

| Item | Unit | Item Description | Amendments, Additional Specifications/ Clarifications | Quantity |
|-------|------|--|---|----------|
| Lot 1 | | LOT 1: Chemistry lab apparatus and glassware systems | | |
| | set | Steam Distillation Set | | 2 |
| | | Each steam distillation set must have: | | |
| | | steam generator which is a one 1-L distillation flask with a one-hole rubber stopper | | |
| | | one 1-L round bottom flask with one two-hole rubber stopper | | |
| | | one coil condenser with two one hole rubber stopper (one for each end) | with glass connector | |
| | | one receiver/delivery adapter | must fit the lower end (cone end) of condenser | |
| | | 2 pcs 250 mL erlenmeyer flask, one with one-hole rubber stopper and the other one with two-hole rubber stopper | | |
| | | 2 pcs glass tubing: 2 feet each | 6mm internal diameter | |
| | | rubber tubing: 15 feet | for chemistry lab use; 6mm internal diameter | |
| | | iron stand 4 pcs | | |
| | | iron clamps 5 pcs | | |
| | | 3 pcs iron rings | 4 inches diameter of ring | |
| | | large plastic box with lid to store all glasswares in each set | | |
| | | all glasswares must be pyerx, corning or glassco | ALL glasswares must be of trusted brand | |
| | unit | Round Bottom Flask (1-L) Heater/Heating Mantle | | 2 |
| | | fabric heating mantle with digital control | | |
| | | hemispherical | | |
| | | for 1-L round bottom flask | | |
| | | maximum temperature of 450 degC | | |
| | | power: 220 V | | |
| | | one year warranty | | |
| | | provide picture of equipment preferably colored in the bid docs | | |
| | set | Vacuum Filtration System (with Buchner Funnel) | | 2 |
| | | Per set: one 1-L filter flask with two one-hole rubber stopper; | | |
| | | 1 500-mL filter flask with two one-hole rubber stopper; | | |

| | | | |
|------|--|--|---|
| | one 250-mL filter flask with two one-hole rubber stopper; | | |
| | all flasks have glass connector; | | |
| | 6 pcs Buchner funnel porcelain 67mm x 110 mm (OD x H); | | |
| | appropriate rubber tubing at least 10 feet; | for chemistry lab use; 6mm internal diameter | |
| | all glasswares must be pyrex, corning or glassco | ALL glasswares must be of trusted brand | |
| set | Separatory Funnel with Stand | | 6 |
| | Per set: Squibb separating funnels: one 500mL and one 250mL; | | |
| | each funnel with PP stopper and PTFE stopcock; | | |
| | one iron stand; | | |
| | one retort ring with bosshead that can hold the funnels; | | |
| | two retort clamps (3 prongs-euro designs); | | |
| | all glasswares must be pyrex, corning or glassco | ALL glasswares must be of trusted brand | |
| kit | Molecular Model Kits | | 6 |
| | For Advanced Organic Chemistry; | | |
| | at least 333-PIECE Molecular Model Kit with at least 142 Atom | | |
| | provide picture of kit preferably colored in the bid docs | | |
| set | Soxhlet Extraction Apparatus 85 mL capacity | | 1 |
| | Flask Capacity should be 250 ml or more | | |
| | extractor volume capacity should be 85 ml or more | ALL glasswares must be of trusted brand | |
| set | Kjeldahl Distilling Apparatus (ST Joints) | | 1 |
| | 1. Individual glasswares should be connected with ST Joints (e.g. flask and condenser) | | |
| | 2. Flask should be capable of doing distillation and digestion of | ALL glasswares must be of trusted brand | |
| unit | Vacuum Desiccator | | 1 |
| | Max vacuum: 27.9 in Hg; | | |
| | glass desiccator; | | |
| | borosilicate glass | | |

| | | | |
|-------|------|--|------------------|
| Lot 2 | | LOT 2: Biotechnology equipment A | |
| | unit | Incubator-shaker | 1 |
| | | Temp range: 15 to 60 degC; | With AVR |
| | | Temp control: digital; | |
| | | Speed range: 10-350 rpm; | |
| | | Compressor: around 1/5 HP; | |
| | | Display type: digital; | |
| | | Circulation fan: convection fan; | |
| | | Materials: steel plate with powder coating; | |
| | | Cover: Acrylic; | |
| | | Power: 220V; | |
| | | With holders for 125-mL, 250-mL, 500-mL and 1-L Erlenmeyer | |
| | | Driver system: beltless direct drive; | |
| | | One year warranty on parts and labor; | |
| | | with locally available technician for after sale maintenance; | |
| | | provide picture of equipment preferably colored in the bid docs | |
| | | | |
| | unit | Autoclave | 1 |
| | | Effective internal capacity: at least 60 L; | With AVR and UPS |
| | | Chamber material: stainless steel; | |
| | | Max/Min Operating Pressure: 0 - 180 kPa (0-26.2 psig); | |
| | | Max/Min Operating Temp: 10-131.3 degC; | |
| | | Sterilization Temp: 105-126 degC; | |
| | | Temperature gauge range: digital display 80-141 degC; | |
| | | Safety valve releasing pressure: 180 kPa; | |
| | | Pressure gauge range: 0-0.3 MPa (0-43.5 psig); | |
| | | Time setting range: 1 min to 180 min; | |
| | | Exhaust tank: 3L tank; | |
| | | Safety devices: pressure safety valve, anti-dry scorch thermo-limiter, door switch, handle switch, current fuse, 250 VAC 0.25 Type T Temperature fuse; | |
| | | Accessories: stainless steel basket; | |
| | | Sound pressure level: max 70 dB; | |
| | | Power: 220- 230 V; | |
| | | Power consumption: 2 kW | or 2000W |
| | | One year warranty on parts and labor; | |

| | | | |
|-------|-----|---|---|
| | | with locally available technician for after sale maintenance; | |
| | | provide picture of equipment preferably colored in the bid docs | |
| | | | |
| | | Refrigerated MicroCentrifuge | 1 |
| | | Quiet motor; | with AVR and UPS |
| | | LED controls, Digital display; | |
| | | Fixed-angle rotor, 24 x 1.5- to 2.0-mL tubes; | |
| | | Temp range: -9 to 40 degC; | |
| | | Speed range: 100 to 14800 rpm; | |
| | | max rcf: 21000 xg; | |
| | | power: 220V; | |
| | | One year warranty on parts and labor; | |
| | | with locally available technician for after sale maintenance; | |
| | | reputable brand with at least 10 years market proven track record of reliability; | |
| | | provide picture of equipment preferably colored in the bid docs | |
| | | | |
| | | Shaking water bath | 1 |
| | | Temperature range: 20°C - 100°C; | with AVR |
| | | Display: LED; | |
| | | Shaking speed: 20 to 200 rpm; | |
| | | Capacity: 15-20 L; | |
| | | Power supply: 220V; | |
| | | Shaking stroke: Rotation/Oscillating back and forth/Timing; | |
| | | with drain valve, with adjustable springs to hold racks and | |
| | | One year warranty on parts and labor; | |
| | | with locally available technician for after sale maintenance; | |
| | | provide picture of equipment preferably colored in the bid docs | |
| | | | |
| Lot 3 | | LOT 3: Biotechnology equipment B | |
| | set | Agarose Gel Apparatus (mini) with AVR | 2 |
| | | Cell size (W x L x H): 17.8 x 25.5 x 6.8 cm; | Power supply should have at least 2 outputs |

| | | | |
|--|---|--|---|
| set | Gel tray sizes (OD) (W x L): 15 x 7 cm, 15 x 10 cm, 7 x 7 cm , 7 x 10 cm; | and can supply voltage from 10-300 V in 1 V increment) | |
| | Base buffer volume approximately ~650 ml; | | |
| | No buffer recirculation; | | |
| | Bromophenol blue migration ~4.5 cm/hr (at 75 V); | | |
| | Should include casting gates, tray and combs; | | |
| | with combs for 8- and 12-well gels; | | |
| | With 220V Power supply; | | |
| | One year warranty; | | |
| | provide picture of equipment preferrably colored in the bid docs | | |
| | | | |
| unit | Western Blot Apparatus (mini) with AVR | | 2 |
| | Number of gels: 2-4 precast or handcast; | | |
| | Cassette size (WxL): 10 x 8.3 cm; | | |
| | Glass plate size (WxL): 10.1x7.3 cm (short plate), 10.1x8.2 cm | | |
| | Buffer volume: 1.0L max; | | |
| | Running conditions: 35-45 min (at 200V constant); | | |
| | components: lid, tank, running module, combs (8+1-, 10- and 15-well), gel releasers, spacer plates, short plates, spacers, sample loading guides, casting frame, casting stand; | | |
| | with power supply (220V); | | |
| | components for blotting: cooling unit, foam pads, gel holder cassette, electrophoresis blotting module; | | |
| | One year warranty; | | |
| provide picture of equipment preferrably colored in the bid docs | | | |
| | | | |
| | PCR with AVR | | 1 |
| | Pear Block Ramp Rate: 3.9 degC per sec; | With UPS | |
| | Format: 1 x 96-well plate, 96 x 0.2 mL tubes; | | |
| | High Throughput-Compatible; | | |
| | Tm calculator: menu driven through touch screen; | | |
| | Reaction speed: standard, fast, Program features: program overwrite protection, auto re-start (after power outages); | | |

| | | | | |
|-------|--|--|----------|---|
| | | Sample ramp rate: +/- 3.35 degC/sec; | | |
| | | Instrument memory: USB and on-board; | | |
| | | Temp range: 4.0 to 99.9 degC; | | |
| | | Temp accuracy: +/-25 degC (35 to 99.9 degC); | | |
| | | Reaction volume: 10-80 uL; | | |
| | | with voltage regulator; | | |
| | | one year warranty on parts and labor; | | |
| | | with locally available technician for after sale maintenance; | | |
| | | reputable brand with at least 10 years market proven track record of reliability; | | |
| | | provide picture of equipment preferably colored in the bid docs | | |
| | | | | |
| set | | Micro Filtration/Purification System | | 1 |
| | | Can produce Type 1 and Type 2 purified water (for both Analytical e.g. HPLC and Life Science e.g. cell culture purposes) from tap water; | With AVR | |
| | | with remote dispenser; | | |
| | | with 30L Reservoir; | | |
| | | with Sanitization Tablets; | | |
| | | with Acid and Base Cleaner; | | |
| | | with Maintenance Kit; | | |
| | | Can deliver/produce around 30L water per day; | | |
| | | One year warranty on parts and labor; | | |
| | | Technical support should be readily available; | | |
| | | Free installation; | | |
| | | Provide training for basic operation and maintenance of the equipment; | | |
| | | reputable brand with at least 10 years market proven track record of reliability; | | |
| | | provide picture of equipment preferably colored in the bid docs | | |
| | | | | |
| Lot 4 | | LOT 4: Ovens and Fumehood | | |
| unit | | Air-oven | | 1 |

| | | | |
|----------------|---|--------------------------|---|
| unit | Capacity: 100-130 L; | With AVR | |
| | Temperature range: 40°C - 200°C; Shelves No.: 2; | | |
| | Temperature precision: ± 0.1°C; | | |
| | Power supply: 220V; | | |
| | with thermometer; | | |
| | One year warranty on parts and labor; | | |
| | with locally available technician for after sale maintenance; | | |
| | provide picture of equipment preferably colored in the bid docs | | |
| | | | |
| | | | |
| unit | Oven/Incubator | | 1 |
| | Temp Range: RT to ~300°C; | With AVR | |
| | Timing range: 1 to 9999 min; | | |
| | 2 shelves; | | |
| | Power Supply: 220V ± 10% 50/60 Hz; | | |
| | One year warranty on parts and labor; | | |
| | with locally available technician for after sale maintenance; | | |
| | provide picture of equipment preferably colored in the bid docs | | |
| | | | |
| | | | |
| unit | Vacuum Oven | | 1 |
| | approx. 0.7 cu.ft.; | With AVR | |
| | temperature range: ambient to 220 C; | | |
| | vacuum range: 0 to 30" Hg; | | |
| | power: 220 VAC; | | |
| | with 2 removable shelves; | | |
| | | | |
| | | | |
| | | | |
| | | | |
| unit | stainless steel interior; | | |
| | One year warranty on parts and labor; | | |
| | with locally available technician for after sale maintenance; | | |
| | provide picture of equipment preferably colored in the bid docs | | |
| | | | |
| | Fumehood | Chemical Fumehood | 1 |
| Size: 70 inch; | Width: 5 feet | | |

| | | | | |
|-------|------|---|--------------------------------|---|
| | | Blower size: 3/4 HP motor; | For organic solvents and acids | |
| | | Epoxy coated; | | |
| | | Free installation of exhaust duct; | | |
| | | One year warranty on parts and labor; | | |
| | | with locally available technician for after sale maintenance; | | |
| | | provide picture of equipment preferably colored in the bid docs | | |
| | | | | |
| Lot 5 | | LOT 5: Pumps and Vacuum-Operated Equipment | | |
| | unit | Water Circulation Pumps | | 2 |
| | | Can deliver flowrate of around 660L/hr; | One year warranty | |
| | | submersible; | | |
| | | Power: 220 V; | | |
| | | provide picture of equipment preferably colored in the bid docs | | |
| | | | | |
| | unit | Pump for Suction Filtration | | 1 |
| | | Oil free vacuum pump; | With AVR | |
| | | Power: 220V; | | |
| | | Horsepower: 1/4 hp; | | |
| | | Max flowrate: 62L/min; | | |
| | | Noise level: 62 db; | | |
| | | Port thread: 8mm (5/16in); | | |
| | | Max vacuum: 650 mmHg; | | |
| | | One year warranty on parts and labor; | | |
| | | provide picture of equipment preferably colored in the bid docs | | |
| | | | | |
| | set | Rotavap Set (with Pumps) | | 1 |
| | | One year warranty; | With AVR and UPS | |
| | | Rotation speed: 20-180 rpm; | | |
| | | Resolution: 1 rpm; | | |
| | | Evaporation flask sizes: one 500 mL and one 1 L; | | |
| | | Glass joint: adjustable 24/40 steam duct; | | |
| | | Overcurrent protection: yes; | | |
| | | vacuum seal: fluoresin; | | |

| | | | | |
|-------|------|--|------------------|---|
| | | diagonal condenser; | | |
| | | Power: 220 V AC; | | |
| | | with water circulation pump (water submersible) and 2-L water reservoir; | | |
| | | with oil-free vacuum pump: (Power: 220V; Horsepower: 1/4 hp; Max flowrate: 62L/min; Noise level: 62 db; Port thread: 8mm (5/16in); Max vacuum: 650 mmHg; one year warranty); | | |
| | | One year warranty on parts and labor; | | |
| | | with locally available technician for after sale maintenance; | | |
| | | provide picture of equipment preferably colored in the bid docs | | |
| | | | | |
| | unit | Vacuum Concentrator/Speed Vac | | 1 |
| | | Power: 220 V AC; | With AVR and UPS | |
| | | Rotor type: minimum of 36 holes for 1.5 - 2 mL tubes; Rotor | | |
| | | Temperature: ambient to 100 °C; with locally available technician | | |
| | | Application: for DNA and low BP solvents such as methanol; | | |
| | | One year warranty on parts and labor; | | |
| | | with locally available technician for after sale maintenance; | | |
| | | provide picture of equipment preferably colored in the bid docs | | |
| | | | | |
| Lot 6 | | LOT 6: Small lab equipment A | | |
| | unit | Melting Point Apparatus | | 1 |
| | | Number of samples: three simultaneously; | With AVR | |
| | | Temperature range: ambient to 400degC; | | |
| | | Temperature sensor: 100 ohms platinum RTD; | | |
| | | Heat-up time: 0.1 to 20 degC per minute; | | |
| | | Display: color LCD touchscreen; | | |
| | | Output: printer output and USB; | | |
| | | one year warranty on parts and labor; | | |
| | | with at least 100 free capillary tubes; | | |
| | | Power: 220V; | | |
| | | One year warranty on parts and labor; | | |
| | | with locally available technician for after sale maintenance; | | |
| | | provide picture of equipment preferably colored in the bid docs | | |
| | | | | |

| | | | |
|-------------------------------|--|----------|---|
| unit | Hot Plate (Big) | | 2 |
| | Ceramic top | With AVR | |
| | Power: 220V | | |
| | Temperature: Ambient to 300 degC | | |
| | Digital display | | |
| | 10" x 10" top dimension | | |
| | one-year warranty on parts and labor | | |
| | provide picture of equipment preferrably colored in the bid docs | | |
| unit | Hotplate with Programmable Temperature probe | | 1 |
| | Temp. Range: 25 - 550°C with stirrer | | |
| | Material: ceramic | | |
| | with temperature controller/probe; teflon coated | | |
| | stainless steel | | |
| unit | Grinder/Disintegrator (Robust) | | 2 |
| | Speed: around 21000r/min | | |
| | Smashing mesh: 60-200 | | |
| | Capacity: at least 200g | | |
| | Voltage: 220V | | |
| | one year warranty on parts and labor | | |
| | provide picture of equipment preferrably colored in the bid docs | | |
| Lot 7 | LOT 7: Small lab equipment B | | |
| unit | Top Loading Balance | | 1 |
| | Capacity: 410 g | | |
| | Readability: 0.001 g | | |
| | Linearity +/- 0.003 g | | |
| | Units of measure: grams, milligrams | | |
| | Display: blacklit LCD | | |
| | Housing: die cast aluminum housing with glass draught shield | | |
| Operating temp: 10 to 40 degC | | | |

| | | | | |
|------|--|--|-----------------------|---|
| | | Tare range: full | | |
| | | Calibration: external | Calibration: INTERNAL | |
| | | one-year warranty on parts and labor | | |
| | | provide picture of equipment preferably colored in the bid docs | | |
| | | | | |
| unit | | pH meter (benchtop) | | 2 |
| | | Range: 0-14 | | |
| | | Accuracy: ±0.01 pH | | |
| | | Temperature range (sample): -5°C to 105°C | | |
| | | Temperature selection: automatic or manual | | |
| | | Environment: 0°C - 50°C (ambient) | | |
| | | Relative humidity range: 5% - 95% | | |
| | | | | |
| unit | | Pocket pH Tester | | 1 |
| | | Range: pH 0 - 14 | | |
| | | Calibration: 3 pt calibration | | |
| | | | | |
| unit | | Vortex shaker | | 2 |
| | | changeable platform: with pop-off cup and 3" diameter platform | | |
| | | 500-2500 rpm | | |
| | | touch-mixing | | |
| | | solid metal casing and rubber feet for stability | | |
| | | 220 V AC | | |
| | | | | |
| set | | Pipettor | | 2 |
| | | adjustable volume with 100 uL increments | | |
| | | 500-5000 uL capacity | | |
| | | with tip ejector with blow-out step | | |
| | | include 1 pack (approx. 500 pcs) pipette tips | | |
| | | | | |
| set | | Micropipettor | | 3 |
| | | three sets and each set should have: one 2-10 uL, one 10-200 uL, one 200-1000 uL | | |
| | | pipet stand and free tips (one rack each: white, yellow and blue) | | |
| | | | | |

| | | | |
|-------|------|--|----------|
| Lot 8 | | LOT 8: Food processing equipment | |
| | unit | Large Capacity Mixer | 1 |
| | | Motorized mixer | With AVR |
| | | 110 lbs. capacity | |
| | | AISI 304 grade stainless steel tank | |
| | | shaft, mixing blades, tilting shield and cover | |
| | | AISI 430 grade stainless closure sheeting, side and structure housing | |
| | | The outer unit enclosure is steel with durable baked-on finish | |
| | | A heavy duty chain and belt transmission turns the mixing shaft at 50 RPM | |
| | | | |
| | unit | Table Type Mixer | 1 |
| | | 5-speed setting for different mixing functions | |
| | | With turbo control switch | |
| | | Dual purpose stand or hand mixer | |
| | | 2 mixing dough hooks | |
| | | With stainless steel bowl | |
| | | | |
| | unit | Pressure Cookers | 3 |
| | | 6 qrts capacity | |
| | | Stainless steel | |
| | | with cover lock indicator for safe usage | |
| | | comes with cooking rack | |
| | | | |
| | unit | Heavy-duty Blender 4L Capacity | 1 |
| | | 4 L capacity, heavy duty blender (3 hp motor) with at least 2 speeds and pulse | |
| | | stainless steel container and stainless steel housing plus extra stainless steel container | |
| | | 220 V | |
| | | | |
| | unit | Metal Stem Thermometers | 8 |
| | | Bi metallic stemmed thermometer with calibration nut | |
| | | can check temperature range of 0-220 degree F | |

| | | | | |
|--------|------|--|------------------|---|
| | unit | accurate up to +2°F | | |
| | | Salinometer | | 1 |
| | | hydrometer which can read 0-100 degree salinity | | |
| | | including hydrometer 12 in test jar with removable base | | |
| Lot 9 | | LOT 9: Food micro equipment | | |
| | unit | Water Jacketed Anaerobic Incubator with CO2 tank | | 1 |
| | | 220 volts | With AVR | |
| | | 5 cu ft. | | |
| | | 8-80°C | | |
| | | with CO2 tank | | |
| | unit | Anaerobic jar | | 1 |
| | | Complete set for anaerobic culturing of microbes | | |
| | | capacity of 3 stacks of 12 dishes | | |
| | | transparent jar and lid with excellent quality o-ring for maximum | | |
| | | with extra autoclavable stainless steel plate holder | | |
| | unit | Stomacher | | 1 |
| | | Paddle blender with digital control panel for control of processing features such as paddle speed and processing | With AVR | |
| | | able to homogenize 80-250 mL samples | | |
| | | Programmable for repeatable homogenisation protocols | | |
| | | Include prescribed stomacher sample bags | | |
| Lot 10 | | LOT 10: Food analysis equipment | | |
| | unit | Water Activity Meter | | 1 |
| | | benchtop | With AVR and UPS | |
| | | Aw range = 0.03 to 1.0 | | |
| | | resolution = 0.001 Aw | | |
| | | accuracy = ±0.003 Aw | | |
| | | sample temperature range = 15 to 50 C | | |
| | | resolution = 0.01 C | | |
| | | accuracy = ±0.1 C | | |
| | | 220 VAC | | |

| | | | | |
|------|---|--|------------------|---|
| unit | | comes with at least 3 standard solutions and sample cups (15 mL full capacity) | | |
| | | reputable brand with at least 10 years market proven track record of reliability | | |
| | | one year warranty on parts and labor | | |
| | | | | |
| | | Colorimeter | | 1 |
| | | Detector: Silicon photocells | With AVR and UPS | |
| | | Illumination/Observer system: 45°/0° | | |
| | | Reflectance Range: 0~150% | | |
| | | Light Source: LED sources | | |
| | | Illuminant: C, D65 | | |
| | | Illumination area: 8 mm | | |
| | | Observer: 2° | | |
| | | Provides absolute L*a*b* and L*C*Ho data with print out option | | |
| | | comes with calibration plate and case | | |
| | | can work with batteries or AC adapter (must be included) | | |
| | with option to have it attached to a computer | | | |
| | with optional accessory for liquid sample color measurement | | | |
| unit | | reputable brand with at least 10 years market proven track record of reliability | | |
| | | one year warranty on parts and labor | | |
| | | | | |
| | Texture Analyzer Attachments | | 1 | |
| set | | mini kramer shear cell | | |
| | | 5-blade type = compatible with Shimadzu UTM texture analyzer with corresponding jig platform with standard plate | | |
| | | | | |
| | | Desktop computer (for Shimadzu UTM texture analyzer) | | 1 |
| | | OS: Windows 8.1, Intel Core i5 | With AVR | |
| | | 4 GB RAM | | |
| | | 500 GB hard disk drive | | |
| | | Optical drive (CD): DVD RW | | |
| | connectivity options: ethernet, USB, HDMI | | | |
| | 220 V | | | |

| | | | |
|------|--|--|---|
| unit | | monitor = 19.5" LED-lit, display resolution max: 1920 x 1080 pixels | |
| | | keyboard = wired, full-sized, with built-in number pad, spill resistant, adjustable legs, compatible with Windows 8.1 and 10 | |
| | | mouse = wireless optical 3-button; compatible with Windows 8.1 and 10 | |
| | | | |
| | | | |
| | | Infrared Moisture Analyzer | 1 |
| | | Readability: 0.001g | |
| | | temp. range: 40 to 160°C | |
| | | Repeatability: 1g: ± 0.2% 5g: ± 0.05% | |
| | | 220V | |
| | | heater type: Halogen | |
| | | Timer: Automatic | |
| | | reputable brand with at least 10 years market proven track record of reliability; one year warranty on parts and labor | |