TO : **ALL PROSPECTIVE BIDDERS**
OBSERVERS

SUBJECT : **BID BULLETIN NO. 5, S. 2026**

PROJECT : **PROCUREMENT OF LEARNING TOOLS AND EQUIPMENT - SCIENCE AND MATHEMATICS EQUIPMENT (LTE-SME) FOR PUBLIC ELEMENTARY AND SENIOR HIGH SCHOOLS (ROIVA-26-05)**

DATE : July 29, 2026

Pursuant to Section 51.5 of the Implementing Rules and Regulations of Republic Act No. 12009, this Bid Bulletin is hereby issued for the information and guidance of all prospective bidders. It shall form an integral part of the Bidding Documents issued earlier in connection with the above-mentioned project.

ITEM/DESCRIPTION	CLARIFICATION/AMENDMENT

Address: Gate 2, Karangalan Village, Cainta, Rizal
Telephone No.: 02-8682-2114
Email Address: region4a@deped.gov.ph
Website: depedcalabarzon.ph

Section VII TECHNICAL SPECIFICATIONS

DETAILED TECHNICAL SPECIFICATIONS:

No.	Item Name	Technical Specifications	Unit	Quantity	STATEMENT OF COMPLIANCE (State Comply or Not Comply)	BIDDER'S ACTUAL OFFER (state the brand and model specifying the product offered with an attachment of official brochure or unamended sales literature as applicable)
1	Beaker, borosilicate, 100 mL	Functional Specifications: Used to contain/hold/prepare solids and liquids during chemical reaction and to heat them over a Bunsen burner's flame up to more than 150°C for normal, standard use service Performance Specifications: Must be able to contain/hold /prepare solids and liquids during chemical reaction up to 100 mL capacity and heats them over a Bunsen burner's flame up to more than 150°C for normal, standard use service Design Specifications: 1. Type: Griffin, low form 2. Shape: Cylindrical container with straight sides, a flat bottom, and with a small spout (or "beak") to aid in pouring 3. Material: Borosilicate, clear and transparent bubble-free glass with the following dimensions: a. Outside diameter : 50 mm-52 mm b. Height: 70 mm-72 mm c. Thickness : 1.5 mm-2.0 mm 4. Capacity : 100 mL ± 5% etched onto the glass;" 5. Graduation starts at : 20 mL in 10 mL increments.				
		6. Graduation range : 20 mL to 80 mL 7. With permanent white enamel graduations of approximate volumes, inscriptions 8. With large white marking spot 9. Features an easy-pour spout 10. With single graduated metric scale 11. Can withstand heating up to 200-230°C for normal, standard use service 12. Wrapped in paper, enclosed in bubble wrap, and packed in a compartmentalized box Inspection and Test Procedures: A. (Refer to General Inspection Protocol) B. Tests 1. Scratch test Scratch using your nails the brand and white graduations inscriptions and other markings of the thermometer; to test for the peel and adhesion properties of embossed brand and permanency of graduations, and other markings 2. 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). 3. Volumetric Test				

Section VII TECHNICAL SPECIFICATIONS

DETAILED TECHNICAL SPECIFICATIONS:

No.	Item Name	Technical Specifications	Unit	Quantity	STATEMENT OF COMPLIANCE (State Comply or Not Comply)	BIDDER'S ACTUAL OFFER (state the brand and model specifying the product offered with an attachment of official brochure or unamended sales literature as applicable)
1	Beaker, borosilicate, 100 mL	Functional Specifications: Used to contain/hold/prepare solids and liquids during chemical reaction and to heat them over a Bunsen burner's flame up to more than 150°C for normal, standard use service Performance Specifications: Must be able to contain/hold /prepare solids and liquids during chemical reaction up to 100 mL capacity and heats them over a Bunsen burner's flame up to more than 150°C for normal, standard use service Design Specifications: 1. Type: Griffin, low form 2. Shape: Cylindrical container with straight sides, a flat bottom, and with a small spout (or "beak") to aid in pouring 3. Material: Borosilicate, clear and transparent bubble-free glass with the following dimensions: a. Outside diameter : 50 mm-52 mm b. Height: 70 mm-72 mm c. Thickness : 1.5 mm-2.0 mm 4. Capacity : 100 mL ± 5% etched onto the glass;" 5. Graduation starts at : 20 mL in 10 mL increments.	pc			
		6. Graduation range : 20 mL to 80 mL 7. With permanent white enamel graduations of approximate volumes, inscriptions 8. With large white marking spot 9. Features an easy-pour spout 10. With single graduated metric scale 11. Can withstand heating up to 200-230°C for normal, standard use service 12. Wrapped in paper, enclosed in bubble wrap, and packed in a compartmentalized box Inspection and Test Procedures: A. (Refer to General Inspection Protocol) B. Tests 1. Scratch test Scratch using your nails the brand and white graduations inscriptions and other markings of the thermometer; to test for the peel and adhesion properties of embossed brand and permanency of graduations, and other markings 2. 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). 3. Volumetric Test				

		Measure 100 mL of water using a standard 100 mL graduated cylinder, and pour into it, 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 250 mL: ±5% 4. Functionality test A Place half full water in a beaker Heat the beaker up to its boiling point of 100ºC C. Needed Equipment and Material: 1. Digital Vernier caliper 2. Steel tape measure 3. Graduated cylinder, 100 mL 4. Funnel, glass 5. Denatured alcohol 6. Rag/tissue paper 7. Glycerine (1 liter) 8. Tripod 9. Lighter 10. Wire gauze 11. Thermometer, partial immersion 12. Bunsen/alcohol burner 13. Hand gloves 14. Face mask 15. Safety goggles				
2	Beaker, borosilicate, 500 mL	Functional Specifications: a) Used to contain/hold/prepare solids and liquids during chemical reaction and to heat them over a Bunsen burner's flame up to 150°C for normal, standard use service and b) to serve as a water bath when heating flammable chemicals instead of an open flame to prevent ignition.				
		Performance Specifications: a) Must be able to contain/hold /prepare solids and liquids during chemical reaction and heats them over a Bunsen burner's flame up to 150°C for normal, standard use service and to serve as a water bath b) to serve as a water bath when heating flammable chemicals instead of an open flame to prevent ignition. Design Specifications: 1. Type: Berzellius, tall form 2. Shape: Cylindrical container with straight sides, a flat bottom, with a small spout (or "beak") to aid pouring 3. Material : Borosilicate, clear, bubble free glass , Berzellius, tall form with the following dimensions: a. Outside Diameter Range :75 mm- 80 mm b. Height range: 136 mm -140 mm c. Thickness :1.5 mm to 2.0 mm 4. Capacity :500 ml ; ± 5% etched/embossed onto the glass 5. With permanent white enamel graduations of approximate volumes, inscriptions and 6. With large white marking spot 7. With easy pour spout 8. Double graduated metric scale 9. Marked to fill: Graduation starts at 50 mL in 50 mL increments 10. Marked to empty: Graduation starts at 0 mL in 50 mL increments 11. Can withstand heating up to 200-230°C for normal, standard use service 12. Wrapped in paper, enclosed in bubble wrap and packed individually in a compartmentalized box				

		Measure 100 mL of water using a standard 100 mL graduated cylinder, and pour into it, 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 250 mL: ±5% 4. Functionality test A Place half full water in a beaker Heat the beaker up to its boiling point of 100ºC C. Needed Equipment and Material: 1. Digital Vernier caliper 2. Steel tape measure 3. Graduated cylinder, 100 mL 4. Funnel, glass 5. Denatured alcohol 6. Rag/tissue paper 7. Glycerine (1 liter) 8. Tripod 9. Lighter 10. Wire gauze 11. Thermometer, partial immersion 12. Bunsen/alcohol burner 13. Hand gloves 14. Face mask 15. Safety goggles				
2	Beaker, borosilicate, 500 mL	Functional Specifications: a) Used to contain/hold/prepare solids and liquids during chemical reaction and to heat them over a Bunsen burner's flame up to 150°C for normal, standard use service and b) to serve as a water bath when heating flammable chemicals instead of an open flame to prevent ignition.	pc			
		Performance Specifications: a) Must be able to contain/hold /prepare solids and liquids during chemical reaction and heats them over a Bunsen burner's flame up to 150°C for normal, standard use service and to serve as a water bath b) to serve as a water bath when heating flammable chemicals instead of an open flame to prevent ignition. Design Specifications: 1. Type: Berzellius, tall form 2. Shape: Cylindrical container with straight sides, a flat bottom, with a small spout (or "beak") to aid pouring 3. Material : Borosilicate, clear, bubble free glass , Berzellius, tall form with the following dimensions: a. Outside Diameter Range :75 mm- 80 mm b. Height range: 136 mm -140 mm c. Thickness :1.5 mm to 2.0 mm 4. Capacity :500 ml ; ± 5% etched/embossed onto the glass 5. With permanent white enamel graduations of approximate volumes, inscriptions and 6. With large white marking spot 7. With easy pour spout 8. Double graduated metric scale 9. Marked to fill: Graduation starts at 50 mL in 50 mL increments 10. Marked to empty: Graduation starts at 0 mL in 50 mL increments 11. Can withstand heating up to 200-230°C for normal, standard use service 12. Wrapped in paper, enclosed in bubble wrap and packed individually in a compartmentalized box				

		13. Must be free from breakage, cracks, chipped rims and other defects Comes with a brand, with five (5) years existence in the glass wares industry Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Tests a) Do scratch test: scratch using your nails the brand and white graduations and inscriptions and other markings of the thermometer; to test for the peel and adhesion properties of embossed brand and permanency of graduations, and other markings b) Do the 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 c) Do volumetric test, by measuring 500 mL of water using a standard 100 mL graduated cylinder, and pour into it; 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 500 mL, ±5%				
		d) Perform functionality test by heating the beaker with water up to its boiling point of 100ºC C. Materials needed to perform inspection and test 1. Measuring tape, ruler 2. Graduated cylinder, 10 mL 3. Denatured alcohol, 1 bottle 4. Heater 5. Pail 6. Water 7. Lighter 8. Rag/tissue paper				
3	Beaker, Plastic 500 mL	Functional Specifications: Used to contain liquids and allow liquids to flow thru spout when overfilled Performance Specifications: Should be able to contain liquids and allow liquids to flow thru spout when overfilled Design Specifications: 1. Material: polypropylene plastic 2. Capacity: 500 mL Increments: 10 mL 3. Height: 12 cm 4. Diameter: 8 cm 5. Must have container box. 6. Must be free from any toxic material. Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Volumetric Test: Measure 500 mL of water using a standard 100 mL graduated cylinder and pour into it to check the accuracy and preciseness of the printed graduations and verify whether				

		13. Must be free from breakage, cracks, chipped rims and other defects Comes with a brand, with five (5) years existence in the glass wares industry Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Tests a) Do scratch test: scratch using your nails the brand and white graduations and inscriptions and other markings of the thermometer; to test for the peel and adhesion properties of embossed brand and permanency of graduations, and other markings b) Do the 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 c) Do volumetric test, by measuring 500 mL of water using a standard 100 mL graduated cylinder, and pour into it; 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 500 mL, ±5%				
		d) Perform functionality test by heating the beaker with water up to its boiling point of 100ºC C. Materials needed to perform inspection and test 1. Measuring tape, ruler 2. Graduated cylinder, 10 mL 3. Denatured alcohol, 1 bottle 4. Heater 5. Pail 6. Water 7. Lighter 8. Rag/tissue paper				
3	Beaker, Plastic 500 mL	Functional Specifications: Used to contain liquids and allow liquids to flow thru spout when overfilled Performance Specifications: Should be able to contain liquids and allow liquids to flow thru spout when overfilled Design Specifications: 1. Material: polypropylene plastic 2. Capacity: 500 mL Increments: 10 mL 3. Height: 12 cm 4. Diameter: 8 cm 5. Must have container box. 6. Must be free from any toxic material. Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Volumetric Test: Measure 500 mL of water using a standard 100 mL graduated cylinder and pour into it to check the accuracy and preciseness of the printed graduations and verify whether	pc			

		the required minimum/maximum volumetric capacity of the glass, as stipulated in the technical specifications, is met. The capacity must be 500 mL; ± 10% C. Materials 1. Tap Water 2. 100 mL graduated cylinder				
4	Cork borer	Functional Specifications: Used to bore or to cut a round hole of six different diameters in a cork/rubber stopper with a steel ramrod/eject rod pushing the removed cork out of the borer Performance Specifications: Must be able to bore or to cut a round hole of six different diameters in a cork or rubber stopper and remove cork out of the borer by pushing it with a steel ramrod/eject rod Design Specifications: 1. Shape of cork borer: Long, hollow round rod/tube with sharpened ends 2. Material of tube/rod: Nickel-plated steel borer 3. A set of six (6) different diameter sizes:(4 mm, 4.5 mm, 6 mm, 8 mm, 9.5 mm, 11 mm) 4. Comes with a handles whch are individually and permanently numbered (1-6) for easy identification handle a) Shape of handle: T-shaped b) Material of handle: Hard plastic c) Finish: Smooth d) Color of handle: Red 5. Includes a ramrod/eject rod pushing the removed cork out of the borer Material of ramrod/eject rod: Steel				
		6. Packaging: Resealable plastic pouch 7. Comes with a brand Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Test Functionality Test. Bore a hole in a rubber/cork stopper C. Materials needed to perform inspection and test protocol Measuring tape/ruler				
5	Dry Cell, 9 volts	Functional Specifications: Used to provide 9 volts DC power to digital multimeter Performance Specifications: Should be able to provide 9 volts DC power to digital multi meter Design Specifications: 1. industry standard 9 volts dry cell Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Functionality Test: Set the BLR reference digital multimeter to 20VDC a) Insert the black test probe to the "COM" terminal of the digital multi meter and the red test probe to the "VΩHz" terminal of the digital multimeter b) Switch ON the digital multi meter Connect the black test lead of the BLR reference digital multimeter to the				

		the required minimum/maximum volumetric capacity of the glass, as stipulated in the technical specifications, is met. The capacity must be 500 mL; ± 10% C. Materials 1. Tap Water 2. 100 mL graduated cylinder				
4	Cork borer	Functional Specifications: Used to bore or to cut a round hole of six different diameters in a cork/rubber stopper with a steel ramrod/eject rod pushing the removed cork out of the borer Performance Specifications: Must be able to bore or to cut a round hole of six different diameters in a cork or rubber stopper and remove cork out of the borer by pushing it with a steel ramrod/eject rod Design Specifications: 1. Shape of cork borer: Long, hollow round rod/tube with sharpened ends 2. Material of tube/rod: Nickel-plated steel borer 3. A set of six (6) different diameter sizes:(4 mm, 4.5 mm, 6 mm, 8 mm, 9.5 mm, 11 mm) 4. Comes with a handles whch are individually and permanently numbered (1-6) for easy identification handle a) Shape of handle: T-shaped b) Material of handle: Hard plastic c) Finish: Smooth d) Color of handle: Red 5. Includes a ramrod/eject rod pushing the removed cork out of the borer Material of ramrod/eject rod: Steel	pc			
		6. Packaging: Resealable plastic pouch 7. Comes with a brand Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Test Functionality Test. Bore a hole in a rubber/cork stopper C. Materials needed to perform inspection and test protocol Measuring tape/ruler				
5	Dry Cell, 9 volts	Functional Specifications: Used to provide 9 volts DC power to digital multimeter Performance Specifications: Should be able to provide 9 volts DC power to digital multi meter Design Specifications: 1. industry standard 9 volts dry cell Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Functionality Test: Set the BLR reference digital multimeter to 20VDC a) Insert the black test probe to the "COM" terminal of the digital multi meter and the red test probe to the "VΩHz" terminal of the digital multimeter b) Switch ON the digital multi meter Connect the black test lead of the BLR reference digital multimeter to the	pc			

		negative terminal of the dry cell and the red test lead to the positive terminal of the dry cell c) The BLR reference digital multi meter should register a reading of at least 9.0 volts DC C. Materials Needed to Perform Inspection and Tests: 1. 1 steel rule/meter tape 2. 1 BLR reference digital multimeter				
6	Musical Instrument (Miniature Guitar)	Functional Specifications: Used to demonstrate musical application of standing waves Performance Specifications: Should be able to demonstrate musical application of standing waves Design Specifications: 1. Mini acoustic type, half-size guitar, any color, surface finish: varnish 2. Made of good quality wood without sign of warp 3. Minimum dimensions: Overall length: 33 inches, Width:12 inches,Depth: 3 1/2 inches 4. Standard guitar steel strings (Nos. 1-6), 18 fret minimum Inspection And Test Procedures: Functionality Test: Turn the tuning peg clockwise. The string shall be tightened and without any sign of obstruction or getting stuck or loosen up. Materials Needed to Perform Inspection and Tests: 1. 1 steel rule/meter tape 2. 1 vernier caliper				
7	Nichrome wire. 0.4, 100 ft	Functional Specifications: Used as a wire loop and heating element on which a metal salt or solid ionic compound is made to adhere into it and is heated to emit a characteristic color on the Bunsen flame to identify the particular metal present in the compound Performance Specifications: Must be used as a wire loop on which a metal salt or solid ionic compound is made to adhere to, and is heated to emit a characteristic color on the Bunsen flame to identify the particular metal present in the compound in a laboratory activity, the Flame test Design Specifications: 1. Shape: Round wire 2. Material of wire: Nichrome-Alloy of nickel and chromium, Ni80 Cr20 with the following dimensions: ii. AWG size: 26 iii. Diameter: 0.4 mm iv. Length: 100 ft 3. Form: Soft, rust-free wire 4. Color: Silvery grey 5. Resistance: 2.57 ohms/foot 6. Annealed soft 7. Perfectly tensioned. Zero elongation, scratches, or other flaws. 8. Comes in a spool 9. Packed in a resealable plastic pouch 10. Comes with a brand Inspection And Test Procedures: A. (Refer to General Inspection Protocol)				

		negative terminal of the dry cell and the red test lead to the positive terminal of the dry cell c) The BLR reference digital multi meter should register a reading of at least 9.0 volts DC C. Materials Needed to Perform Inspection and Tests: 1. 1 steel rule/meter tape 2. 1 BLR reference digital multimeter				
6	Musical Instrument (Miniature Guitar)	Functional Specifications: Used to demonstrate musical application of standing waves Performance Specifications: Should be able to demonstrate musical application of standing waves Design Specifications: 1. Mini acoustic type, half-size guitar, any color, surface finish: varnish 2. Made of good quality wood without sign of warp 3. Minimum dimensions: Overall length: 33 inches, Width:12 inches,Depth: 3 1/2 inches 4. Standard guitar steel strings (Nos. 1-6), 18 fret minimum Inspection And Test Procedures: Functionality Test: Turn the tuning peg clockwise. The string shall be tightened and without any sign of obstruction or getting stuck or loosen up. Materials Needed to Perform Inspection and Tests: 1. 1 steel rule/meter tape 2. 1 vernier caliper	pc (Ctrl)			
7	Nichrome wire. 0.4, 100 ft	Functional Specifications: Used as a wire loop and heating element on which a metal salt or solid ionic compound is made to adhere into it and is heated to emit a characteristic color on the Bunsen flame to identify the particular metal present in the compound Performance Specifications: Must be used as a wire loop on which a metal salt or solid ionic compound is made to adhere to, and is heated to emit a characteristic color on the Bunsen flame to identify the particular metal present in the compound in a laboratory activity, the Flame test Design Specifications: 1. Shape: Round wire 2. Material of wire: Nichrome-Alloy of nickel and chromium, Ni80 Cr20 with the following dimensions: ii. AWG size: 26 iii. Diameter: 0.4 mm iv. Length: 100 ft 3. Form: Soft, rust-free wire 4. Color: Silvery grey 5. Resistance: 2.57 ohms/foot 6. Annealed soft 7. Perfectly tensioned. Zero elongation, scratches, or other flaws. 8. Comes in a spool 9. Packed in a resealable plastic pouch 10. Comes with a brand Inspection And Test Procedures: A. (Refer to General Inspection Protocol)	spool			

		B. Test Function test 1. Make a loop out of the nichrome wire 2. Clean it by immersing it in hydrochloric acid 3. Heat it in the tip of the bluish part of the flame heating 4. An orange color is produced 5. Place a small sample of ionic compound, an acid, like boric acid 6. Observe and record your results Nichrome wire is used as a heating element because it is inert or does not react with the samples, making sure that the colors emitted are from the specific elements/ions that emit them This test is done to check the accuracy and preciseness of the item, As stipulated in the technical specifications, is met C. Materials needed to perform inspection and test 1. Triple beam/top loading electronic balance 2. Alcohol/Bunsen burner 3. Hand gloves 4. Safety goggles 5. Face mask 6. Denatured alcohol 7. Lighter 8. Hydrochloric acid 9. Nichrome wire				
8	Protractor, student-type	Functional Specifications: Used to measure angles in degrees. Performance Specifications: Must be able to draw/construct and measure angles and arcs up to 180°. Design Specifications: 1. Protractor, student-type, plastic, transparent, semi-circular, 180º; 2. Ø150mm (or 75mm radius), 1mm thick (minimum); 3. Angular graduations are in degrees, from 0º to 180º. With two (2) sets of numerals, one reading clockwise and the other reading counterclockwise; 4. Linear graduations are in milimeters, from 0 to 100mm; 5. With a hole at vertex point enough for a fine string to pass through it; 6. Plastic Surface Finish: Smooth, clear, and free from scratches; 7. It must be horizontally level when laid flat on a table - no warping; Comes with a plastic case; and **shall be free from toxic materials. (Certificate of Non-Toxicity)** Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape rule				

		B. Test Function test 1. Make a loop out of the nichrome wire 2. Clean it by immersing it in hydrochloric acid 3. Heat it in the tip of the bluish part of the flame heating 4. An orange color is produced 5. Place a small sample of ionic compound, an acid, like boric acid 6. Observe and record your results Nichrome wire is used as a heating element because it is inert or does not react with the samples, making sure that the colors emitted are from the specific elements/ions that emit them This test is done to check the accuracy and preciseness of the item, As stipulated in the technical specifications, is met C. Materials needed to perform inspection and test 1. Triple beam/top loading electronic balance 2. Alcohol/Bunsen burner 3. Hand gloves 4. Safety goggles 5. Face mask 6. Denatured alcohol 7. Lighter 8. Hydrochloric acid 9. Nichrome wire				
8	Protractor, student-type	Functional Specifications: Used to measure angles in degrees. Performance Specifications: Must be able to draw/construct and measure angles and arcs up to 180°. Design Specifications: 1. Protractor, student-type, plastic, transparent, semi-circular, 180º; 2. Ø150mm (or 75mm radius), 1mm thick (minimum); 3. Angular graduations are in degrees, from 0º to 180º. With two (2) sets of numerals, one reading clockwise and the other reading counterclockwise; 4. Linear graduations are in milimeters, from 0 to 100mm; 5. With a hole at vertex point enough for a fine string to pass through it; 6. Plastic Surface Finish: Smooth, clear, and free from scratches; 7. It must be horizontally level when laid flat on a table - no warping; Comes with a plastic case; and **shall be free from toxic materials. (Certificate of Non-Toxicity)** Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape rule	pc			

9	Rubber Stopper # 6 for Erlenmeyer Flask (narrow-mouth) 250 mL , 1 hole	Functional Specifications: Used to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance with one 1) hole opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction .to prevent leaks, hazards and contamination. Performance Specifications: Must be able to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance. with one (1) hole opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction to prevent leaks, hazards and contamination. Design Specifications: 1. Shape: Cylindrical with a tapered bottom end 2. Material: Premium grade SBR black rubber compound with the following dimensions: a) Height: 25 mm b) Top Ø: 32 mm c) Bottom Ø: 26 mm d) Hole Ø: 5 mm 3. Number of holes: With one (1) hole 4. Dimension tolerance on height, top and bottom diameter: ± 0.5 mm 5. Hardness: 40 ± 5 Duro 6. Packed in resealable plastic bag 7. Comes with a brand				
		Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Tests 1. Hardness test by using the durometer. Hardness: 40 ± 5 Duro 2. 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 narrow mouth 250 mL Erlenmeyer flask and see if it fits well. The thermometer, stirrer or glass tubing must be able to fit the hole provided. C. Materials needed to perform inspection and test 1. Steel tape/ ruler 2. Digital vernier caliper 3. Durometer				
10	Rubber Stopper # 6 for Erlenmeyer Flask (narrow-mouth) 250 ml , 2 holes	Performance Specifications: Must be able to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance with two (2) holes opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction to prevent leaks, hazards and contamination. Design Specifications: 1. Shape: Cylindrical with a tapered bottom end 2. Material : Premium grade SBR black rubber compound with the following dimensions: a) Height: 25 mm b) Top Ø: 32 mm				

9	Rubber Stopper # 6 for Erlenmeyer Flask (narrow-mouth) 250 mL , 1 hole	Functional Specifications: Used to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance with one 1) hole opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction .to prevent leaks, hazards and contamination. Performance Specifications: Must be able to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance. with one (1) hole opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction to prevent leaks, hazards and contamination. Design Specifications: 1. Shape: Cylindrical with a tapered bottom end 2. Material: Premium grade SBR black rubber compound with the following dimensions: a) Height: 25 mm b) Top Ø: 32 mm c) Bottom Ø: 26 mm d) Hole Ø: 5 mm 3. Number of holes: With one (1) hole 4. Dimension tolerance on height, top and bottom diameter: ± 0.5 mm 5. Hardness: 40 ± 5 Duro 6. Packed in resealable plastic bag 7. Comes with a brand	pc			
		Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Tests 1. Hardness test by using the durometer. Hardness: 40 ± 5 Duro 2. 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 narrow mouth 250 mL Erlenmeyer flask and see if it fits well. The thermometer, stirrer or glass tubing must be able to fit the hole provided. C. Materials needed to perform inspection and test 1. Steel tape/ ruler 2. Digital vernier caliper 3. Durometer				
10	Rubber Stopper # 6 for Erlenmeyer Flask (narrow-mouth) 250 ml , 2 holes	Performance Specifications: Must be able to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance with two (2) holes opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction to prevent leaks, hazards and contamination. Design Specifications: 1. Shape: Cylindrical with a tapered bottom end 2. Material : Premium grade SBR black rubber compound with the following dimensions: a) Height: 25 mm b) Top Ø: 32 mm	pc (Ctrl)			

		c) Bottom Ø : 26 mm d) Hole Ø: 5 mm 3. Number of holes : Two (2) holes 4. Dimension tolerance on height, top and bottom diameter : ± 0.5 mm 5. Hardness : 40 ± 5 Duro 6. Packed in resealable plastic bag 7. Comes with a brand Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Tests 1. Hardness test by using the durometer. Hardness:40 ± 5 Duro 2. Fitting test to validate the level of performance and accuracy of the item by placing the bottom part of the rubber stopper into the narrow mouth, 250 mL Erlenmeyer flask, and see if it fits well. C. Materials needed to perform inspection and test 1. Steel tape/ ruler 2. Digital vernier caliper 3. Durometer				
11	Ruler, Plastic, 12 inches/30 cm	Functional Specifications: Used to measure length and draw straight lines Performance Specifications: Must be able to measure length of objects in flat surfaces up to 30cm in Metric and 12" in English standards of measurement. Design Specifications: 1. Ruler, plastic, transparent, smooth surface, and 1 mm thick (minimum); 2. Approximate Width x Length: 28 mm x 314 mm;				

		3. Graduations: Metric graduations on one side while English graduations on the other side: *Metric graduations are in centimeters, from 0 cm to 30 cm, with every cm subdivided by 10. *English graduations are in inches, from 0 inches to 12 inches, with every inch subdivided by 16. 4. Clear, readable black, non-groove permanent prints (will not fade and cannot be scratched off); 5. Bendable up to U-shape when held at both ends; and 6. The item shall be free from toxic materials. Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape Rule				
12	SET OF TOOLS:					
	Set of Tools: Ball Peen Hammer, handle length is 11", 350g approx. weight, 1 pc/set	Functional Specifications: Used to peen dent surfaces in metals Performance Specifications: Should be able to peen dent surfaces in metals Design Specifications: Ball Peen Hammer, handle length 11 inches, 350 grams gross weight approx., 1 pc. /set				
	Set of Tools: Long Nose Pliers, 6", 1 pair/set	Functional Specifications: Used to bend tiny solid wire connectors Performance Specifications: Should be able to bend tiny solid wire connectors				

		c) Bottom Ø : 26 mm d) Hole Ø: 5 mm 3. Number of holes : Two (2) holes 4. Dimension tolerance on height, top and bottom diameter : ± 0.5 mm 5. Hardness : 40 ± 5 Duro 6. Packed in resealable plastic bag 7. Comes with a brand Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Tests 1. Hardness test by using the durometer. Hardness:40 ± 5 Duro 2. Fitting test to validate the level of performance and accuracy of the item by placing the bottom part of the rubber stopper into the narrow mouth, 250 mL Erlenmeyer flask, and see if it fits well. C. Materials needed to perform inspection and test 1. Steel tape/ ruler 2. Digital vernier caliper 3. Durometer				
11	Ruler, Plastic, 12 inches/30 cm	Functional Specifications: Used to measure length and draw straight lines Performance Specifications: Must be able to measure length of objects in flat surfaces up to 30cm in Metric and 12" in English standards of measurement. Design Specifications: 1. Ruler, plastic, transparent, smooth surface, and 1 mm thick (minimum); 2. Approximate Width x Length: 28 mm x 314 mm;	pc			

		3. Graduations: Metric graduations on one side while English graduations on the other side: *Metric graduations are in centimeters, from 0 cm to 30 cm, with every cm subdivided by 10. *English graduations are in inches, from 0 inches to 12 inches, with every inch subdivided by 16. 4. Clear, readable black, non-groove permanent prints (will not fade and cannot be scratched off); 5. Bendable up to U-shape when held at both ends; and 6. The item shall be free from toxic materials. Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape Rule				
12	SET OF TOOLS:		SET			
	Set of Tools: Ball Peen Hammer, handle length is 11", 350g approx. weight, 1 pc/set	Functional Specifications: Used to peen dent surfaces in metals Performance Specifications: Should be able to peen dent surfaces in metals Design Specifications: Ball Peen Hammer, handle length 11 inches, 350 grams gross weight approx., 1 pc. /set				
	Set of Tools: Long Nose Pliers, 6", 1 pair/set	Functional Specifications: Used to bend tiny solid wire connectors Performance Specifications: Should be able to bend tiny solid wire connectors				

		Design Specifications: Long Nose Pliers with side cutter, 6 inches long, chrome vanadium material, 1 pair/set				
	Set of Tools: Mechanical Wire Cutter and Pliers, 6.5", 1 pair/set	Functional Specifications: Used to bend large wires Performance Specifications: Should be able to bend large wires Design Specifications: Mechanical-Wire Cutter and Pliers, 6 1/2 inches, chrome vanadium material, 1 pair/set				
	Set of Tools: Precision Screwdrivers Set, 6 pcs/set, with plastic casing, 1 set/set	Functional Specifications: Used to drive precision screws Performance Specifications: Should be able to drive precision screws Design Specifications: Precision Screwdrivers Set, 6 pc. (3 phillips, 3 flats)/set, with plastic casing, 1 set				
	Set of Tools: Screwdriver, flat, 6", 1 pc/set	Functional Specifications: Used to drive flat head screws Performance Specifications: Should be able to drive flat head screws Design Specifications: Screwdriver flat, 3/16 inches tip width x 6 inches long, chrome vanadium material, 1 pc. /set;				
	Set of Tools: Screwdriver, phillips, 6", 1 pc/set	Functional Specifications: Used to drive phillips type screws				
		Performance Specifications: Should be able to drive phillips type screws Design Specifications: Screwdriver, Phillips, Point size blade #3 x 6" long, chrome vanadium material, 1 pc/set;				
	Set of Tools: Soldering Iron, 60 watts, 1 pc/set	Functional Specifications: Used to heat electrical contacts for permanent joints Performance Specifications: Should be able to heat electrical contacts for permanent joints Design Specifications: Soldering Iron, 60 watts, small type, wooden handle, 1 pc. /set;				
	Set of Tools: Soldering Lead, Ø1mm, Grade 60/40, Wt.: 1 lb/spool, 1 spool/set	Functional Specifications: Used to provide permanent joint for different electrical components Performance Specifications: Used to provide permanent joints for different electrical components Design Specifications: Soldering Lead, Ø 1 mm, Grade 60/40, weight: 1 lb./spool, 1 spool/set				
	Set of Tools: Soldering Paste, 50 grams/can, 1 can/set	Functional Specifications: Used to provide better adhesion of solder lead to electrical joints Performance Specifications: Used to provide better adhesion of solder lead to electrical joints				

		Design Specifications: Long Nose Pliers with side cutter, 6 inches long, chrome vanadium material, 1 pair/set				
	Set of Tools: Mechanical Wire Cutter and Pliers, 6.5", 1 pair/set	Functional Specifications: Used to bend large wires Performance Specifications: Should be able to bend large wires Design Specifications: Mechanical-Wire Cutter and Pliers, 6 1/2 inches, chrome vanadium material, 1 pair/set				
	Set of Tools: Precision Screwdrivers Set, 6 pcs/set, with plastic casing, 1 set/set	Functional Specifications: Used to drive precision screws Performance Specifications: Should be able to drive precision screws Design Specifications: Precision Screwdrivers Set, 6 pc. (3 phillips, 3 flats)/set, with plastic casing, 1 set				
	Set of Tools: Screwdriver, flat, 6", 1 pc/set	Functional Specifications: Used to drive flat head screws Performance Specifications: Should be able to drive flat head screws Design Specifications: Screwdriver flat, 3/16 inches tip width x 6 inches long, chrome vanadium material, 1 pc. /set;				
	Set of Tools: Screwdriver, phillips, 6", 1 pc/set	Functional Specifications: Used to drive phillips type screws				
		Performance Specifications: Should be able to drive phillips type screws Design Specifications: Screwdriver, Phillips, Point size blade #3 x 6" long, chrome vanadium material, 1 pc/set;				
	Set of Tools: Soldering Iron, 60 watts, 1 pc/set	Functional Specifications: Used to heat electrical contacts for permanent joints Performance Specifications: Should be able to heat electrical contacts for permanent joints Design Specifications: Soldering Iron, 60 watts, small type, wooden handle, 1 pc. /set;				
	Set of Tools: Soldering Lead, Ø1mm, Grade 60/40, Wt.: 1 lb/spool, 1 spool/set	Functional Specifications: Used to provide permanent joint for different electrical components Performance Specifications: Used to provide permanent joints for different electrical components Design Specifications: Soldering Lead, Ø 1 mm, Grade 60/40, weight: 1 lb./spool, 1 spool/set				
	Set of Tools: Soldering Paste, 50 grams/can, 1 can/set	Functional Specifications: Used to provide better adhesion of solder lead to electrical joints Performance Specifications: Used to provide better adhesion of solder lead to electrical joints				

		Design Specifications: Soldering Paste, all-purpose flux, non-corrosive, 50 grams/can, 1 can/set;				
	Set of Tools: Tweezers, stainless steel, with curved tips, 6.5" long, 1 pair/set	Functional Specifications: Used to hold and pick tiny electronics components Performance Specifications: Should be able to hold and pick tiny electronics components Design Specifications: Tweezers, stainless steel, with curved tips, 6 1/2 inches long, 1 pair/set;				
	Set of Tools:	INSPECTION and TEST PROCEDURES A. (Refer to General Inspection Protocol) B. Functionality Test: 1. Screw driver, flat: a. drive the flat test screw into the piece of wood; flat screw should get into the wood b. detach the buried screw from the wood 2. Screw driver, phillips; a) drive the phillips test screw into the piece of wood; b) phillips, screw should get into the wood c) detach the buried phillips screw from the wood 3. Long nose pliers: a) open and close the long nose pliers continuously at least 10 times b) the pliers should be firm and not loose c) get a piece of #20 magnet wire d) bend one end of the wire then form a loop				

		4. Mechanical wire cutter: a) open and close the mechanical wire cutter continuously at least 10 times b) the mechanical wire cutter should be firm, not loose, and should not stuck up c) get hold of a AWG 20 stranded wire and cut a portion 1 cm from one end using the wire cutter d) the wire should be snap off unimpeded 5. Soldering iron: a. insert the plug of the soldering iron into the wall outlet and pull out after 2 seconds b. touch the tip of the soldering iron with the tip of your forefinger; it should feel warm 6. Ball peen hammer a. visual and specifications only 7. Precision screw drivers: a. visual and specifications only 8. Tweezers: a. test tweezers to pick up tiny objects that are too small for your finger to pick 9. Solder lead: a. to be tested with the soldering iron b. plug soldering iron into the wall outlet for 3 minutes c. bring the solder lead in contact with the tip of the soldering iron; the lead should melt 10. Solder paste: a. strip off of insulation 2 ends of magnet wire b. plug the solder iron into the wall outlet for 3 minutes c. bring the two ends of the bare ends of the magnet wire together using long				

		Design Specifications: Soldering Paste, all-purpose flux, non-corrosive, 50 grams/can, 1 can/set;				
	Set of Tools: Tweezers, stainless steel, with curved tips, 6.5" long, 1 pair/set	Functional Specifications: Used to hold and pick tiny electronics components Performance Specifications: Should be able to hold and pick tiny electronics components Design Specifications: Tweezers, stainless steel, with curved tips, 6 1/2 inches long, 1 pair/set;				
	Set of Tools:	INSPECTION and TEST PROCEDURES A. (Refer to General Inspection Protocol) B. Functionality Test: 1. Screw driver, flat: a. drive the flat test screw into the piece of wood; flat screw should get into the wood b. detach the buried screw from the wood 2. Screw driver, phillips; a) drive the phillips test screw into the piece of wood; b) phillips, screw should get into the wood c) detach the buried phillips screw from the wood 3. Long nose pliers: a) open and close the long nose pliers continuously at least 10 times b) the pliers should be firm and not loose c) get a piece of #20 magnet wire d) bend one end of the wire then form a loop				

		4. Mechanical wire cutter: a) open and close the mechanical wire cutter continuously at least 10 times b) the mechanical wire cutter should be firm, not loose, and should not stuck up c) get hold of a AWG 20 stranded wire and cut a portion 1 cm from one end using the wire cutter d) the wire should be snap off unimpeded 5. Soldering iron: a. insert the plug of the soldering iron into the wall outlet and pull out after 2 seconds b. touch the tip of the soldering iron with the tip of your forefinger; it should feel warm 6. Ball peen hammer a. visual and specifications only 7. Precision screw drivers: a. visual and specifications only 8. Tweezers: a. test tweezers to pick up tiny objects that are too small for your finger to pick 9. Solder lead: a. to be tested with the soldering iron b. plug soldering iron into the wall outlet for 3 minutes c. bring the solder lead in contact with the tip of the soldering iron; the lead should melt 10. Solder paste: a. strip off of insulation 2 ends of magnet wire b. plug the solder iron into the wall outlet for 3 minutes c. bring the two ends of the bare ends of the magnet wire together using long				

		nose pliers and hold in place by the pliers d. apply small amount of solder paste on the joined bare ends of the magnet wire e. bring the tip of the hot solder iron into the joined bare wires f. place the solder lead underneath the tip of the soldering iron; you will see the lead melts and envelopes the joined bare wires g. you will see dark stains on the paste h. release the joined wires from the pliers i. the ends are now soldered in place C. Materials Needed to Perform Inspection and Tests: 1. 1 steel rule/meter tape 2. 1 Vernier caliper 3. 220 volts outlet 4. 1-flat screw 5. 1-phillips screw 6. 1-wood block, 2" x 2" x 2"				
13	Triangular File, fine, 6" long, with plastic handle	Functional Specifications: Used to cut the glass tubing Performance Specifications: Must be able to cut the glass tubing Design Specifications: 1. Type of file: Triangular 2. Shape: Triangular 3. Material: High carbon steel 4. Kind of file: Fine, smooth 5. Length of file: 6" (150-152.4 mm) long 6. Material of handle: Plastic 7. Packed in a resealable pouch 8. Comes with a brand				

		nose pliers and hold in place by the pliers d. apply small amount of solder paste on the joined bare ends of the magnet wire e. bring the tip of the hot solder iron into the joined bare wires f. place the solder lead underneath the tip of the soldering iron; you will see the lead melts and envelopes the joined bare wires g. you will see dark stains on the paste h. release the joined wires from the pliers i. the ends are now soldered in place C. Materials Needed to Perform Inspection and Tests: 1. 1 steel rule/meter tape 2. 1 Vernier caliper 3. 220 volts outlet 4. 1-flat screw 5. 1-phillips screw 6. 1-wood block, 2" x 2" x 2"				
13	Triangular File, fine, 6" long, with plastic handle	Functional Specifications: Used to cut the glass tubing Performance Specifications: Must be able to cut the glass tubing Design Specifications: 1. Type of file: Triangular 2. Shape: Triangular 3. Material: High carbon steel 4. Kind of file: Fine, smooth 5. Length of file: 6" (150-152.4 mm) long 6. Material of handle: Plastic 7. Packed in a resealable pouch 8. Comes with a brand	pc			

(Please see attached Ammended Detailed Technical Specifications for your reference)

AMMENDED DETAILED TECHNICAL SPECIFICATIONS

No.	Item Name	Technical Specifications	Unit	Quantity	STATEMENT OF COMPLIANCE (State Comply or Not Comply)	BIDDER'S ACTUAL OFFER (state the brand and model specifying the product offered with an attachment of official brochure or unamended sales literature as applicable)
1	Beaker, borosilicate, 100 mL	Functional Specifications: Used to contain/hold/prepare solids and liquids during chemical reaction and to heat them over a Bunsen burner's flame up to more than 150°C for normal, standard use service Performance Specifications: Must be able to contain/hold /prepare solids and liquids during chemical reaction up to 100 mL capacity and heats them over a Bunsen burner's flame up to more than 150°C for normal, standard use service Design Specifications: 1. Type: Griffin, low form 2. Shape: Cylindrical container with straight sides, a flat bottom, and with a small spout (or "beak") to aid in pouring 3. Material: Borosilicate, clear and transparent bubble-free glass with the following dimensions: a. Outside diameter : 50 mm-52 mm b. Height: 70 mm-72 mm c. Thickness : 1.5 mm-2.0 mm	pc			

		4. Capacity : 100 mL ± 5% etched onto the glass;" 5. Graduation starts at : 20 mL in 10 mL increments. 6. Graduation range : 20 mL to 80 mL 7. With permanent white enamel graduations of approximate volumes, inscriptions 8. With large white marking spot 9. Features an easy-pour spout 10. With single graduated metric scale 11. Can withstand heating up to 200-230°C for normal, standard use service 12. Wrapped in paper, enclosed in bubble wrap, and packed in a compartmentalized box Inspection and Test Procedures: A. (Refer to General Inspection Protocol) B. Tests 1. Scratch test Scratch using your nails the brand and white graduations inscriptions and other markings of the thermometer; to test for the peel and adhesion properties of embossed brand and permanency of graduations, and other markings 2. 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). 3. Volumetric Test Measure 100 mL of water using a standard 100 mL graduated cylinder, and pour into it, 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 250 mL: ±5% 4. Functionality test A Place half full water in a beaker Heat the beaker up to its boiling point of 100^0C C. Needed Equipment and Material: 1. Digital Vernier caliper 2. Steel tape measure 3. Graduated cylinder, 100 mL 4. Funnel, glass 5. Denatured alcohol 6. Rag/tissue paper 7. Glycerine (1 liter) 8. Tripod 9. Lighter 10. Wire gauze 11. Thermometer, partial immersion 12. Bunsen/alcohol burner 13. Hand gloves 14. Face mask 15. Safety goggles				

2	Beaker, borosilicate, 500 mL	Functional Specifications: a) Used to contain/hold/prepare solids and liquids during chemical reaction and to heat them over a Bunsen burner's flame up to 150°C for normal, standard use service and b) to serve as a water bath when heating flammable chemicals instead of an open flame to prevent ignition. Performance Specifications: a) Must be able to contain/hold /prepare solids and liquids during chemical reaction and heats them over a Bunsen burner's flame up to 150°C for normal, standard use service and to serve as a water bath b) to serve as a water bath when heating flammable chemicals instead of an open flame to prevent ignition. Design Specifications: 1. Type: Berzellius, tall form 2. Shape: Cylindrical container with straight sides, a flat bottom, with a small spout (or "beak") to aid pouring 3. Material : Borosilicate, clear, bubble free glass , Berzellius. tall form with the following dimensions: a. Outside Diameter Range :75 mm-80 mm b. Height range: 136 mm -140 mm c. Thickness :1.5 mm to 2.0 mm 4. Capacity :500 mL ; ± 5% etched/embossed onto the glass 5. With permanent white enamel graduations of approximate volumes, inscriptions and 6. With large white marking spot	pc			

		7. With easy pour spout 8. Double graduated metric scale 9. Marked to fill: Graduation starts at 50 mL in 50 mL increments 10. Marked to empty: Graduation starts at 0 mL in 50 mL increments 11. Can withstand heating up to 200-230°C for normal, standard use service 12. Wrapped in paper, enclosed in bubble wrap and packed individually in a compartmentalized box 13. Must be free from breakage, cracks, chipped rims and other defects Comes with a brand, with five (5) years existence in the glass wares industry Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Tests a) Do scratch test: scratch using your nails the brand and white graduations and inscriptions and other markings of the thermometer; to test for the peel and adhesion properties of embossed brand and permanency of graduations, and other markings b) Do the 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 c) Do volumetric test, by measuring 500 mL of water using a standard 100 mL graduated cylinder, and pour into it; 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 500 mL, ±5% d) Perform functionality test by heating the beaker with water up to its boiling point of 100^0C C. Materials needed to perform inspection and test 1. Measuring tape, ruler 2. Graduated cylinder, 10 mL 3. Denatured alcohol, 1 bottle 4. Heater 5. Pail 6. Water 7. Lighter 8. Rag/tissue paper				
3	Beaker, Plastic 500 mL	Functional Specifications: Used to contain liquids and allow liquids to flow thru spout when overfilled Performance Specifications: Should be able to contain liquids and allow liquids to flow thru spout when overfilled	pc			

		Design Specifications: 1. Material: polypropylene plastic 2. Capacity: 500 mL Increments: 10 mL 3. Height: 12 cm 4. Diameter: 8 cm 5. Must have container box. 6. Must be free from any toxic material. Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Volumetric Test: Measure 500 mL of water using a standard 100 mL graduated cylinder and pour into it 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 500 mL; ± 10% C. Materials 1. Tap Water 2. 100 mL graduated cylinder				
4	Cork borer	Functional Specifications: Used to bore or to cut a round hole of six different diameters in a cork/rubber stopper with a steel ramrod/eject rod pushing the removed cork out of the borer	pc			

		Performance Specifications: Must be able to bore or to cut a round hole of six different diameters in a cork or rubber stopper and remove cork out of the borer by pushing it with a steel ramrod/eject rod Design Specifications: 1. Shape of cork borer: Long, hollow round rod/tube with sharpened ends 2. Material of tube/rod: Nickel-plated steel borer 3. A set of six (6) different diameter sizes:(4 mm, 4.5 mm, 6 mm, 8 mm, 9.5 mm, 11 mm) 4. Comes with a handles whch are individually and permanently numbered (1-6) for easy identification handle a) Shape of handle: T-shaped b) Material of handle: Hard plastic c) Finish: Smooth d) Color of handle: Red 5. Includes a ramrod/eject rod pushing the removed cork out of the borer Material of ramrod/eject rod: Steel 6. Packaging: Resealable plastic pouch 7. Comes with a brand Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Test Functionality Test. Bore a hole in a rubber/cork stopper				

		C. Materials needed to perform inspection and test protocol Measuring tape/ruler				
5	Dry Cell, 9 volts	Functional Specifications: Used to provide 9 volts DC power to digital multimeter Performance Specifications: Should be able to provide 9 volts DC power to digital multi meter Design Specifications: 1. industry standard 9 volts dry cell Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Functionality Test: Set the BLR reference digital multimeter to 20VDC a) Insert the black test probe to the "COM" terminal of the digital multi meter and the red test probe to the "VΩHz" terminal of the digital multimeter b) Switch ON the digital multi meter Connect the black test lead of the BLR reference digital multimeter to the negative terminal of the dry cell and the red test lead to the positive terminal of the dry cell c) The BLR reference digital multi meter should register a reading of at least 9.0 volts DC	pc			

		C. Materials Needed to Perform Inspection and Tests: 1. 1 steel rule/meter tape 2. 1 BLR reference digital multimeter				
6	Musical Instrument (Miniature Guitar)	Functional Specifications: Used to demonstrate musical application of standing waves Performance Specifications: Should be able to demonstrate musical application of standing waves Design Specifications: 1. Mini acoustic type, half-size guitar, any color, surface finish: varnish 2. Made of good quality wood without sign of warp 3. Minimum dimensions: Overall length: 33 inches, Width:12 inches,Depth: 3 1/2 inches 4. Standard guitar steel strings (Nos. 1-6), 18 fret minimum Inspection And Test Procedures: Functionality Test: Turn the tuning peg clockwise. The string shall be tightened and without any sign of obstruction or getting stuck or loosen up. Materials Needed to Perform Inspection and Tests: 1. 1 steel rule/meter tape 2. 1 vernier caliper	pc			
7	Nichrome wire. 0.4, 100 ft	Functional Specifications: Used as a wire loop and heating element on which a metal salt or solid ionic compound is made to adhere into it	spool			

		and is heated to emit a characteristic color on the Bunsen flame to identify the particular metal present in the compound Performance Specifications: Must be used as a wire loop on which a metal salt or solid ionic compound is made to adhere to, and is heated to emit a characteristic color on the Bunsen flame to identify the particular metal present in the compound in a laboratory activity, the Flame test Design Specifications: 1. Shape: Round wire 2. Material of wire: Nichrome-Alloy of nickel and chromium, Ni80 Cr20 with the following dimensions: ii. AWG size: 26 iii. Diameter: 0.4 mm iv. Length: 100 ft 3. Form: Soft, rust-free wire 4. Color: Silvery grey 5. Resistance: 2.57 ohms/foot 6. Annealed soft 7. Perfectly tensioned. Zero elongation, scratches, or other flaws. 8. Comes in a spool 9. Packed in a resealable plastic pouch 10. Comes with a brand Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Test Function test				

		1. Make a loop out of the nichrome wire 2. Clean it by immersing it in hydrochloric acid 3. Heat it in the tip of the bluish part of the flame heating 4. An orange color is produced 5. Place a small sample of ionic compound, an acid, like boric acid 6. Observe and record your results Nichrome wire is used as a heating element because it is inert or does not react with the samples, making sure that the colors emitted are from the specific elements/ions that emit them This test is done to check the accuracy and preciseness of the item, As stipulated in the technical specifications, is met C. Materials needed to perform inspection and test 1. Triple beam/top loading electronic balance 2. Alcohol/Bunsen burner 3. Hand gloves 4. Safety goggles 5. Face mask 6. Denatured alcohol 7. Lighter 8. Hydrochloric acid 9. Nichrome wire				
8	Protractor, student-type	Functional Specifications: Used to measure angles in degrees. Performance Specifications: Must be able to draw/construct and measure angles and arcs up to 180°. Design Specifications:	pc			

		1. Protractor, student-type, plastic, transparent, semi-circular, 180^0; 2. Ø150mm (or 75mm radius), 1mm thick (minimum); 3. Angular graduations are in degrees, from 0^0 to 180^0. With two (2) sets of numerals, one reading clockwise and the other reading counterclockwise; 4. Linear graduations are in milimeters, from 0 to 100mm; 5. With a hole at vertex point enough for a fine string to pass through it; 6. Plastic Surface Finish: Smooth, clear, and free from scratches; 7. It must be horizontally level when laid flat on a table - no warping; Comes with a plastic case; and **shall be free from toxic materials. (Certificate of Non-Toxicity)** Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape rule				
9	Rubber Stopper # 6 for Erlenmeyer Flask (narrow-mouth) 250 mL , 1 hole	Functional Specifications: Used to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance with one 1) hole opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction .to	pc			

		prevent leaks, hazards and contamination. Performance Specifications: Must be able to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance. with one (1) hole opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction to prevent leaks, hazards and contamination. Design Specifications: 1. Shape: Cylindrical with a tapered bottom end 2. Material: Premium grade SBR black rubber compound with the following dimensions: a) Height: 25 mm b) Top Ø: 32 mm c) Bottom Ø: 26 mm d) Hole Ø: 5 mm 3. Number of holes: With one (1) hole 4. Dimension tolerance on height, top and bottom diameter: ± 0.5 mm 5. Hardness: 40 ± 5 Duro 6. Packed in resealable plastic bag 7. Comes with a brand Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Tests 1. Hardness test by using the durometer. Hardness: 40 ± 5 Duro				

		2. 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 narrow mouth 250 mL Erlenmeyer flask and see if it fits well. The thermometer, stirrer or glass tubing must be able to fit the hole provided. C. Materials needed to perform inspection and test 1. Steel tape/ ruler 2. Digital vernier caliper 3. Durometer				
10	Rubber Stopper # 6 for Erlenmeyer Flask (narrow-mouth) 250 mL , 2 holes	Performance Specifications: Must be able to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance with two (2) holes opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction to prevent leaks, hazards and contamination. Design Specifications: 1. Shape: Cylindrical with a tapered bottom end 2. Material : Premium grade SBR black rubber compound with the following dimensions: a) Height: 25 mm b) Top Ø: 32 mm c) Bottom Ø : 26 mm d) Hole Ø: 5 mm 3. Number of holes : Two (2) holes	pc			

		4. Dimension tolerance on height, top and bottom diameter : ± 0.5 mm 5. Hardness : 40 ± 5 Duro 6. Packed in resealable plastic bag 7. Comes with a brand Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Tests 1. Hardness test by using the durometer. Hardness:40 ± 5 Duro 2. Fitting test to validate the level of performance and accuracy of the item by placing the bottom part of the rubber stopper into the narrow mouth, 250 mL Erlenmeyer flask, and see if it fits well. C. Materials needed to perform inspection and test 1. Steel tape/ ruler 2. Digital vernier caliper 3. Durometer				
11	Ruler, Plastic, 12 inches/30 cm	Functional Specifications: Used to measure length and draw straight lines Performance Specifications: Must be able to measure length of objects in flat surfaces up to 30cm in Metric and 12" in English standards of measurement. Design Specifications: 1. Ruler, plastic, transparent, smooth surface, and 1 mm thick (minimum); 2. Approximate Width x Length: 28 mm x 314 mm;	pc			

		3. Graduations: Metric graduations on one side while English graduations on the other side: *Metric graduations are in centimeters, from 0 cm to 30 cm, with every cm subdivided by 10. *English graduations are in inches, from 0 inches to 12 inches, with every inch subdivided by 16. 4. Clear, readable black, non-groove permanent prints (will not fade and cannot be scratched off); 5. Bendable up to U-shape when held at both ends; and 6. The item shall be free from toxic materials. Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Materials to be used to perform the Tests and Inspection Procedures: 1. Tape Rule				
12	SET OF TOOLS:		SET			
	Set of Tools: Ball Peen Hammer, handle length is 11", 350g approx. weight, 1 pc/set	Functional Specifications: Used to peen dent surfaces in metals Performance Specifications: Should be able to peen dent surfaces in metals Design Specifications: Ball Peen Hammer, handle length 11 inches, 350 grams gross weight approx., 1 pc. /set				
	Set of Tools: Long Nose Pliers, 6", 1 pair/set	Functional Specifications: Used to bend tiny solid wire connectors				

		Performance Specifications: Should be able to bend tiny solid wire connectors Design Specifications: Long Nose Pliers with side cutter, 6 inches long, chrome vanadium material, 1 pair/set				
	Set of Tools: Mechanical Wire Cutter and Pliers, 6.5", 1 pair/set	Functional Specifications: Used to bend large wires Performance Specifications: Should be able to bend large wires Design Specifications: Mechanical-Wire Cutter and Pliers, 6 1/2 inches, chrome vanadium material, 1 pair/set				
	Set of Tools: Precision Screwdrivers Set, 6 pcs/set, with plastic casing, 1 set/set	Functional Specifications: Used to drive precision screws Performance Specifications: Should be able to drive precision screws Design Specifications: Precision Screwdrivers Set, 6 pc. (3 phillips, 3 flats)/set, with plastic casing, 1 set				
	Set of Tools: Screwdriver, flat, 6", 1 pc/set	Functional Specifications: Used to drive flat head screws Performance Specifications: Should be able to drive flat head screws Design Specifications:				

		Screwdriver flat, 3/16 inches tip width x 6 inches long, chrome vanadium material, 1 pc. /set;				
	Set of Tools: Screwdriver, phillips, 6", 1 pc/set	Functional Specifications: Used to drive phillips type screws Performance Specifications: Should be able to drive phillips type screws Design Specifications: Screwdriver, Phillips, Point size blade #3 x 6" long, chrome vanadium material, 1 pc/set;				
	Set of Tools: Soldering Iron, 60 watts, 1 pc/set	Functional Specifications: Used to heat electrical contacts for permanent joints Performance Specifications: Should be able to heat electrical contacts for permanent joints Design Specifications: Soldering Iron, 60 watts, small type, wooden handle, 1 pc. /set;				
	Set of Tools: Soldering Lead, Ø1mm, Grade 60/40, Wt.: 1 lb/spool, 1 spool/set	Functional Specifications: Used to provide permanent joint for different electrical components Performance Specifications: Used to provide permanent joints for different electrical components				

		Design Specifications: Soldering Lead, Ø 1 mm, Grade 60/40, weight: 1 lb./spool, 1 spool/set				
	Set of Tools: Soldering Paste, 50 grams/can, 1 can/set	Functional Specifications: Used to provide better adhesion of solder lead to electrical joints Performance Specifications: Used to provide better adhesion of solder lead to electrical joints Design Specifications: Soldering Paste, all-purpose flux, non-corrosive, 50 grams/can, 1 can/set;				
	Set of Tools: Tweezers, stainless steel, with curved tips, 6.5" long, 1 pair/set	Functional Specifications: Used to hold and pick tiny electronics components Performance Specifications: Should be able to hold and pick tiny electronics components Design Specifications: Tweezers, stainless steel, with curved tips, 6 1/2 inches long, 1 pair/set;				
	Set of Tools:	INSPECTION and TEST PROCEDURES A. (Refer to General Inspection Protocol) B. Functionality Test: 1. Screw driver, flat: a. drive the flat test screw into the piece of wood; flat screw should get into the wood				

		b. detach the buried screw from the wood 2. Screw driver, phillips: a) drive the phillips test screw into the piece of wood; b) phillips screw should get into the wood c) detach the buried phillips screw from the wood 3. Long nose pliers: a) open and close the long nose pliers continuously at least 10 times b) the pliers should be firm and not loose c) get a piece of #20 magnet wire d) bend one end of the wire then form a loop 4. Mechanical wire cutter: a) open and close the mechanical wire cutter continuously at least 10 times b) the mechanical wire cutter should be firm, not loose, and should not stuck up c) get hold of a AWG 20 stranded wire and cut a portion 1 cm from one end using the wire cutter d) the wire should be snap off unimpeded 5. Soldering iron: a. insert the plug of the soldering iron into the wall outlet and pull out after 2 seconds b. touch the tip of the soldering iron with the tip of your forefinger; it should feel warm 6. Ball peen hammer a. visual and specifications only				

		7. Precision screw drivers: a. visual and specifications only 8. Tweezers: a. test tweezers to pick up tiny objects that are too small for your finger to pick 9. Solder lead: a. to be tested with the soldering iron b. plug soldering iron into the wall outlet for 3 minutes c. bring the solder lead in contact with the tip of the soldering iron; the lead should melt 10. Solder paste: a. strip off of insulation 2 ends of magnet wire b. plug the solder iron into the wall outlet for 3 minutes c. bring the two ends of the bare ends of the magnet wire together using long nose pliers and hold in place by the pliers d. apply small amount of solder paste on the joined bare ends of the magnet wire e. bring the tip of the hot solder iron into the joined bare wires f. place the solder lead underneath the tip of the soldering iron; you will see the lead melts and envelopes the joined bare wires g. you will see dark stains on the paste h. release the joined wires from the pliers i. the ends are now soldered in place C. Materials Needed to Perform Inspection and Tests: 1. 1 steel rule/meter tape 2. 1 Vernier caliper				

		3. 220 volts outlet 4. 1-flat screw 5. 1-phillips screw 6. 1-wood block, 2” x 2” x 2”				
13	Triangular File, fine, 6" long, with plastic handle	Functional Specifications: Used to cut the glass tubing Performance Specifications: Must be able to cut the glass tubing Design Specifications: 1. Type of file: Triangular 2. Shape: Triangular 3. Material: High carbon steel 4. Kind of file: Fine, smooth 5. Length of file: 6" (150-152.4 mm) long 6. Material of handle: Plastic 7. Packed in a resealable pouch 8. Comes with a brand Inspection And Test Procedures: A. (Refer to General Inspection Protocol) B. Test Functionality test to validate the level of performance and accuracy of the item Cut a glass tubing C. Materials needed to perform inspection and test 1. Steel tape/ ruler 2. Glass tubing 3. Water	pc			

Note:

Item No. 12 Set of Tools - Must be quoted as SET.

For further information, you may contact the BAC Secretariat at bac.calabarzon@deped.gov.ph.

Please be guided accordingly.

LOIDA N. NIDEA
BAC Chairperson