ANNEX "D"

General Inspection Protocol

A. This general protocol shall serve as a guide in the conduct of the Evaluation Samples/predelivery inspection for all market items (where the following statement is applicable).

a.) verify/evaluate the parameters of the goods or product as indicated in the specifications e.g. material, dimensions, capacity, power rating, etc.;

b.) check the goods for any evidence of defects visually as follows:
- i) rust formation
- ii) cracked/broken parts
- iii) warps/dents
- iv) loose parts
- v) discoloration

c.) look into the completeness of parts/accessories;

d.) all goods powered by dry cell (AA, AAA, etc.) shall be included with corresponding batteries ready for use;

e.) the bidder shall unbox, set up (if applicable), and manipulate the goods to be evaluated and shall perform corresponding performance and/or functionality tests.

f.) Markings and Labels shall be in English, with correct spelling, permanent.

g.) For models with key card, verify and identify the structures if correct.

h.) The bidder/supplier shall provide the materials and consumables.

Lot No.	Item Number	Description	INSPECTION and TEST PROCEDURES
I. MASS PRODUCTION ITEMS			
	BLR-DEVELOPED STORAGE CABINETS		
1	1	BLR-developed Storage Cabinet	(a) In the evaluation of sample, the technical specifications, as part of the Contract, will be used as reference. However, in the pre-delivery inspection, it will be the approved sample that will be used as reference. On the individual parts (when the cabinet is at its collapse state): (b) Conduct visual inspection of the individual parts. The material/s must conform to what is specified in the technical specifications. There must be no deformities, breakage, sharp edges, cracks, chipped edges, scratches, dents, and other defects on the individual parts. (c) Do dimensional inspection of the individual parts. Measure lengths, widths, heights, thicknesses, holes, distances between holes, etc.

			(d) Check the surface finish. Surface that needs powder coating, as specified in the technical specifications, must be powder-coated. (e) Inspect the doors, the transparent Plexiglass (acrylic), and the rubber linings. Note: There must be no cracks, warping, bending, scratches, and other defects on the transparent Plexiglass (acrylic). (f) Check the door lock and its keys. Check the door handles, detachable shelf supports, and hinges. (g) Inspect the top cover, bottom cover, side covers, back covers, and the shelves. Check the holes for the detachable shelf supports. (h) Check the fittings of the lock posts of the top cover, front base, and rear base to the (square) openings of the side and back covers. (i) Check the bolts and nuts. Check the rivets. (j) Check the welds and their locations. Note: Messy or untidy welds are not acceptable. On the Assembly: (k) The assembled cabinet will be subjected to stress test by moving it sideways, forward, and backward and tilt 30 degrees both ways from the vertical position. During stress test, if the assembled cabinet is found not sturdy and defects are noted, it will be subjected to re-inspection to verify the quality of welded joints, locking rivets, bolts, nuts, and their spacing and determine whether these conform to the technical specifications. (l) Do dimensional inspection of the assembly. Measure the height, width, depth, length, etc. (m) Check the uprightness of the assembly when laid flat on a (horizontal) ground. (n) Check the perpendicularity and/or parallelism of the top cover, bottom cover, side covers, and back covers with respect to each other. (o) Check the alignment of the holes (for the detachable shelf supports) both vertically and horizontally. (p) Using a spirit level, check the horizontality of the shelves when these are laid to rest on their (detachable) supports in the cabinet. Check, also, the horizontality of the top and bottom covers.

			(q) There must be no deformities, breakage, sharp edges, cracks, chipped edges, cracks, scratches, dents, and other defects on the assembly. (r) Check for gaps between the assembled parts. (s) Test the opening, closing, swinging, and locking of the doors. Check the performance of the hinges including the performance of the door lock & its keys. (t) Inspect the rivets. Check the bolts and nuts. Check their fixations. (u) Do functionality test to validate the level of performance of the cabinet by placing in it the equipment intended for it to store.
II. SCIENCE AND MATHEMATICS EQUIPMENT (MARKET ITEMS)			
	CHEMICALS		
2	1	Benedict's Solution, 100ml/bottle	A. (Refer to General Inspection Protocol) B. Tests 1.Visual Test Perform visual inspection of the following: a) Blue liquid b) With original screw type plastic packing with threaded chemical seal pack bottle. c) With full chemical name, chemical formula, the name and address of the manufacturer and appropriate hazard warning d) With manufacturing and expiry date (at least 2 years) and chemical assay e) With Certificate of Analysis and SDS (Safety Data Sheet) f) Brand printed into the product label g) Sample is brand new 2. Volumetric Test Measure the volume of the Benedict's solution using the 100 mL graduated cylinder if it is 100 mL 3. Functionality Test a) Place 5 mL each of glucose, milk and sugar solution in three test tubes. b) Pour 20 drops of Benedict's solution. c) Gently shake or swirl the test tube. d) Heat this mixture in a hot water bath for approximately 4-5 minutes. e) Take the test tube out from the bath and place in test tube rack. Cool down. f) Do the same procedures(1-5) with table sugar and

			milk Expected Result: A visible change in color occurs Glucose - a color change from clear blue to orange precipitate Milk (skim/whole) - a color change from clear blue to orange precipitate Table Sugar- still blue (non-reducing sugar) Expected Results: A positive test with Benedict's reagent is shown by a color change from clear blue to: a) blue- 0 g % (no trace of simple reducing sugar) b) green precipitate - 0.5 to 1.0 g % (traces of simple reducing sugars) c) yellow precipitate- 1.0-1.5 g % (low presence of simple reducing sugar)) d) orange precipitate - 1.5 to 2.0 g % (moderate presence of simple reducing sugar)) e) brick-red precipitate - greater than 2.0 g % (high presence of simple reducing sugar) C. Materials Beaker, 250 mL 4 pc Test tube, 16 x 150 Benedict's reagent Glucose - 5 mL Sugar, 10 g Test tube rack Stirring rod Hand gloves Safety goggles Face mask Detergent Sponge Rags/tissue paper Water Milk (skim/whole) Bunsen burner LPG with accessories
	2	Boric Acid, 100 grams / bottle	A. (Refer to General Inspection Protocol) B. Test I. Visual Inspection Perform/check the following: a) A colorless or white, odorless crystalline solid. b) With original screw type plastic packing with threaded chemical sal pack bottle.

			c) With full chemical name, chemical formula, the name and address of the manufacturer and appropriate hazard warning d) With manufacturing and expiry date (at least 2 years) and chemical assay e) With Certificate and Analysis and SDS (Safety Data Sheet) f) Brand printed into the product label g) Sample is brand new B. Get the mass of the sample = 100 g a) Weigh the empty threaded chemical seal pack bottle sample (a) using a balance b) Weigh the sample with the threaded chemical seal pack bottle (b) using same balance c) Subtract (b-a) – 100 g B. Function (flame) test a) Get a nichrome wire and make a small loop at the end by bending the wire. b) Dip the nichrome wire in hydrochloric acid to clean it c) Close the air holes and light the Bunsen burner. A yellow flame is produced d) Adjust the height of the flame. Open the air holes of the Bunsen burner so that an invisible or pale blue flame is observed e) Burn the loop end of the wire to remove any dust at the tip of the inner flame f) Dip the loop into boric acid on the nichrome wire loop and ignite it in the clear or bluish part of the flame g) Heat the loop with the boric acid at the tip of the inner blue flame Expected result: The emission of bright green color in the flame is observed, which indicated that the unknown element/io is boron present in boric acid C. Materials needed to perform test and inspection protocol Nichrome wire loop Empty threaded added chemical seal pack bottle from supplier Burner with LPG Watch glass Spatula Lighter/match Hydrochloric acid, 0.1N Hand gloves Safety goggles Face mas Detergent Sponge Water

		Rags/tissue paper
3	Bromothymol Blue	A. Inspection: 1. Shall comply with the design specifications. B. Tests: 1. Functionality test: Add 1 to 2 drops of BTB to approximately 5 m L of water in a test tube. Gently blow into the tube using a straw until the changes color to yellow (This is a commonly used pH indicator. Low levels of CO2 with BTB will appear blue. As the level of CO2 increases, the solution will gradually take a yellow tint). 2. Volumetric Test: Measure the volume using Graduated cylinder 100 mL. C. Materials Needed to Perform Inspection and Test: 1.Test Tube 2.Graduated Cylinder, 100ml 3.Water 4.Beral pipette or medicine dropper 5.Drinking straw
4	Calcium Chloride, 100 grams / bottle	A. (Refer to General Inspection Protocol) B. Test I. Visual Inspection Perform/check the following: a. White, powder, crystals or granules. b. With original screw type plastic packing with threaded chemical sea, pack bottle. c. With full chemical name, chemical formula, the name and addres of the manufacturer and appropriate hazard warning d. With manufacturing and expiry date (at least 2 years) and chemical assay e. With Certificate of Analysis and SDS (Safety Data Sheet) f. Brand printed into the product label g. Sample is brand new B.Get the mass of the sample – 100 g a. Weigh the empty threaded chemical seal pack bottle sample (a) using a balance b. Weigh the sample with the threaded chemical

		seal pack bottle (b) using the same balance c. Subtract (b-a) – 100 g C. Function (flame) test a. Get a nichrome wire and make a small loop at the end by bending the wire. b. Dip the nichrome wire in hydrochloric acid to clean it c. Close the air holes and light the Bunsen burner. A yellow flame is produced d. Adjust the height of the flame. Open the air holes of the Bunsen burner that an invisible or pale blue flame is observed e. Burn the loop end of the wire to remove any dust at the tip of the inner flame. f. Dip the loop into calcium chloride on the nichrome wire loop and ignite it in the clear or bluish part of the flame. Expected result: The emission of orange red/yellowish red color in the flame is observed, which indicated that the unknown element/ion is boron present in calcium chloride D. Materials needed to perfom test and inpsection protocol Nichrome wire loop Empty threaded chemical seal pack bottle from supplier Burner with LPG Watch glass Spatula Lighter/match Hydrochloric acid, 0.1N Hand gloves Safety goggles Face mask Detergent Sponge Water Rags/tissue paper
5	Chemicals Storage Box	A. (Refer to General Inspection Protocol) B. Test a) Visual Inspection Check all the visual attributes/parameters as per technical specifications b) Dimension test Using the tape rule, measure the dimension of the box as per Technical Specifications c) Chemicals (acid/base) Resistance Test

			a. Place one to two drops of acid/base into the box, if it resists chemical attacks. If the container showed any discoloration, deformity, or any signs of defects, it failed. If not, it passed. C. Materials needed to perfom test and inpsection Acid, HCI Base, NaOH Two (2) medicine droppers Tape rule
	6	Copper Sulfate, CuSO4, 100 grams / bottle	A. (Refer to General Inspection Protocol) B. Test I. Visual Inspection Perform/check following: a. Aa blue, odorless crystalline solid b. With original screw type plastic packing with threaded chemical seal pack bottle. c. With full chemical name, chemical formula, the name and address of the manufacturer and appropriate hazard warning d. With manufacturing and expiry date (at least 2 years) and chemical assay e. With Certificate of Analysis and SDS (Safety Data Sheet) f. Brand printed into the product label g. Sample is brand new II. Get the mass of sample = 100 g a. Weigh the empty threaded seal pack bottle sample (a) using a balance b. Weight the sample with the threaded chemical seal pack bottle (b) using the same balance c. Subtract (b-a) = 100 g III. Functionality (Flame) Test a. Get a nichrome wire and make a small loop at the end by bending the wire. b. Dip the nichrome wire in hydrochloric acid to clean it. c. Close the air holes and light the Bunsen burner. A yellow flame is produced d. Adjust the height of the flame. Open the air holes of the Bunsen burner so that an invisible or pale blue flame is observed e. Burn the loop end of the wire to remove any dust at the tip of the inner flame. f. Dip the loop into copper sulfate on the nichrome wire loop and ignite it in the clear or bluish part of the flame. g. Heat the loop with the copper sulfate at the tip of the inner blue flame

			Expected result: The emission of blue green color in the flame is observed indicating the presence of copper/ion C. Materials needed to perform inspection and test Bunsen burner with LPG Empty threaded chemical seal pack bottle from supplier Alcohol burner Lighter Denatured alcohol Nichrome wire loop Hydrochloric acid Spatula Hydrochloric acid, 0. 1N Hand gloves Safety goggles Face mas Watch glass Stirring rod Detergent Sponge Water
	7	Gentian Violet, 100 ml / bottle	A. Inspection: 1. Shall comply with the design specifications. B. Staining Test: 1. Add a drop of water at the center of a clean slide 2. Using a flat end of a clean toothpick, gently scrape the inside of your check 3. Stir the used flat end of the toothpick to the drop of wter on the slide. (Dispose the toothpick in the trash can) 4. Place one edge of the cover slip (45°) over the sample and lowering it carefully to finally cover Make sure there are no air bubbles being trapped under the cover slip. 5. Bring the glass slide on the stage of the microscope 6. Examine the specimen using the scanner (4x) and LPO (10x). Take a picture. 7. This time, take out the slide and add less than a drop of Gentian violet to one side of the cover slip. Make sure it gets into the specimen (wipe any excess with a tissue paper). 8. Bring the glass slide back on the stage and reexamine using the scanner and LPO. The visibility of the animal cell is enhanced. Take a picture for comparison.

			Note: Be careful not to break the slide. Always look at the side when you lower the body tube, to avoid damaging the mounted specimen. C. Materials Needed to Perform Inspection and Test: 1. Compound Microscope 2. Glass slide 3. Water 4. Tooth pick 5. Cover slip 6. Beral pipette 7. Tissue paper
	8	Iodine Solution, 100 ml / bottle	A. Inspection 1. Shall comply with the design specifications B. Staining Provedure: 1. Carefully cut a small selection at the topmost portion of the onion bulb, preferably the second layer 2. Peel off a very thin layer of onion skin using forceps 3. Place the thin layer of onion skin at the center of a clean slide and add a drop of water 4. Place one edge of the cover slip (45°) over the sample and carefully lowering it to finally cover. Make sure there are no air bubbles being trapped under the cover slip. 5. Bring the glass slide on the stage of the microscope 6. Examine the specimen using the scanner (4x) and LPO (10x). Take a picture. 7. This time, take out the slide and add a drop of iodine to one side of the cover slip. Make sure the iodine gets into the specimen (wipe any excess with a tissue paper) 8. Bring back the glass slide on the stage and reexamine it using the scanner and LPO. The visibility of the plant cell this time is enhanced. Take a picture for comparision. Note: Be careful not to break the slide. Always look at the side when you lower the body tube, to avoid damaging the mounted specimen. C. Materials Needed to Perform Inspection and Test: 1. Compound Microscope 2. Onin bulb 3. Forcep 4. Glass slide

		5. Cover slip 6. Beral pipette 7. Water
9	Magnesium Ribbon, 25 grams, 1 roll	A. (Refer to General Inspection Protocol) B. Test I. Visual Inspection Perform/check the following: a) Colorless, yellow fuming liquid b) With original screw type plastic packing with threaded chemical seal pack bottle c) With full chemical name, chemical formula, the name and address of the manufacturer and appropriate hazard warning d) With manufacturing and expiry date (at least 2 years) and chemical assay e) With Certificate of Analysis and SDS (Safety Data Sheet) f) Brand printed into the product label g) Sample is brand new II. Get the mass of the sample = 100 g a) Weigh the empty threaded chemical seal pack bottle sample (a) using a balance b) Weigh the sample with the threaded chemical seal pack bottle (b) using the same balance c) Subtract (b-a) = 100 g III. Function test (Synthesis/Addition reaction) a) Cut 1 pc magnesium ribbon (2.54 cm) b) Rub with sand paper c) Ignite in the hottest portion of the Bunsen/alcohol burner using a test tube holder d) Observe C. Materials needed to perform test and inspection protocol Digital balance Empty threaded chemical seal pack bottle from supplier Digital vernier caliper Test tube holder Alcohol burner Lighter Denatured alcohol Pair of scissors Sand paper

10	Manganese Dioxide, 50 grams / bottle	A. (Refer to General Inspection Protocol) B. Tests I. Visual Inspection Perform/check the following: a) Brown-black solid/ blackish or brown solid b) With original screw type plastic packing with threaded chemical seal pack bottle. c) With full chemical name, chemical formula, the name and address of the manufacturer and appropriate hazard warning d) With manufacturing and expiry date (at least 2 years) and chemical assay e) With Certificate of Analysis and SDS (Safety Data Sheet) f) Brand printed into the product label g) Sample is brand new II. Get the mass of the sample = 50 g a) Weigh the empty threaded chemical seal pack bottle sample (a) using a balance b) Weigh the sample with the threaded chemical seal pack bottle (b) using the same balance c) Subtract (b-a) = 50 g III. Function test : Decomposition reaction. a) Pour 10 mL of 10 % hydrogen peroxide into a 50 mL test tube. b) Add 1.0 g powdered manganese dioxide into the solution. Expected Result: A foamy product shoots out quickly in the vial; hence, the name elephant toothpaste. The manganese dioxide is used as a catalyst, making the reaction to proceed faster. C. Materials needed to perform inspection and test Triple beam/top loading electronic balance Empty threaded chemical seal pack bottle from supplier Test tube, 16 x 150 mL Stirring rod Spatula Hand gloves Face mask

		Safety goggles Detergent Graduated cylinder, 10 m L Sponge Rags/tissue paper
11	Microscope's Immersion Oil, 100mL/bot	A. Inspection 1. Shall comply with the design specifications B. Refractive-Index Test: 1. Take any prepared slide and view it under the microscope. 2. Consider using the oil (100x) objective. 3. Make a comparison of the images with and without the immersion oi. Take both pictures for comparison. 4. With oil, put a drop over the specimen slie and birng the oil objective (100x) into contact with the immersion oil. Placing a substance such as immersion oil with a refractive index equal to that of the glass slide (R.I.1.5) in the space filled with air, more light is directed through the objective and a clearer image is observed. 5. Clean up after. Immersion oil can (and will) penetrate the microscope components and can damage 'dry' objectives, as immersion oil can corrode the cement used to hold objective front lenses in place. Clean the immersion objective with a lens paper to sweep across the surface of the objective front lens in one direction only. Continue cleaning until no oil is seen on the lens paper. Clean also the prepared slide being used. C. Materials Needed to Perform Inspection and Test: 1. Compound Microscope 2. Any perapred slide 3. Lens paper
12	Phenolphthalein, 100 grams/bottle	A. (Refer to General Inspection Protocol) B. Tests I. Visual inspection Perform/check the following: a) A white to cream, odorless solid powder b) With original screw type plastic packing with threaded chemical seal pack bottle. c) With full chemical name, chemical formula, the name and address of the manufacturer and appropriate hazard warning d) With manufacturing and expiry date (at least 2 years) and chemical assay e) With Certificate of Analysis and SDS

			(Safety Data Sheet) f) Brand printed into the product label g) Sample is brand new II. Get the mass of the sample = 100 g a) Weigh the empty threaded chemical seal pack bottle sample (a) using a balance b) Weigh the sample with the threaded chemical seal pack bottle (b) using the same balance c) Subtract (b-a) = 100 g III. Function test: phenolphthalein indicator is used to distinguish an acid from a base a) First, add 5 mL ethanol and 5 mL water in a 50 mL beaker. b) Dissolve a pinch of phenolphthalein in the beaker with the ethanol solution. Mix well using a stirring rod c) Pour 5 mL acid to a test tube and another 5 mL base to another test tube and place both test tubes in the test tube rack d) Using a medicine dropper, place 2-3 drops of phenolphthalein indicator to an acid and a base. Expected results: For a base - exhibits a pink color with a phenolphthalein indicator For an acid - no color change C. Materials needed to perform inspection and test Triple beam/toploading electronic balance Empty threaded chemical seal pack bottle from supplier Beaker, 50 mL Stirring rood Funnel, glass Ethyl alcohol Water, 5 mL Ethanol, 5 mL Pinch of phenolpthalein Acid Base Distilled water Safety goggles Face mask Medicine dropper

		Hand gloves Detergent Sponge Rag/tissue paper
13	Potassium Chloride, 100 grams / bottle	A. (Refer to General Inspection Protocol) B. Test I. Visual inspection a) White to cream, odorless solid powder b) With original screw type plastic packing with threaded chemical seal pack bottle. c) With full chemical name, chemical formula, the name and address of the manufacturer and appropriate hazard warning d) With manufacturing and expiry date (at least 2 years) and chemical assay e) With Certificate of Analysis and SDS (Safety Data Sheet) f) Brand printed into the product label g) Sample is brand new II. Get the mass of the sample = 100 g a) Weigh the empty threaded chemical seal pack bottle sample (a) using a balance b) Weigh the sample with the threaded chemical seal pack bottle (b) using the same balance c) Subtract (b-a) = 100 g III. Function test: a) Get a nichrome wire and make a small loop at the end by bending the wire. Dip the nichrome wire in hydrochloric acid to clean it b) Close the air holes and light the Bunsen burner. A yellow flame is produced c) Adjust the height of the flame. Open the air holes of the Bunsen burner so that an invisible or pale blue flame is observed d) Burn the loop end of the wire to remove any dust/impurities at the tip of the inner flame. e) Dip the loop into potassium chloride on the nichrome wire loop and ignite it in the clear or bluish part of the flame. f) Heat the loop with the potassium chloride at the tip of the inner blue flame

			Expected result: The emission of light lilac or purple color in the flame is observed which indicates the presence of potassium /ion. C. Materials needed to perform inspection and test Triple beam/toploading electronic balance Empty threaded chemical seal pack bottle from supplier Watch glass Stirring rod Bunsen burner with LPG Nichrome wire loop Hand gloves Safety goggles Face mask Detergent HCI Sponge Rag/Tissue paper Water
	14	Potassium Iodide, 100 grams / bottle	A. (Refer to General Inspection Protocol) B. Tests I. Visual inspection a) White granules or crystals b) With original screw type plastic packing with threaded chemical seal pack bottle. c) With full chemical name, chemical formula, the name and address of the manufacturer and appropriate hazard warning d) With manufacturing and expiry date (at least 2 years) and chemical assay e) With Certificate of Analysis and SDS (Safety Data Sheet) f) Brand printed into the product label g) Sample is brand new II. Get the mass of the sample = 100 g a) Weigh the empty threaded chemical seal pack bottle sample (a) using a balance b) Weigh the sample with the threaded chemical seal pack bottle (b) using the same balance c) Subtract (b-a) = 100 g III. Function test 1: Decomposition reaction. a) Pour 10 mL of 10 % hydrogen peroxide into a 50 mL vial. Dip the nichrome wire

		in hydrochloric acid to clean it b) Add 1.0 g powdered potassium iodide into the solution. Expected Result: A foamy product is produced in the vial; hence, the name elephant toothpaste. The potassium iodide is used as a catalyst, making the reaction to proceed faster Function test 2: a) Get a nichrome wire and make a small loop at the end by bending the wire. Dip the nichrome wire in hydrochloric acid to clean it b) Close the air holes and light the Bunsen burner. A yellow flame is produced c) Adjust the height of the flame. Open the air holes of the Bunsen burner so that an invisible or pale blue flame is observed d) Burn the loop end of the wire to remove any dust/impurities at the tip of the inner flame. e) Dip the loop into potassium iodide on the nichrome wire loop and ignite it in the clear or bluish part of the flame. f) Heat the loop with the potassium iodide at the tip of the inner flame. Expected Result: The emission of purple/very faint lilac (light violet) color in the flame is observed C. Materials needed to perform inspection and test 10% hydrogen peroxide Triple beam/toploading electronic balance Empty threaded chemical seal pack bottle from supplier Beaker Stirring rod Spatula Nichrome wire loop Hand gloves Safety gloves Face mask Detergent Sponge Rags/tissue paper Water Vial. 50 mL

	15	Sodium Hydroxide (Lye), 250 grams/bottle	A. (Refer to General Inspection Protocol) B. Tests I. Visula Inspection a) A white semi-transparent odorless hygroscopic solid b) With original screw type plastic packing with threaded chemical seal pack bottle. c) With full chemical name, chemical formula, the name and address of the manufacturer and appropriate hazard warning d) With manufacturing and expiry date (at least 2 years) and chemical assay e) With Certificate of Analysis and SDS (Safety Data Sheet) f) Brand printed into the product label g) Sample is brand new II. Get the mass of the sample = 250 g a) Weigh the empty threaded chemical seal pack bottle sample (a) using a balance b) Weigh the sample with the threaded chemical seal pack bottle (b) using the same balance c) Subtract (b-a) = 250 g III. Function test .Double decomposition (neutralization)reaction a) Place 200 mL water in a beaker b) Submerge the test tube with 10 mL hydrochloric acid in it. c) Add sodium hydroxide one pellet at a time into the vial with hydrochloric acid. Expected Results: A fizzing sound and a white solid, sodium chloride and water is observed Function test 2: Using the pH meter, measure the pH of the sodium hydroxide sample a) Place 1 pellet of sodium hydroxide in a test tube b) Pour 5 mL of water into it. Stir well c) Measure the pH using the pH meter Expected Results: pH reading is pH 13-14 C. Materials needed to perform inspection and test Triple beam/toploading electronic balance Steel tape/ruler Empty threaded chemical seal pack bottle from supplier Hydrocholoric acid Distilled water

		Beaker, 250 mL Graduated cylinder, 10 mL Test tube, 16 x 150 mL Watch glass Hydrochloric acid Hand gloves Face mask Safety goggles Stirring rod Watch glass Water
16	Yeast, active dry, 100 grams / bottle	A. Inspection 1. Shall comply with the design specifications. B. Proofing Test: 1. Measure 50 mL of lukewarm water (40°C) in a beaker. 2. Dissolve one (1) teaspoon of sugar. 3. Add 2 teaspoon of yeast and stir the yeast into the warm sugar solution. 4. Wait for 10 minutes. During this time, if the yeast is alive, it will start eating the sugar and fermenting into alcohol and carbon dioxide. There is foaming up (bubbles) as a sign of activation. C. Materials Needed to Perform Inspection and Test: 1. Beaker, 250 mL 2. Sugar (1 tsp) 3. Alcohol thermometer 4. Teaspoon 5. Lukewarm water
17	Zinc Chloride, 100 grams / bottle	A. (Refer to General Inspection Protocol) B. Test I. Visual inspection a) A white crystalline/granular solid powder b) With original screw type plastic packing with threaded chemical seal pack bottle. c) With full chemical name, chemical formula, the name and address of the manufacturer and appropriate hazard warning d) With manufacturing and expiry date (at least 2 years) and chemical assay e) With Certificate of Analysis and SDS (Safety Data Sheet) f) Brand printed into the product label g) Sample is brand new II. Get the mass of the sample = 100 g a) a) Weigh the empty threaded chemical seal pack bottle sample (a) using a balance

			b) Weigh the sample with the threaded chemical seal pack bottle (b) using the same balance c) Subtract (b-a) = 100 g III. Functionality Test (Flame Test) a) Get a nichrome wire and make a small loop at the end by bending the wire. Dip the nichrome wire in hydrochloric acid to clean it b) Close the air holes of the burner. A yellow flame is produced. Light the Bunsen burner. c) Close the air holes. A yellow flame is produced. d) Adjust the height of the flame. e) Open the air holes of the Bunsen burner so that an invisible or pale blue flame is observed. f) Burn the loop end of the wire to remove any dust at the tip of the inner flame. g) Dip the loop into the zinc chloride powder. h) Heat the loop with the zinx chloride at the tip of the inner flame. Expected Result: A bluish green/pale green/colorless color of the flame is observed. C. Materials needed to perform inspection and test protocol Nichrome wire, 0.4 m dia Empty threaded chemical seal pack bottle form supplier Bunsen burner LPG with accessories Spatula Lighter/a box of Match Proper Protective equipment (safety goggles, hand) Gloves, face mask Detergent Rag/tissue paper Sponge Water
	18	Zinc metal, pellets/mossy, 100 grams / bottle	A. (Refer to General Inspection Protocol) B. Test I. Visual inspection a) A bluish white, or as a grey powder/pellets/mossy b) With original screw type plastic packing with threaded chemical seal pack bottle. c) With full chemical name, chemical

			formula, the name and address of the manufacturer and appropriate hazard warning d) With manufacturing and expiry date (at least 2 years) and chemical assay e) With Certificate of Analysis and SDS (Safety Data Sheet) f) Brand printed into the product label g) Sample is brand new II. Get the mass of the sample = 100 g a) Weigh the empty threaded chemical seal pack bottle sample (a) using a balance b) Weigh the sample with the threaded chemical seal pack bottle (b) using the same balance c) Subtract (b-a) = 100 g III. Function test: single displacement (redox) reaction with copper, sulfate, with zinc acting as a reducing agent. Zinc is a reducing agent and reduces copper Procedure: a) Place 5 g copper sulfate in 50 mL beaker. Mix well using a stirring rod b) Place the zinc strip in the solution and observe c) After some time copper ions will be oxidized to copper metal while zinc metal is reduced Expected result: In this reaction, zinc atoms reduce copper ions since the copper(II) ion has substantially greater reduction potential (+0.15 V) than zinc ion (-0.76 V), it is readily reduced by zinc metal. The Cu2+ ions become Cu atoms since the two electrons that are released by zinc will be gained by the Cu2+ ions (reduction). A dark coating of copper metal appears on the zinc within two minutes and when 45 minutes have elapsed, there is a thick coat of copper metal powder on the zinc strip and the blue color of the solution has lightened considerably be left in the solution for a longer period of time, the zinc will gradually darken and decay due to oxidation to zinc ions. The blue solution will change to light blue, then eventually to colorless. The blue color of the aqueous copper(II) sulfate solution is due to the presence of the hexaaquacopper(II) ion in water. The solution becomes lighter in color as

			copper(II) ions, Cu2+(aq). in the solution is replaced by zinc(II) ions, Zn2+(aq). C. Materials needed to perform inspection and test protocol Triple beam/toploading electronic precision balance Copper sulfate Empty threaded chemical seal pack bottle from supplier Beaker Stirring rod Spatula Beaker, 50 mL Graduated cylinder, 100 mL Proper Protective equipment (safety goggles, hand gloves) Detergent Test tube brush Rag/tissue paper Water
	GLASSWARES AND LAB TOOLS		
3	1	Beaker, borosilicate, 250 mL	A. (Refer to General Inspection Protocol) B. Tests a) Visual inspection Check the visible attributes/parameters of the 250 mL beaker, borosilicate as per technical specifications b) Dimensional inspection Measure the dimensions as per technical specifications of the 250 mL beaker, borosilicate c) Scratch test Scratch using your thumb nails the brand, white graduations and inscriptions and other markings , to test for the peel and adhesion properties of embossed brand and permanency of graduations, and other markings, If it wont peel off, it passed QC inspection. If not, it is rejected d) Refractive-index test Submerge the glass into vegetable oil or glycerin to determine whether the glass material is borosilicate. Borosilicate glass is identified by its refractive index, 1.474. Immersing the glass in a container of liquid of similar refractive index, makes the glass not visible or will disappear. (Vegetable oil, 1.47 and glycerin, 1.473 are some liquids with similar refractive index as to borosilicate

			glass). e) Volumetric test a. Fill the dry beaker sample with water up to the 200 mL mark . Measure all its contents of the beaker sample using a dry, standard 100 graduated cylinder up to 200 mL and transfer the water to another beaker , to check the accuracy and preciseness of the printed graduations as stipulated in the technical specifications, is met. The capacity must be 200 mL, tolerance: ±5% b. b) Measure 250 mLwater using the standard 100 mL graduated cylinder and transfer all the contents to the beaker sample. The capacity must be 250 mL, tolerance: ±5% f) Functionality test 1. Place half- full of water in the 250 mL beaker. Use boiling stones or boiling sticks in liquids to facilitate even heating and boiling 2. Heat the beaker with water up to its boiling point of 100ºC and let it continue boiling for 3 more minutes up to 150ºC to check and verify its resistance to thermal shock without breakage, it Passed QC inspection or if it it fails to resist thermal shock, it is rejected. C. Needed Equipment and Material: 2. Digital vernier caliper 3. Steel tape measure 4. Graduated cylinder, 100 mL 5. Funnel, glass 6. Denatured alcohol 7. Rag/tissue paper 8. Glycerin (1 liter) 9. Tripod 10. Lighter 11. Wire gauze 12. Thermometer, partial immersion 13. Hand gloves 14. Face mask 15. Safety goggles 16. Boiling stones
2	Beaker, borosilicate, 50 mL		A. (Refer to General Inspection Protocol) B. Tests a) Visual inspection Check the visible attributes/parameters of the 50 mL borosilicate beaker as per

			technical specifications b) Dimension inspection Measure the dimension as per technical specifications of the 50 mL borosilicate beaker c) Scratch test Scratch using your thumb nails the brand, white graduations and inscriptions and other markings, to test for the peel and adhesion properties of embossed brand and permanency of graduations, and other markings. If it will not peel off, it passed QC inspection. if not, it is rejected d) Refractive-index test Submerge the glass into vegetable oil or glycerin to determine whether the glass material is borosilicate. Borosilicate glass is identified by its refractive index, 1.474. Immersing the glass in a container of liquid of similar refractive index, makes the glass not visible or will disappear. (Vegetable oil, 1.47 and glycerin, 1.473 are some liquids with similar refractive index as to borosilicate glass). e) Volumetric Test a) Fill the dry beaker sample with water up to its 40 mL mark. Measure all of its contents using a standard 10 mL graduated cylinder, to check the accuracy and preciseness of the printed graduations . The capacity must be 40 mL; tolerance: ±5% b) Measure 50 mL water using a standard dry graduated cylinder and transfer all the contents to the beaker sample, to verify whether the required minimum/maximum volumetric capacity as stipulated in the technical specifications , is met. The capacity must be 50 mL, tolerance: ±5% and it must not overflow, it passed QC inspection. If not, it is rejected f) Functionality test 1. Place half- full water in the 50 mL beaker. Use boiling stones or boiling sticks in liquids to facilitate even heating and boiling 2. 2. Heat the beaker with water up to its boiling point of 100ºC and let it continue boiling for 3 more minutes up to 150ºC to check if it can resist thermal shock, it passed QC inspection. If not, it is rejected

			C. Needed Equipment and Material: 1. Digital vernier caliper 2. Steel tape measure 3. Graduated cylinder, 10 mL 4. Graduated cylinder, 100 mL 5. Funnel, glass 6. Denatured alcohol 7. Rag/tissue paper 8. Glycerin (1 liter) 9. Tripod 10. Lighter 11. Wire gauze 12. Thermometer, partial immersion 13. Hand gloves 14. Saftey goggles 15. Boilig stones 16. Detergent, sponge, water
	3	Burette, 10 mL capacity (acid)	A. (Refer to General Inspection Protocol) B. Tests a) Visual inspection Check the visible attributes/parameters of the burette as per technical specifications b) Dimension inspection Measure the dimensions as per technical specifications of the burette c) Scratch test: Scratch using your thumb nails the brand and white graduations and inscriptions and other markings of thedistilling flask; to test for the peel and adhesion properties of embossed brand and permanency of graduations, and other markings. If it wont peel off, it passed QC inspection. If not, it is rejected d) Refractive-index test. Submerge the glass into vegetable oil or glycerine) to determine whether the glass material is borosilicate. Borosilicate glass is identified by its refractive index, 1.474. Immersing the glass in a container of liquid of similar refractive index, the glass can no longer be seen or will disappear. (Vegetable oil, 1.47 and glycerine, 1.473 are some liquids with similar refractive index as to borosilicate glass e) Leak test Procedure: 1. Clean the burette. 2. Allow the temperature of burette and distilled water used for verification to equalize, 3. Note the water temperature.

4. The burette must be fixed in a vertical position in a burette clamp
5. Close the stopcock.
6. Initially fill the burette to a level a few millimetres above the zero mark/line with water.
7. With the key in one or other of the « closed » or shut off positions, the test time will last at least 30-51 minutes to ensure sufficiently accurate determination of water-tightness
8. If a drop appears, the stopcock may need to be tightened or cleaned. If the problem persists, the burette should be rejected.

   The rate of leakage for Class A burette shall not exceed one half of one scale subdivision in 30-51 min, it Passed QC inspection. If not, it is rejected

f) Delivery time
is the time required for the free descent of the water meniscus, from the zero mark to the lowest numbered scale mark, with the stopcock fully open and with no restriction of flow.
   a) Fix/mount the burette in a vertical position using the burette clamp
   b) Close the stopcock.
   c) Fill initially the burette with distilled water way up the zero mark.Open the stopcock and slowly drain the liquid to set the zero point accurately,making sure the lower meniscus is up to zero mL/mark.
   d) Fully open the stopcock making sure its tip is not in contact with the wall of the receiving vessel but at the center .
   e) Drain the water into the beaker up to the lowest numbered scale mark with the stopcock fully open and with no restriction of flow.

The delivery time determined in this way must be minimum- 70 sec. maximum: 100 sec

g) Functionality Test
   1. Add 0.33 mL of 12 N HCl to 10 ml of distilled water to obtain a 0.4 N HCl solution.
   2. Set up the burette.
   3. Fill the burette with 0.4 N hydrochloric acid slightly above the zero mark using a pipette to rinse its inside surface very well and align burette tube vertically.

4. Place a reading card at the back of the burette to take a more accurate initial reading at the level of the mensicus.
5. Drain the liquid to set the zero point accurately.
6. Pour 5 mL of the unknown NaOH solution in an Erlenmeyer flask using the 10 mL pipette and add three drops of phenolphthalein to get a pink color. Swirl the flask to mix all the substances.
7. Place the sheet of white paper under the flask for easiest recognition of the color change.
8. Begin the titration by adding HCl to the analyte. Open the stopcock and slowly add titrant to the sample in the flask
9. Gently keep swirling the flask with one hand while using the other hand to manipulate the burette adding the titrant simultaneously. Rinse the walls of the beaker and the tip of the burette with deionized water from a wash bottle when the endpoint is near. This ensures that all of the HCl delivered from the burette ends up in the reaction mixture.
10. The end point is reached when the pink color disappear and one drop changes the indicator color permanently from pink to colorless which lasts for at least 30 seconds
11. Take the reading of the burette. Volume of the acid= Final - initial reading
12. Make three or more trials

C. Materials

Beaker, 250 mL
Test tube, 16 x 150
Sodium hydroxide, 5 mL
Hydrochloric acid,10 mL, 0.4 M
Watch glass
Burette, base
Erlenmeyer flask, 250 mL
Phenolpthalein indicator
Glycerine (1L)
Stand setup assembly/tripod
Stirring rod
Hand gloves
Safety goggles
Face mask
Detergent
Sponge
Rags/tssue paper
Pipette, 10 mL with pipettor
Graduated cylinder, 10 mL

			Distilled water, 1 L Buret reading card, 3 x 5 index card White paper Funnel
	4	Burette, 10 mL capacity (base)	A. (Refer to General Inspection Protocol) B. Tests a) Visual inspection Check the visible attributes/parameters of the burette as per technical specifications b) Dimensional inspection Measure the dimensions as per technical specifications of the burette c) Scratch Test Scratch using your thumb nails the brand and white graduations and inscriptions and other markings of thedistilling flask; to test for the peel and adhesion properties of embossed brand and permanency of graduations, and other markings. If it wont peel off, it passed QC inspection. If not, it is rejected d) Refractive-index test Submerge the glass into vegetable oil or glycerine) to determine whether the glass material is borosilicate. Borosilicate glass is identified by its refractive index, 1.474. Immersing the glass in a container of liquid of similar refractive index, the glass can no longer be seen or will disappear. (Vegetable oil, 1.47 and glycerine, 1.473 are some liquids with similar refractive index as to borosilicate glass e) Leak test 1. Clean the burette. 2. Allow the temperature of burette and distilled water used for verification to 3. equalize, 4. Note the water temperature. 5. The burette must be fixed in a vertical position in a burette clamp 6. Close the stopcock. 7. Initially fill the burette to a level a few millimetres above the zero mark/line 8. with water. 9. 7.With the key in one or other of the « closed » or shut off positions, the test time 10. will last at least 30-51 minutes to ensure sufficiently accurate determination of 11. water-tightness 12. If a drop appears, the stopcock may need to be tightened or cleaned. If the 13. problem persists, the burette should be

rejected.

The rate of leakage for Class A burette shall not exceed one half of one scale subdivision in 30-51 min, it Passed QC inspection. If not, it is rejected

f) Delivery time
is the time required for the free descent of the water meniscus, from the zero mark to the lowest numbered scale mark, with the stopcock fully open and with no restriction of flow.

a) Fix/mount the burette in a vertical position using the burette clamp
b) Close the stopcock.
c) Fill initially the burette with distilled water way up the zero mark.
d) Open the stopcock and slowly drain the liquid to set the zero point accurately,making sure the lower meniscus is up to zero mL/mark.
e) Fully open the stopcock making sure its tip is not in contact with the wall of the receiving vessel but at the center .
f) Drain the water into the beaker up to the lowest numbered scale mark with the stopcock fully open and with no restriction of flow.

The delivery time determined in this way must be minimum- 70 sec . maximum: 100 sec

g) Functionality Test
1. Set up the burette. Fill the burette with 0.4 M sodium hydroxide solution slightly above the zero mark using a pipette to rinse its inside surface very well and align burette tube vertically. Place a reading card at the back of the burette to take a more accurate initial reading at the level of the meniscus. Drain liquid to set the zero point accurately.
2. Pour 5 mL of the unknown HCl solution in an Erlenmeyer flask using the 10 mL burette and add three drops of phenolphthalein. Swirl the flask to mix all the substances.
3. Place the sheet of white paper under the flask for easiest recognition of the color change
4. 4 Begin the titration by adding NaOH solution to the analyte. Open the Rotaflow stopcock and slowly add

			titrant to the sample in the flask 5. Gently keep swirling the flask with one hand while using the other hand to manipulate the burette adding the titrant simultaneously. Rinse the walls of the beaker and the tip of the burette with deionized water from a wash bottle when the endpoint is near. This ensures that all of the NaOH delivered from the burette ends up in the reaction mixture. 6. The end point is reached when one drop changes the indicator color permanently from colorless to a very slight pink which lasts for at least 30 seconds . Take the final reading. Volume of the base = Final - intial reading. Make three or more trials. C. Materials Erlenmeyer flask, 250m mL Sodium hydroxide, 0.4 M Hydrochloric acid, 30 mL Phenolpthalein indicator Stirring rod Glycerine (1L) Stand setup assembly/tripod Graduated cylinder, 10 mL Burette reading card Hand gloves Safety goggles Face mask Detergent Sponge Rags/tissue paper Pipetter, 10 mL with pipettor Graduated cylinder, 10 mL Distilled water, 1 L Duret reading card, 3 x 5 index card White paper Funnel
5	Burner, Alcohol, glass, 150 ml. Capacity		A. (Refer to General Inspection Protocol) B. Tests **a) Visual inspection** Check the visible attributes/parameters of the alcohol burner, 150 mL, as per technical specifications **b) Dimensional inspection** Measure the dimensions as per technical specifications of the alcohol burner, 150 mL **c) Volumentric Test** Measure 150 mL of denatured alcohol, using a standard 100 mL graduated

		cylinder. Fill the alcohol burner using a funnel. This test is used to check and verify whether the required minimum/maximum volumentric capacity of the glass, as stipulated in the technical specifications, is met. The capacity must be 150 mL **d) Leak Test** 1. Place a piece of white paper on a table. 2. Place the aclohollamp on top of the piece of papeer. Observe. Expected Result: No leak of the alcohol on the piece of paper. This test is done to check if there is no leakage of the denatured alcohol inside the burner/lamp. e) Functionality (Healing) Test Use the alcohol lamp for continuous heating of water for 20 minutes to test if it can resist thermal shock/withstand prolonged heating without breaking, it Passed QC inspection. If it failed to resist thermal shock and if the glass breaks, it is rejected C. Needed Equipment and Material: 1. Digital vernier caliper 2. Tape rule 3. Graduated cylinder, 100 mL 4. Funnel, glass 5. Hand gloves 6. Safety goggles 7. Face mask 8. Denatured alcohol 9. Detergent
6	Burner, Bunsen	A. (Refer to General Inspection Protocol) B. Tests **a.) Visual inspection** Check the visible attributes/parameters of the Bunsen burner as per technical specifications **b.) Dimensional inspection** Measure the dimensions as per technical specifications of the Bunsen burner **c.) Functinality test** 1. Install/connect the Bunsen burner to LPG tank.

		2. Check for leaks especially on the Bunsen burner's serrated inlet tube and threaded gas needle valve using soap solution (soap or detergent). No bubbles formed, it passed QC inspection. If not, it is rejected 3. Close the air holes, a yellow flame (luminous) is produced. 4. Open the air holes, a blue flame (non-luminous) is produced. **d.) Gas leak test before using the LPG tank** 1. Prepare a soap solution by mixing 5 mL detergent to 10 mL water; ensure that bubbles do not form during the preparation of the detergent. 2. Open the LPG tank control valve one-fourth turn counterclockwise. 3. Place the soap solution on both ends of the rubber hose and into the connection between the regulator and the LPG tank. 4. If bubbles are formed, it indicates that there is a leakage; 5. Shut off the LPG tank control valve. 6. Locate the leak and fix. 7. Repeat steps 1-3 to re-test the leakage. 8. After the re-test, if there is no more leakage, continue with the succeeding activity C. Materials needed to perform inspection and test Digital vernier caliper Tape rule Stand set up assembly/tripod Lighter Beaker Detergent Water
7	Cork Stopper # 5 (for Ø 16mm test tube)	A. (Refer to General Inspection Protocol) B. Tests **a.) Visual inspection** Check the visible attributes/parameters of the cork stopper, #5 for 16 x 150 mm test tube, as per technical specifications **b.) Dimensional inspection** Measure the dimensions as per technical specifications of the cork stopper, #5 for 16 x 150 mm test tube **c.) Functionality Test** Plug the cork stopper to a 16 mm test tube to check if it fits snugly into it. If it does, ot passed Qc inspection. If not, it is rejected

		C. Materials needed to perform inspection and test protocol Tape rule, Vernier caliper, 16 x 150 mm test tube
8	Crucible with lid/cover	A. (Refer to General Inspection Protocol) B. Tests **a.) Visual inspection** Check the visible attributes/parameters of the crucible with lid/cover as per technical specifications **b.) Dimensional inspection** Measure the dimensions as per technical specifications of the crucible with lid/cover **c.) Volumetric test** Measure 30 mL water and pour into it; to check and verify whether the its required minimum/maximum volumetric capacity as stipulated in the technical specifications, is met. d.) **Functionality test,** by heating sugar until it melted to test its resistance to breakage of crucible. C. Materials needed to perform inspection and test protocol Steel tape/ ruler Vernier caliper Sugar Lighter Bunsen/alcohol burner Stand setup assembly LPG/match Burner Wire gauze Water Graduated cylinder, 10 mL
9	Dish, Evaporating, 75 mL	A. (Refer to General Inspection Protocol) B. Tests **Visual inspection** Check the visible attributes/parameters of the evaporating dish, 75 mL as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the evaporating dish, 75 mL **Function test** by performing the evaporation of

			salt solution, to separate water from the salt crystals, with the salt residue remaining in the filter paper and the water evaporated, a to test for the functionality and the thermal shock resistance of the evaporating dish C. Materials needed to perform inspection and test Measuring tape/ruler Caliper Stand setup assebly/tripod Alcohol/Bunsen Burner Wire gauze Evaporating dish LPG/match Graduated cylinder, 100 mL Denatured alcohol Lighter Stirring rod Salt Water Spatula Graduated cylinder, 100 mL
	10	Distillation set-up: Condenser, Liebig-type	A. (Refer to General Inspection Protocol) B. Tests **Visual inspection** Check the visible attributes/parameters of the Liebig condenser as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specificarions of the Liebig condenser Insert the rubber stopper to the distilling flask and to the Liebig condenser if there will be no leak or escape of the steam or rubber hose **Scratch test:** Scratch using your thumb nails the brand and inscriptions and other markings of theLiebig condenser; to test for the peel and adhesion properties of embossed brand and permanency of graduations, and other markings. If it wont peel off, it passed QC inspection. If not, it is rejected **Refractive-index test** (by submerging the glass into vegetable oil or glycerine) to determine whether the glass material is borosilicate. Borosilicate glass is identified by its refractive index, 1.474. Immersing the glass in a container of liquid of similar refractive index, the glass can no longer be seen or will disappear. (Vegetable oil, 1.47 and glycerine, 1.473 are some

			liquids with similar refractive index as to borosilicate glass **Refractive-index test.** Submerge the glass into vegetable oil or glycerine) to determine whether the glass material is borosilicate. Borosilicate glass is identified by its refractive index, 1.474. Immersing the glass in a container of liquid of similar refractive index, the glass can no longer be seen or will disappear. (Vegetable oil, 1.47 and glycerine, 1.473 are some liquids with similar refractive index as to borosilicate glass C. Materials needed to perform inspection and test tape rule, heat source, stand, water source, glycerine (1L), coffee solution, rag/tissue paper, wire gauze, ring with stem, stand setup assembly, universal clamp, Bunsen burner, LPG
	11	Distillation set-up: Distilling Flask, borosilicate, 250ml,	A. (Refer to General Inspection Protocol) B. Tests **Visual inspection** Check the visible attributes of the distilling flask, borosilicate, 250 mL, as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specificarions of the distilling flask, borosilicate, 250 mL **Scratch test:** Scratch using your thumb nails the brand and white graduations and inscriptions and other markings of thedistilling flask; to test for the peel and adhesion properties of embossed brand and permanency of graduations, and other markings. If it wont peel off, it passed QC inspection. If not, it is rejected **Refractive-index test.** Submerge the glass into vegetable oil or glycerine) to determine whether the glass material is borosilicate. Borosilicate glass is identified by its refractive index, 1.474. Immersing the glass in a container of liquid of similar refractive index, the glass can no longer be seen or will disappear. (Vegetable oil, 1.47 and glycerine, 1.473 are some liquids with similar refractive index as to borosilicate glass

		Volumetric Test Fill the 250 mL distilling flask with 250 mL water using a standard 100 mL graduated cylinder, to check if its volumetric capacity is met. **Functionality Test .** Assemble the distillation setup to perform distillation experiment (Liebig Condenser, distilling flask, rubber hose, rubber stopper). (See attached procedure). Distillate shall be obtained (e.g. coffee to be distilled) without any breakage . C. Materials needed to perform test and inspection tape rule, heat source, stand, water source, glycerine (1L), coffee solution, rag/tissue paper, wire gauze, ring with stem, stand setup assembly, universal clamp, Bunsen burner, LPG
12	Double burette clamp	A. (Refer to General Inspection Protocol) B. Tests **Visual inspection** Check the visible attributes/parameters of the double burette clamp as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the double burette clamp **Functionality Test** Let the clamp hold the burettes (acid, base) securely and in place to check its functionality. C. Materials needed: Tape rule, Vernier caliper
13	Electrolysis Apparatus, student-type (Brownlee)	A. (Refer to General Inspection Protocol) B. Tests a) Do the refractive-index test for the four graduated 25 mL glass test tubes and beaker/glass jar (by submerging the glass into vegetable oil or glycerine) to determine whether the glass material is borosilicate. Borosilicate glass is identified by its refractive index, 1.474. Immersing the glass in a container of liquid of similar refractive index makes the glass not visible or will disappear. (Vegetable oil, 1.47 and glycerine, 1.473

			are some liquids with similar refractive index as to borosilicate glass. b) Do the function test by performing the Electrolysis of Water experiment, to separate water into its elements to produce two part hydrogen and one part oxygen gases (2:1) ratio. (See attached sheets), to check the accuracy and preciseness of the printed graduations and verify whether the required minimum/maximum volumetric capacity of the glass, as stipulated in the technical specifications, is met. If the hydrogen gas is present, it pops. If oxygen gas is tested, it supports combustion, making the ember glow more or re-ignites c) Do volumetric test: i) Fill each of the two (2) graduated test tube samples up to their 25 mL mark, using a standard 10 mL graduated cylinder to check the accuracy and preciseness of the printed graduations b) Measure 27 mL water and fill the two graduated test tube samples. It wont overflow , it passed QC inspection. If not, it is rejected ii) Measure 1000 mL of water using a standard 100 mL graduated cylinder and pour into glass jar sample, to test and verify its volumetric capacity and to check the accuracy and preciseness of the printed graduations and verify whether the required minimum/maximum volumetric capacity of the glass jar (1000 mL): as stipulated in the technical specifications, is met. d) Do the scratch test: scratch using your thumb nails the white graduations and large white enamel marking spot of the 27 mL graduated test tubes and 1000 mL beaker to test for the peel and adhesion properties of embossed/enameled brand and permanency of graduations, If they are peeled off, the item is rejected. C. Materials needed to perform inspection and test Tape rule 9 V battery Connecting wires Beaker, 250 mL Power supply with switch selector Stirring rod Sodium hydroxide solution

		Glycerine (1L)
14	Flask, Erlenmeyer, borosilicate, narrow-mouth, 250 mL	A. (Refer to General Inspection Protocol) B. Tests **Visual inspection** Check the visible attributes/parameters of the Erlenmeyer flask, 250 mL, as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the Erlenmeyer flask, 250 mL **Scratch test:** Scratch using your thumb nails the brand and white graduations and inscriptions and other markings of the glass jar and four (4) graduated test tubes; to test for the peel and adhesion properties of embossed brand and permanency of graduations, and other markings. If it wont peel off, it passed QC inspection. If not, it is rejected. **Refractive-index test** (by submerging the glass into vegetable oil or glycerine) to determine whether the glass material is borosilicate. Borosilicate glass is identified by its refractive index, 1.474. Immersing the glass in a container of liquid of similar refractive index makes the glass not visible or will disappear. (Vegetable oil, 1.47 and glycerine, 1.473 are some liquids with similar refractive index as to borosilicate glass. **Volumetric test** 1) Fill the flask up to its 200 mL mark. Measure all its contents using a standard graduated cylinder and transfer to a beaker, to check the accuracy and preciseness of the printed graduations and verify whether the required minimum/maximum volumetric capacity of the glass, as stipulated in the technical specifications, is met. The capacity must be 200 mL 2) Measure 250 mL water using a standard graduated cylinder and transfer all the contents to the Erlenmeyer flask sample, to check its volumetric capacity. The capacity must be 250 mL

		Use boiling stones 1. Fill the flask with half-full water 2. Heat the flask with water up to its boiling point of 100ºC and let it continue boiling for 3 minutes, to check if it can resist thermal shock, it Passed QC inspection or its failure to resist thermal shock when the glass breaks, it is Prepared MARIA TITA Science C. Materials needed to perform inspection and test Measuring tape/ ruler Boiling stones Measuring tape/ ruler Vernier Caliper, Graduated cylinder, 100 mL, Glycerine (1L) Measuring tape/ ruler Caliper Stand setup assembly/tripod Alcohol/Bunsen Burner Wire gauze Evaporating dish LPG/match Graduated cylinder, 100 mL Denatured alcohol Lighter Stirring rod Water Spatula, Stand setup assembly Wire gauze Universal clamp Universal bosshead
15	Funnel, borosilicate, fluted	A. (Refer to General Inspection Protocol) B. Tests **Visual inspection** Check the visible attributes/parameters of the funnel, borosilicate, fluted, as per technical specifications

			Dimensional inspection Measure the dimensions as per technical specifications of the funnel, borosilicate, fluted **Functionality test** 1. Make a filter cone out of a filter paper and place it snugly in a funnel 2. Place a little sand and pour 10 mL water in beaker 3. Filter and collect in a flask **Expected Result:** The sand- water mixture must be separated The sand is retained on the filter paper as residue and the water as the filtrate passes through the filter paper and is collected in the flask C. Materials needed to perform inspection and test Measuring tape/ ruler Digital Vernier caliper Graduated cylinder, 100 mL Erlenmeyer flask, 250 mL Stirring rod Beaker, 250 mL Filter paper Pair of scissors Sand TapWater
	16	Glass Tubing, Ø 6 mm x Ø 4 mm x 1500 mm long	A. (Refer to General Inspection Protocol) B. Tests Visual inspection Check the visible attributes/parameters of the glass tubing, Ø 6 mm x Ø 4 mm x 1219-1500 mm long as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the glass tubing Prepared by: MARIA TITA Science **Function test** Cut a 1 foot glass tubing using the triangular file Fire polish the ends C. Materials needed to perform inspection and test Tape rule Digital vernier caliper

		Triangular file Alcohol /Bunsen burner Funnel Denatured alcohol Lighter
17	Manometer, Open U-tube	A. (Refer to General Inspection Protocol) B. Tests **Visual inspection** Check the visible attributes/parameters of the Open U-tube manometer, as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the Open U-tube manometer Leak Test for the rubber hose 1. Fill the rubber hose with water for at least a minute. Water must not leak. 2. Immerse the rubber hose in water. Gently blow air through the tube. There shall be no bubbles coming out from the rubber hose **Functionality Test** 1. Fill the U-tube manometer with colored water following instructions in the accompanying User's Manual. 2. The height/level of the colored water in the two (left an right) tubes must be the same. 3. Insert the rubber hose into the rifted tip of the U-tube manometer 3. Apply slight pressure onto the rubber hose. There is now a difference in the level of the left and right) tubes of the manometer colored water. The colored water inside the U-tube manometer moves up and down. 4. Allow the liquid to stop moving before taking the reading 5. Read the height/level difference between both the tubes (arms) 6. Record the height of the liquid in the left tube (arm).

		7. Record the height of the liquid in the right tube (arm). 8. The pressure difference is measured by taking the difference between the two heights/levels of colored water. C. Materials needed to perform inspection and test Steel tape/ruler Vernier caliper Colored dye Water Beker, 250 mL Spatula Ruler
18	Mortar and Pestle, porcelain, 150 mL.	A. (Refer to General Inspection Protocol) B. Tests Visual inspection Check the visible attributes/parameters of the mortar and pestle, 150 mL, as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the mortar and pestle, 150 mL Prepared by: MARIA TITA Science Volumetric test Fill the mortar with 150 mL of water using a standard 100 mL graduated cylinder, to check its maximum volumetric capacity, as stipulated in the technical specifications, is met. **Functionality test** Cut a leaf into smaller pieces Use the mortar and pestle to extract the juice out of the leaf C. Materials needed to perform inspection and test Steel tape Mortar and pestle Pair of scissors Graduated cylinder, 100 mL Beaker, 250 mL Water
19	Osmosis Apparatus	A. (Refer to General Inspection Protocol) B. Tests Visual inspection

			Check the visible attributes/parameters of the Osmosis apparatus, as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the Osmosis apparatus **Functionality Test** Set up the Osmosis apparatus and conduct experiment (See attached procedure on Osmosis experiment) Procedure: 1 Soak the animal membrane in water for at least 30 seconds and cover the thistle tube with it, and tie it with rubber band. Make sure that the membrane is smooth and tight against the lip of the thistle tube to prevent leakage 2. Fill the thistle tube funnel up to a its neck with the 50 % sugar and remove trapped air using a barbecue stick 3. Invert and mount the thistle funnel in an upright position using the alumnum stand . Make sure that it does not touch the bottom of the jar. 4. Fill the jar with water up to the neck of the thistle funnel. Use the barbecue stick when there is a gap on the glass tube 5. Mark the initial level of the sugar solution with a marking pen 6. Mark the next level of the sugar solution in the thistle tube after 5 minutes 7. Monitor the change of the level of the sugar solution in the thistle tube every after 5 minutes for 20 minutes Expected Result: There is a continuous rise of the level of sugar solution in the thistle tube until rising of the level stops when equilibrium is reached. C. Materials Sugar solution, 50% Sugar, 10 g Tape rule Balance. digital Ruler

		Vernier caliper Stopwatch Beaker, 250 mL Barbecue stick Water Rubber band
20	Pipette, Beral, 1 mL	A. Inspection: 1. Shall comply with the design specifications. 2. There must be no leaks and cuts and other deficiencies on the item. 3. Shall provide a manufacturer's certificate of non-toxicity of plastic material. B. Volumetric Test: 1. Measure 1 mL of water using a standard 10 mL graduated cylinder to check its capacity. C. Materials Needed to Perform Inspection and Test: 1.Graduated cylinder, 10 mL 2. Steel Tape Measure 3. Water
21	Reagent Bottle, narrow-mouth, amber, borosilicate, 250 mL	A. (Refer to General Inspection Protocol) B. Tests Visual inspection Check the visible attributes/parameters of the reagent bottle, narrow mouth, amber, 250 mL , as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the reagent bottle, narrow mouth, amber, 250 mL **Refractive-index test** (by submerging the glass into vegetable oil or glycerine) to determine whether the glass material is borosilicate. Borosilicate glass is identified by its refractive index, 1.474. Immersing the glass in a container of liquid of similar refractive index makes the glass not visible or will disappear. (Vegetable oil, 1.47 and glycerine, 1.473 are some liquids with similar refractive index as to borosilicate glass. **Volumetric test**

		Measure 250 mL water using a standard 100 mL graduated cylinder and fill the reagent bottle sample, to check its capacity. **Scratch test** Scratch using your thumb nails the white large white markings and brand of the reagent bottle to test for the peel and adhesion properties of embossed brand and permanency of the big white enamel marking spot and other markings. If the marking spot and brand name and other markings are peeled off, the item is rejected. C. Materials needed to perform test and inspection Tape rule Digital vernier caliper Graduated cylinder, 100 mL
22	Reagent Bottle, wide-mouth, transparent, borosilicate, 250 mL	A. (Refer to General Inspection Protocol) B. Tests **Visual inspection** Check the visible attributes/parameters of the reagent bottle, wide mouth, clear, 250 mL , as per technical specifications Dimensional inspection Measure the dimensions as per technical specifications of the reagent bottle, wide mouth, clear, 250 mL **Scratch test** Scratch using your thumb nails the white large white markings and brand of the reagent bottle to test for the peel and adhesion properties of embossed brand and permanency of the big white enamel marking spot and other markings. If the marking spot and brand name and other markings are peeled off, the item is rejected. **Refractive-index test** (by submerging the glass into vegetable oil or glycerine) to determine whether the glass material is borosilicate. Borosilicate glass is identified by its refractive index, 1.474. Immersing the glass in a container of liquid of similar refractive index makes the glass not visible or will disappear. (Vegetable oil, 1.47 and glycerine, 1.473 are some liquids with similar refractive index as to borosilicate glass.

			Volumetric test Measure 250 mL water using a standard 100 mL graduated cylinder and fill the reagent bottle sample, to check its capacity. C. Materials needed to perform inspection and test Tape rule Vernier caliper Graduated cylinder, 100 mL Glycerine Hand gloves Face mask Stirring rod Safety goggles Detergent Sponge Rags/Tissue paper Water
	23	Rubber Stopper # 0 (for Ø 16mm test tube)	A. (Refer to General Inspection Protocol) B. Tests **Visual inspection** Check the visible attributes/parameters of the rubber stopper, #0, as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the rubber stopper, #0 Hardness test by using the durometer. Hardness: 40± 5 Duro Fitting test to validate the level of performance and accuracy of the item by placing the bottom part of the rubber stopper into the mouth of a 16 mm x 150 mm test tube, and see if it fits well. It passed QC, if not, it failed QC. C. Materials needed to perform inspection and test Steel tape// ruler Digital vernier caliper

		Durometer
24	Spoon-spatula, porcelain and glazed	A. (Refer to General Inspection Protocol) B. Tests Visual inspection Check the visible attributes/parameters of the Spoon-spatula, porcelain and glazed, as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the Spoonspatula, porcelain and glazed Functional test by transferring liquid or powder from one container to another **Volumetric test** i) Measure 0.3 mL of water using a standard 10 mL graduated cylinder ii) Pour the 0.3 mL water into the spoon portion This test is used to check and verify whether the required minimum/maximum volumetric capacity of the spoon, as stipulated in the technical specifications, is met C. Materials needed to perform inspection and test Vernier caliper Steel tape/ ruler, Graduated cylinder, 10 mL Water
25	Stirring Rod, Ø 6 mm x 250 mm long	A. (Refer to General Inspection Protocol) B. Tests **Visual inspection** Check the visible attributes/parameters of the Stirring Rod, Ø 6 mm x 250 mm long, as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the Stirring Rod, Ø 6 mm x 250 mm long Prepared by: MARIA TITA V. Science Functionality Test Mix salt and water using the stirring rod. A solution is formed, one phase. **Refractive-index Test**

		Submerge the glass into vegetable oil or glycerin to determine whether the glass material is borosilicate. Borosilicate glass is identified by its refractive index, 1.474. Immersing the glass in a container of liquid of similar refractive index, makes the glass not visible or will disappear. (Vegetable oil, 1.47 and glycerin, 1.473 are some liquids with similar refractive index as to borosilicate glass). C. Materials needed to perform inspection and test Tape rule Digital vernier caliper Glycerine (1L) Hand gloves Face mask Safety goggles Detergent Sponge, Rags/tissue paper
26	Test tube brush	A. (Refer to General Inspection Protocol) B. Tests **Visual inspection** Check the visible attributes/parameters of the test tube brush, as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the test tube brush **Function test** by cleaning a test tube using the test tube brush C. Materials needed to perform inspection and test Vernier caliper Steel tape/ ruler Water Detergent, Rags/tissue paper
27	Test Tube, borosilicate, Ø 16 mm x 150 mm long	A. (Refer to General Inspection Protocol) B. Tests **Visual inspection** Check the visible attributes/parameters of the test

			tube, borosilicate,Ø 16 x 150 mm long, as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the test tube, borosilicate, Ø16 x 150 mm long **Volumetric test** Fill the test tube with 20 mL water using a standard graduated cylinder to check its capacity. **Refractive-index test** Submerge the glass into vegetable oil or glycerine to determine whether the glass material is borosilicate. Borosilicate glass is identified by its refractive index, 1.474. Immersing the glass in a container of liquid of similar refractive index makes the glass not visible or will disappear. (Vegetable oil, 1.47 and glycerine, 1.473 are some liquids with similar refractive index as to borosilicate glass. **Scratch test:** Scratch using your thumb nails the white large white markings and brand of the test tubes to test for the peel and adhesion properties of embossed brand and permanency of the big white enamel marking spot and other markings. If the marking spot and brand name and other markings are peeled off, the item is rejected. **Functionality (Boiling Point) Test:** Fill the test tube half-full with water. Use boiling stones or boiling sticks in liquids to facilitate even heating and boiling. Heat to boiling and let it continue boiling for at least three more minutes to check and verify if it can resist thermal schock or withstand prolonged heating wihout breaking, it Passed QC inspection, or if it fails to resist thermal shock, it i rejected C. Materials needed to perform inspection and test protocol Tape rule Vernier caliper Glycerine (1 L) Graduated cylinder, 10 mL Hand gloves Face mask

			Safety goggles Detergent Sponge Water
	28	Tong, Beaker	A. Inspection: 1. Shall comply with the design specifications. B. Tests: 1. Performance Test: Do actual holding of heated beakers of different sizes. 2. Material Test: Chrome is highly polished and smooth, with a high luster finish and is magnetic. C. Materials Needed to Perform Inspection and Tests: 1. Steel tape measure 2. Different sizes of beakers 3. Magnet
	29	Tong, Crucible	A. (Refer to General Inspection Protocol) B. Test **Visual inspection** Check the visible attributes/parameters of the Crucible tong, as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the Crucible tong **Functionality Test** Check if it is easy to remove the lid from a crucible, transfer evaporating dish or pick small objects out of a reaction container using the tong. If it does, it passed. if not, reject it C. Needed tools and materials: Steel tape rule/ ruler Vernier caliper Steel tape/ ruler
	30	Vial, screw-neck, 25 ml. (with screw-type plastic cap)	A. (Refer to General Inspection Protocol) B. Tests

			Visual inspection Check the visible attributes/parameters of the vial, screw-neck, 25 mL (with screw-type plastic cap), as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the vial, screw-neck, 25 mL (with screw-type plastic cap) **Volumetric test** Measure 25 mL water using the standard 10 mL graduated cylinder and transfer all the contents to the dry 25 mL vial sample, to check its volumetric capacity. It must not overflow and it passed QC inspection. If not. It is rejected **Functionality Test** Submerge the glass into vegetable oil or glycerin to determine whether the glass material is borosilicate. Borosilicate glass is identified by its refractive index, 1.474. Immersing the glass in a container of liquid of similar refractive index, makes the glass not visible or will disappear. (Vegetable oil, 1.47 and glycerin, 1.473 are some liquids with similar refractive index as to borosilicate glass). C. Needed tools and materials: Tape rule Vernier caliper Acetone Glycerine (1 L) Graduated cylinder, 10 mL Hand gloves Face mask Safety goggles Detergent Water Sponge Rags/tissue paper

	31	Vial, screw-neck, 50 mL. (with screw-type plastic cap)	A. (Refer to General Inspection Protocol) B. Tests Visual inspection Check the visible attributes/parameters of the vial, screw-neck, 50 mL (with screw-type plastic cap), as per technical specifications Dimensional inspection Measure the dimensions as per technical specifications of the vial, screw-neck, 50 mL (with screw-type plastic cap) **Volumetric test** Fill the vial with 50 mL water using a standard 10 mL graduated cylinder to check its capacity **Refractive-index test** Submerge the glass into vegetable oil or glycerin to determine whether the glass material is borosilicate. Borosilicate glass is identified by its refractive index, 1.474. Immersing the glass in a container of liquid of similar refractive index, makes the glass not visible or will disappear. (Vegetable oil, 1.47 and glycerin, 1.473 are some liquids with similar refractive index as to borosilicate glass). C. Needed tools and materials: tape rule Vernier caliper Glycerine (1 L) Graduated cylinder, 10 mL Hand gloves Face mask Safety goggles Detergent Sponge Water Rags/tissue paper
	32	Watch Glass, Ø 90 mm	A. (Refer to General Inspection Protocol) B.Tests **Visual inspection** Check the visible attributes/parameters of the watch glass, as per technical specifications **Dimensional inspection**

			Measure the dimensions as per technical specifications of the watch glass **Refractive-index Test** Submerge the glass into vegetable oil or glycerine) to determine whether the glass material is borosilicate. Borosilicate glass is identified by its refractive index, 1.474. Immersing the glass in a container of liquid of similar refractive index makes the glass not visible or will disappear. (Vegetable oil, 1.47 and glycerine, 1.473 are some liquids with similar refractive index as to borosilicate glass. **Functionality Test** Fill the watch glass with 5 mL acetone using a standard 10 mL graduated cylinder . Observe Fill the watch glass with 5 mL water and observe. **The acetone evaporates faster than water since it is more volatile than water** C. Needed tools and materials: Tape rule Vernier caliper Acetone Glycerine (1 L) Graduated cylinder, 10 mL Stirring rod Hand gloves Face mask Safety goggles Detergent Sponge Rags/tissue paper
4	**SCIENCE DEVICES, INSTRUMENTS, AND MEASURING TOOLS - EARTH & SPACE and LIVING THINGS**		
	1	Balance, Toploading, Electronic	A. (Refer to General Inspection Protocol) B. Tests **Visual inspection** Check the visible attributes/parameters of the Balance, Toploading, Electronic, as per technical specifications **Dimensional inspection**

			Measure the dimensions as per technical specifications of the Balance, Toploading, Electronic **Functionality test** a) Set up and operate the unit using the User's Manual . b) Place the balance on a sturdy, level surface. c) Get the bubble centered to ensure the balance is correctly level on the bench top d) First, before weighing , it needs to be "tared," or recalibrated to read 0.01 g. e) Press the button and turn it on f) Press the Tare button and release to effect this recalibration to check **its** accuracy . g) Place the 500 g calibration mass to be weighed at the center of the pan h) Take the reading i) Take **three or** more trials to verify the precision and functionality C. Materials needed to perform inspection and test
	2	Centrifuge	A. (Refer to General Inspection Protocol) B. Tests **Visual inspection** Check the visible attributes/parameters of the centrifuge, as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the centrifuge **Functionality Test** Install, set up and operate the unit using the User's Manual. a) Remove the centrifuge from the box and inspect for any possible shipping damage. If the centrifuge appears to be damaged from shipping, it is rejected. b) Place the centrifuge on a sturdy, level surface. c) Turn the lid latch to the UNLOCK position (“U”). Open to verify that there are no loose objects or packing material in the tube chamber, and that the 8 large blue tube shields and the 8 smaller black tube shields are in place and seated in the angled 8-place rotor. The smaller tube shields can be removed when spinning larger test tubes.

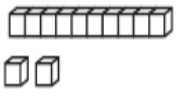
			d) Verify that the power switch on the front of the unit is in the OFF position. e) Connect the 3-prong wall power cord to the AC power adapter, and then connect the AC power adapter to the back of the centrifuge. f) Plug the power cord into an approved and properly grounded outlet. Do not insert specimen test tubes prior to initial test run. g) Close the lid, turn the lid latch to the LOCKED position ("L") and turn power switch ON. For fixed unit, turn the timer to 10 minutes. h) Press RUN. If there is a smooth whirring sound and the unit accelerates with little or no vibration, your E8 centrifuge is ready to operate. The unit PASSED If there are loud, unusual sounds or if you experience excessive vibration, immediately turn the unit off. DO NOT OPERATE. The sample is rejected
	3	Electrical Conductivity (Conductivity of Solutions) Apparatus	A. (Refer to General Inspection Protocol) B. Tests Visual inspection Check the visible attributes/parameters of the Electrical Conductivity (Conductivity of Solutions) Apparatus, as per technical specifications Dimensional inspection Measure the dimensions as per technical specifications of the Electrical Conductivity (Conductivity of Solutions) Apparatus Functionality test by performing the Electrical Conductivity of Substances, wherein conductors/electrolytes cause the bulbs to light while non-conductors/non-electrolyte will not cause the bulbs to light Procedure:

		1. Prepare 10% salt solution,(10 g salt, 90 g water) 2. Clean the electrode using sand paper 3. Fill the jar with the salt solution 4. Connect the ECA to the power source **Expected Result**: The bulb will light up if (salt solution) electrolyte. If non-electrolyte, it will not light up(sugar) C. Materials needed to perform test and inspection Measuring tape/ ruler 2 Battery, AA Power supply (0-12 V) with switch selector Beaker, 250 mL Alligator clips Connecting wires Stirring rod 10% salt solution Sugar solution
4	Laboratory Hot Plate with magnetic stirrer	A. (Refer to General Inspection Protocol) B. Tests **Visual inspection/parameters** Check the visible attributes/parameters of the Laboratory Hot Plate with magnetic stirrer, as per technical specifications **Dimensional inspection** Measure the dimensions as per technical specifications of the Laboratory Hot Plate with magnetic stirrer **Functionality test** a) Place half full water in a beaker. Use boiling stones or boiling sticks in liquids to facilitate even heating and boiling b)Heat the water up to its boiling point and let it continue boiling for three more minutes to check functionality **Monitor the motor temperature based on NEMA Standards** MG 1-2011, 12.43, defines temperature rise

		for motors in a maximum ambient of 40°C. *Its vibration is within the tolerance of the given motor rating without irregular noise in motor bearing and in other moving mechanical parts; **Endurance Test** for a series of five Test Runs with one minute each to determine how the machine behaves under sustained use. Turn On and Off method is applied. **Powder coating test** Rub a ball of cotton with alcohol into the surface of the plate. If the color of the paint sticks to the cotton, it is not powder coated. Reject the item. If not, accept the item as it is powder coated. C. Materials needed to perform inspection and test Steel / ruler Digital vernier caliper Stand setup assembly Beaker Wire gauze Boiling stones Ring with stem Alcohol burner Lighter Denatured alcohol
5	Microscope, Digital	**A. Inspection:** 1. Shall comply with the design specifications. 2. Move the stage clips left to right, to and fro to check if not defective 3. Check the completeness of the parts and accessories 4. Check for defects. 5. Shall comply in the submission of Training video as stated in the specifications. **B. Performance Test:** Bidder's representative must do the demonstration on its operation during the sample evaluation. a. Set-up the unit

		b. Perform sample snapshots c. Conduct short videos **C. Material Needed to Perform Inspection:** 1. Steel tape measure
6	Soil pH, Moisture, Sunlight Meter	**A. (Refer to General Inspection Protocol)** **B. Functionality Test:** 1. Demonstrate the functions indicated in the technical specifications. 2. Look for a place outdoors where there is soil. 3. Stick into the soil the probe of the pH/moisture/light meter. 4. It shall show the weak and strong pH, weak and strong light, and weak and strong moisture. **C. Materials Needed to Perform Inspection and Tests:** 1. 1 steel rule/meter tape 2. 1 vernier caliper
7	Telescope, Astronomical (Reflecting)	**A. (Refer to General Inspection Protocol)** **B. Functionality Test:** 1. Measure the focal length-the effective physical length of the telescope: a) using a meter tape measure the distance from the rear of the telescope where the primary mirror (objective) is fixed to the secondary mirror is fixed. The secondary mirror is directly below the eyepiece. The measured distance is the focal length of the telescope. (To get the actual measure, get the length between the primary mirror and below the eyepiece.) 2. Manipulate the controls of the telescope as presented in the accompanying manual, these includes the cradles, latitude, leveling and balancing, alignment, azimuth lock, declination etc.

			3.The telescope unit should respond accordingly as discussed in the manual. **C. Materials Needed to Perform Inspection and Tests:** 1. 1 steel rule/meter tape 2. 1 vernier caliper
	MATHEMATICAL MANIPULATIVES		
5	1	Algebra Tile Set, plastic	**A. (Refer to General Inspection Protocol)** **B. Test (Functionality and Performance)** 1. Identifying the Algebra Tiles. Lay down the Algebra Tiles submitted. Check the tiles. All three tiles shall come in set of 30 as per technical specification. 2. The Zero Pair Using the Algebra tiles (ones tile), model the following integers: a. 5 + 3 b. 3 + (-3) c. -6 + 4 d. -6 - (-2) e. 4 - 7 3. Simplifying Algebraic Expression Using the Algebra tiles model then simplify the following algebraic expressions: a. 3x + 2 - 4x - 5 b. -2x + 5 - 4x - 5 4. Solving Linear Equation Using the Algebra tiles model then solve the following Linear Equations: a. x - 2 = 7 b. 5x + 6 = -4 5. Modeling Polynomials Using the Algebra tiles model then simplify the polynomial: a. $2x^2 - 2x - 3$ 6. Addition and Subtraction of Polynomials Using the Algebra tiles model then perform the following operation:

		a. Add: $2x^2 + 3x + 5$ and $x^2 – 2x – 3$ b. Subtract: 2x2 + 4x – 5 – (x2 + 2x – 3) 7. Multiplication of Polynomials Using the Algebra tiles model then multiply the following expressions: a. (x - 1)(x - 4) b. (-2x + 2)(x - 3) 8. Factoring Polynomials Using the Algebra tiles model then factor the given polynomial expression: a. $x^2 + 5x + 6$ b. $x^2 – 7x + 12$ **C. Materials to be used to perform the Tests and Inspection Procedures:** 1. Tape Rule 2. Show me board (white board) 3. White board marker
2	Base Ten Blocks	**A. (Refer to General Inspection Protocol)** **B. Test (Functionality and Performance)** 1. Identifying the Base Ten Blocks. Lay down the Base Ten Blocks submitted. Check the blocks. All four types of blocks must demonstrate what was written as per technical specification. 2. Lay out a number Use the base ten blocks and lay out a number such as the ff.: a.  b. 

		C. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape Rule 2. Show me board (white board) 3. White board marker
3	Beads, Ø16mm	A. (Refer to General Inspection Protocol) B. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape Rule
4	Circle Area Demonstrator	A. (Refer to General Inspection Protocol) B. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape Rule
5	Compass, Drawing, student type	A. (Refer to General Inspection Protocol) B. Tests: 1. Conduct stainless steel (magnet/file test). 2. Performance Test: Use the compass to draw circle with diameters of a) 20mm, b) 75mm and c) 150mm, in which the start and endpoint of the line should meet in the same point for three (3) consecutive trials. C. Materials to perform Inspection and Test Procedures: 1. Tape rule. 2. Sheet of Paper (for drawing/construction purposes) 3. Magnet 4. Triangular File
6	Cuisenaire Rods, 250 pcs/set	A. (Refer to General Inspection Protocol) B. Test (Functionality and Performance) 1. Identifying the Cuisenaire Rods Lay down all the rods submitted. Check all the rods and classify them according to lengths. 2.Square Numbers Discover square numbers using rods. First, model the first 6 integers using their corresponding length and it shall form a square. Example, rod with length of 2 (red). In order to make it a square, I shall add another rod with length of 2. Next, fill the top of the square rod with

		a rod with length of 1cm until its covered. Count all white rod, it must be the square of the length of the rod below. B. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape Rule
7	Elapsed Time (Clock) Set	A. (Refer to General Inspection Protocol) B. Test: 1. Should stick vertically to any metal surface without sliding or falling while manipulating/moving the hands of the clock. 2. Using the Elapsed Time (Clock) Set, show the elapsed time asked in the problem below: *The bus leaves the station at 7:50 AM and arrive at its destination at 11:23 AM. How long did the journey take?* C. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape rule.
8	Geoboard, 11 x 11	A. (Refer to General Inspection Protocol) B. Functionality Test 1. Use the rubber bands (3) provided to create (3) basic 2-dimensional geometric shapes to test if the pins can withstand the tension. 2. Using the rubber bands, create a) a triangle with an area of 8 square units, b) a rectangle with a perimeter of 8 units, and c) a trapezoid with 8 square units. C. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape Rule 2. Show me board (white board) 3. White board marker
9	Geoboard, 5 x 5	A. (Refer to General Inspection Protocol) B. Functionality Test 1. Use the rubber bands (3) provided to create (3) basic 2-dimensional geometric shapes to test if the pins can withstand the tension.

		2. Using the rubber bands, create a) a triangle with an area of 4 square units, b) a rectangle with a perimeter of 6 units, c) circle diagram showing 3 parts. C. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape Rule 2. White board marker
10	Geostrips	A. (Refer to General Inspection Protocol) B. Functionality 1. Connect the strips with the fastened brads to create basic geometric shapes. The connected strips should not break-up when manipulated or moved. C. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape rule.
11	Ghost Grid Whiteboard, Mobile Magnetic, 72-inch x 40-inch	A. (Refer to General Inspection Protocol) B. Test 1. Place a BLR procured magnets and let it attract with the Ghost Grid. Underneath the magnets is a standard Manila Paper. The BLR procured magnets shall not slide and shall sustain its place in a standard class hour duration if not moved. B. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape rule
12	Linking Cubes	A. (Refer to General Inspection Protocol) B. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape Rule
13	Model, Basic 3D Geometrical Collapsible	A. (Refer to General Inspection Protocol) B. Tests: 1. Conduct leak test. 2. Perform derivation of formula as to solids relational volume using sand/water. C. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape rule

			2. Water
	14	Model, Basic 3D Geometrical Solids	A. (Refer to General Inspection Protocol) B. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape Rule
	15	Pattern Blocks, 250 pcs/set	A. (Refer to General Inspection Protocol) B. Test 1. Check if the sides of the blocks coincide with each other. Create a B. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape Rule
	16	Pentominoes	A. (Refer to General Inspection Protocol) B. Test 1. Create two separate rectangles with different dimensions using all the pentaminoes pieces. The area shall be the same. C. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape Rule
	17	Plastic Two-colored Counters, 1-inch diameter, 200 pcs/set	A. (Refer to General Inspection Protocol) B. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape Rule
	18	Probability Kit	A. (Refer to General Inspection Protocol) B. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape Rule
	19	Tangrams, set of 30	A. (Refer to General Inspection Protocol) B. Test 1. Compare all the tangram pieces. All pieces shall be proportionate with each other. 2. Using the seven pieces of tangram, create a square. C. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape Rule