Contract Form in accordance with the Instructions to Bidders, if required; or
  - (b) fails or refuses to furnish the Performance Security in accordance with the Instructions to Bidders.

We undertake to pay to the Entity up to the above amount upon receipt of its first written demand, without the Entity having to substantiate its demand, provided that in its demand the Entity will note that the amount claimed by the Entity is due to the Entity owing to the occurrence of one or both of the two (2) conditions, specifying the occurred condition or conditions.

The Guarantee will remain in force up to and including the date *[insert days]* days after the deadline for submission of Bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Entity, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

DATE \_\_\_\_\_ SIGNATURE OF THE BANK \_\_\_\_\_  
WITNESS \_\_\_\_\_ SEAL \_\_\_\_\_  
(Signature, Name and Address)

## **Bid Securing Declaration Form**

*[shall be submitted with the Bid if bidder opts to provide this form of bid security]*

---

REPUBLIC OF THE PHILIPPINES)  
CITY OF \_\_\_\_\_) S.S.

### **BID SECURING DECLARATION** **Project Identification No.: *[Insert number]***

To: *[Insert name and address of the Procuring Entity]*

I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Bid Security, which may be in the form of a Bid Securing Declaration.
2. I/We accept that: (a) I/we will be automatically disqualified from bidding for any procurement contract with any procuring entity for a period of two (2) years upon receipt of your Blacklisting Order; and, (b) I/we will pay the applicable fine provided under Section 6 of the Guidelines on the Use of Bid Securing Declaration, within fifteen (15) days from receipt of the written demand by the procuring entity for the commission of acts resulting to the enforcement of the bid securing declaration under Sections 23.1(b), 34.2, 40.1 and 69.1, except 69.1(f), of the IRR of RA No. 9184; without prejudice to other legal action the government may undertake.
3. I/We understand that this Bid Securing Declaration shall cease to be valid on the following circumstances:
  - a. Upon expiration of the bid validity period, or any extension thereof pursuant to your request;
  - b. I am/we are declared ineligible or post-disqualified upon receipt of your notice to such effect, and (i) I/we failed to timely file a request for reconsideration or (ii) I/we filed a waiver to avail of said right; and
  - c. I am/we are declared the bidder with the Lowest Calculated Responsive Bid, and I/we have furnished the performance security and signed the Contract.

IN WITNESS WHEREOF, I/We have hereunto set my/our hand/s this\_day of *[month]* *[year]* at *[place of execution]*.

*[Insert NAME OF BIDDER OR ITS  
AUTHORIZED REPRESENTATIVE]  
[Insert signatory's legal capacity]  
Affiant*

**[Jurat]**

*[Format shall be based on the latest Rules on Notarial Practice]*

**Omnibus Sworn Statement (Revised)**  
***[shall be submitted with the Bid]***

---

REPUBLIC OF THE PHILIPPINES )  
CITY/MUNICIPALITY OF \_\_\_\_\_ ) S.S.

**AFFIDAVIT**

I, [Name of Affiant], of legal age, [Civil Status], [Nationality], and residing at [Address of Affiant], after having been duly sworn in accordance with the law, do hereby depose and state that:

1. *[Select one, delete the other:]*

*[If a sole proprietorship:]* I am the sole proprietor or authorized representative of [Name of Bidder] with office address at [address of Bidder];

*[If a partnership, corporation, cooperative, or joint venture:]* I am the duly authorized and designated representative of [Name of Bidder] with office address at [address of Bidder];

2. *[Select one, delete the other:]*

*[If a sole proprietorship:]* As the owner and sole proprietor, or authorized representative of [Name of Bidder], I have full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], as shown in the attached duly notarized Special Power of Attorney;

*[If a partnership, corporation, cooperative, or joint venture:]* I am granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], as shown in the attached [state title of attached document showing proof of authorization (e.g., duly notarized Secretary's Certificate, Board/Partnership Resolution, or Special Power of Attorney, whichever is applicable)];

3. [Name of Bidder] is not "blacklisted" or barred from bidding by the Government of the Philippines or any of its agencies, offices, corporations, or Local Government Units, foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the Government Procurement Policy Board, **by itself or by relation, membership, association, affiliation, or controlling interest with another blacklisted person or entity as defined and provided for in the Uniform Guidelines on Blacklisting;**

4. Each of the documents submitted in satisfaction of the bidding requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;

5. [Name of Bidder] is authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;

6. *[Select one, delete the rest:]*

*[If a sole proprietorship:]* The owner or sole proprietor is not related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

*[If a partnership or cooperative:]* None of the officers and members of *[Name of Bidder]* is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

*[If a corporation or joint venture:]* None of the officers, directors, and controlling stockholders of *[Name of Bidder]* is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the enduser unit, and the project consultants by consanguinity or affinity up to the third civil degree;

7. *[Name of Bidder]* complies with existing labor laws and standards; and

8. *[Name of Bidder]* is aware of and has undertaken the responsibilities as a Bidder in compliance with the Philippine Bidding Documents, which includes:

- a. Carefully examining all of the Bidding Documents;
- b. Acknowledging all conditions, local or otherwise, affecting the implementation of the Contract;
- c. Making an estimate of the facilities available and needed for the contract to be bid, if any; and
- d. Inquiring or securing Supplemental/Bid Bulletin(s) issued for the *[Name of the Project]*.

9. *[Name of Bidder]* did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.

**10. In case advance payment was made or given, failure to perform or deliver any of the obligations and undertakings in the contract shall be sufficient grounds to constitute criminal liability for Swindling (Estafa) or the commission of fraud with unfaithfulness or abuse of confidence through misappropriating or converting any payment received by a person or entity under an obligation involving the duty to deliver certain goods or services, to the prejudice of the public and the government of the Philippines pursuant to Article 315 of Act No. 3815 s. 1930, as amended, or the Revised Penal Code.**

**IN WITNESS WHEREOF**, I have hereunto set my hand this \_\_ day of \_\_, 20\_\_ at \_\_\_\_\_, Philippines.

*[Insert NAME OF BIDDER OR ITS AUTHORIZED  
REPRESENTATIVE]  
[Insert signatory's legal capacity]  
Affiant*

**[Jurat]**

*[Format shall be based on the latest Rules on Notarial Practice]*

**Performance Security (Bank Guarantee) Form**

To : The Secretary  
Department of Education  
DepEd Complex, Meralco Avenue  
Pasig City

Attention: The Chairperson  
Bids and Awards Committee

WHEREAS, *[insert name and address of Supplier]* (hereinafter called the "Supplier") has undertaken, in pursuance of Contract No. *[insert number]* dated *[insert date]* to execute *[insert name of contract and brief description]* (hereinafter called the "Contract");

AND WHEREAS, it has been stipulated by you in the said Contract that the Supplier shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS, we have agreed to give the Supplier such a Bank Guarantee;

NOW THEREFORE, we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Supplier, up to a total of *[insert amount of guarantee]* proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of *[insert amount of guarantee]* as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Supplier before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract to be performed there under or of any of the Contract documents which may be made between you and the Supplier shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until the date of your issuance of the Notice of Final Acceptance.

SIGNATURE AND SEAL OF THE GUARANTOR:

NAME OF BANK:

ADDRESS:

DATE:

## FINANCIAL BID FORM

Date: \_\_\_\_\_  
Project No: \_\_\_\_\_

The Secretary  
Department of Education  
DepEd Complex, Central Office  
Meralco Avenue, Pasig City

Attention: The Chairperson  
Bids and Awards Committee

Gentlemen and/or Ladies:

Having examined the Bidding Documents including Bid Bulletin Numbers *[insert numbers]*, the receipt of which is hereby duly acknowledged, we, the undersigned, offer to *[supply/deliver/perform]* *[description of the Goods]* in conformity with the said Bidding Documents for the sum of *[total Bid amount in words (and figures)]* or such other sums as may be ascertained in accordance with the Schedule of Prices attached herewith and made part of this Bid.

We undertake, if our Bid is accepted, to deliver the goods in accordance with the delivery schedule specified in the Schedule of Requirements.

If our Bid is accepted, we undertake to provide a performance security in the form, amounts, and within the times specified in the Bidding Documents.

We agree to abide by this Bid for the Bid Validity Period specified in BDS provision for ITB Clause 17.1 and 18.2, respectively, and it shall remain binding upon us and may be accepted at any time before the expiration of that bid validity period.

Until a formal Contract is prepared and executed, this Bid, together with your written acceptance thereof and your Notice of Award, shall be binding upon us.

We understand that you are not bound to accept the lowest or any Bid you may receive.

We certify/confirm that we comply with the eligibility requirements as per ITB Clause 5 of the Bidding Documents.

We likewise certify/confirm that the undersigned, *[for sole proprietorships, insert: as the owner and sole proprietor or authorized representative of Name of Bidder, has the full power and authority to participate, submit the bid, and to sign and execute the ensuing contract, on the latter's behalf for the Name of Project of the Name of the Procuring Entity]* *[for partnerships, corporations, cooperatives, or joint ventures, insert: is granted full power and authority by the Name of Bidder, to participate, submit the bid, and to sign and execute the ensuing contract on the latter's behalf for Name of Project of the Name of the Procuring Entity].*



We, further, confirm that, for purposes of this bid, and if such Bid is accepted, the address stated below shall be the Supplier's official address and contact numbers, as reflected in the *(state proof of billing e.g. PhilGEPS Certificate, Mayor's Permit, SEC, Tax Clearance)*

We acknowledge that failure to sign each and every page of this Bid Form, including the attached Schedule of Prices, shall be a ground for the rejection of our bid.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_\_.

[signature over printed name of  
Authorized Representative] \_\_\_\_\_

\_\_\_\_\_  
[in the capacity of \_\_\_\_\_ ]  
(designation of Authorized Representative)

Duly authorized to sign Bid for and on behalf of \_\_\_\_\_

[Registered Company/Business Name of the Bidder]

Address : \_\_\_\_\_

Telephone No : \_\_\_\_\_

Telefax: \_\_\_\_\_

Email address : \_\_\_\_\_

**BANK GUARANTEE FORM FOR ADVANCE PAYMENT**

To: **Department of Education**  
*[name of Contract]*

Gentlemen and/or Ladies:

In accordance with the payment provision included in the Special Conditions of Contract, which amends Clause of the General Conditions of Contract to provide for advance payment, *[name and address of Supplier]* (hereinafter called the "Supplier") shall deposit with the PROCURING ENTITY a bank guarantee to guarantee its proper and faithful performance under the said Clause of the Contract in an amount of *[amount of guarantee in figures and words]*.

We, the *[bank or financial institution]*, as instructed by the Supplier, agree unconditionally and irrevocably to guarantee as primary obligator and not as surety merely, the payment to the PROCURING ENTITY on its first demand without whatsoever right of objection on our part and without its first claim to the Supplier, in the amount not exceeding *[amount of guarantee in figures and words]*.

We further agree that no change or addition to or other modification of the terms of the Contract to be performed thereunder or of any of the Contract documents which may be made between the PROCURING ENTITY and the Supplier, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition, or modification.

This guarantee shall remain valid and in full effect from the date of the advance payment received by the Supplier under the Contract until *[date]*.

Yours truly,

Signature and seal of the Guarantors

---

*[name of bank or financial institution]*

---

*[address]*

---

*[date]*

# SEALING AND MARKING OF BIDS

GOODS AND SERVICES

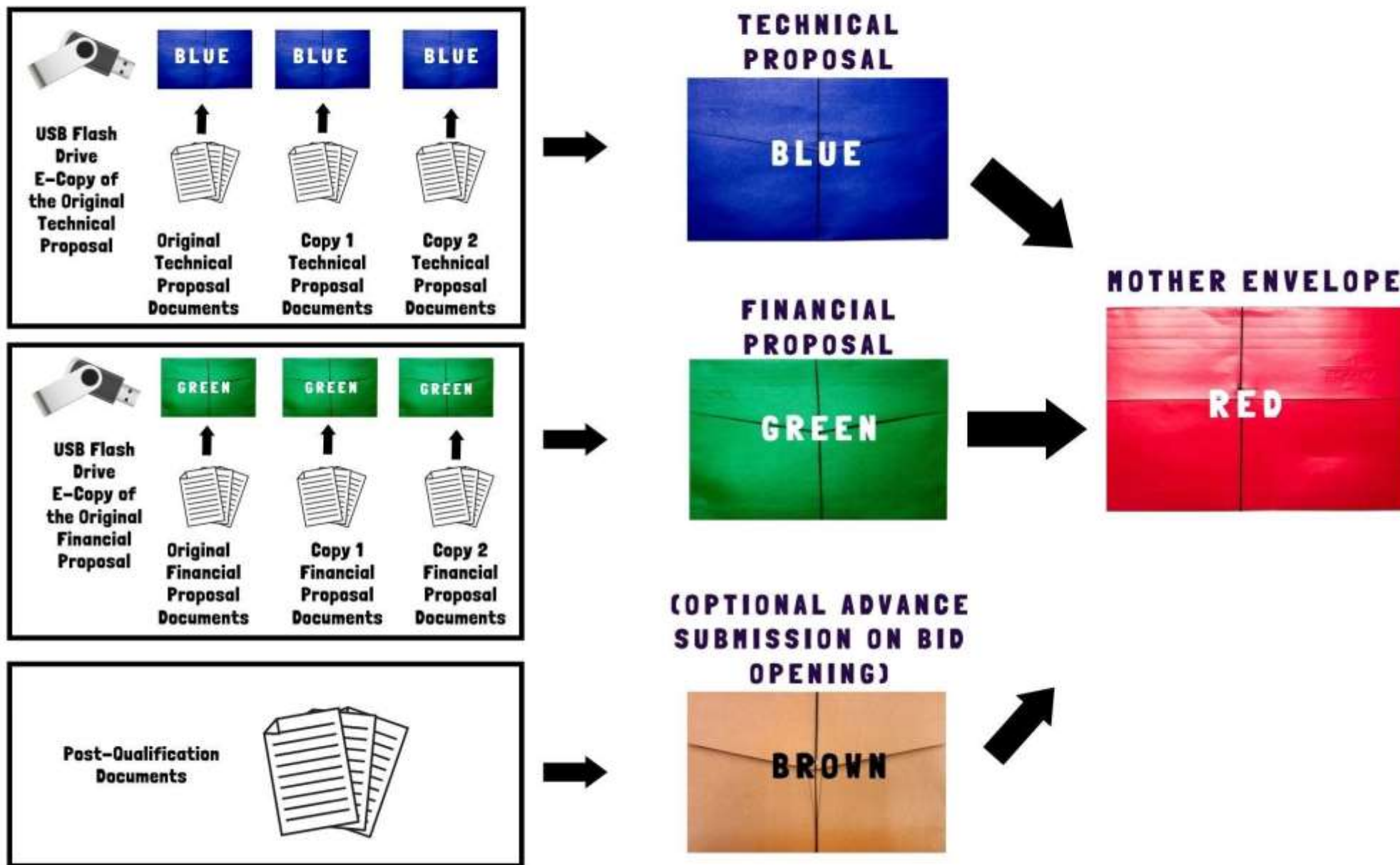


Illustration 1

ORIGINAL / COPY NO. \_\_\_

[BIDDER'S COMPANY NAME]

[COMPANY'S OFFICE ADDRESS] PUBLIC BIDDING:

[PROJECT TITLE]:

BIDDING FOR [no.] : [item description] (if applicable)

THE CHAIRPERSON BIDS AND AWARDS COMMITTEE  
DEPARTMENT OF EDUCATION CENTRAL OFFICE  
[VENUE OF BID OPENING]

***DO NOT OPEN BEFORE [TIME AND DATE OF BID OPENING]***

Republic of the Philippines



Government Procurement Policy Board