

**IB 2020-29– PROCUREMENT OF VARIOUS LABORATORY
EQUIPMENT FOR FOOD SCIENCE RESEARCH AND
INNOVATION CENTER (FSRIC)**



**SECTION VI –
SCHEDULE OF
REQUIREMENTS**

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The delivery schedule expressed as weeks/months stipulates hereafter a delivery date which is the date of delivery to the project site.

Item Number	Description	Quantity	Delivered, weeks/ Months
1	<p>ULTRA LOW TEMPERATURE FREEZER</p> <p>Ergonomic, Temp. Range -86°C~-65°C at Room Temperature of 30°C and Humidity of 85%; Compressor Hermetic Type Hermetic Type Condenser Type Block Condenser, No Pin, Filter Free Mechanism; Refrigerant Natural (CFC Free Refrigerant System); capacity- 503 liters; Temp. Sensor - P T100 Sensor; Compressor - Hermetic Type; Condenser Type - Block Condenser, No Pin, Filter Free Mechanism; Refrigerant - Natural (CFC Free Refrigerant System); Controller & Display - 7" Full Touch Screen TFT LCD; Shelves - Included 3 Stainless-steel Shelves; Max. Quantity of Racks - 16pcs of 20 (4x5)P Placed Rack (RFUSO); Material - Internal : Stainless-steel (#304), External : Powder Coated steel Plate, Inner Door : Powder Coated Stainless-steel (#304); Others - UL/CUL & CE Certified, PL (Product Liability) Insurance, GD-mark, Touch Screen TFT LCD Smart Controller, CFC Free Refrigerants, Built in Standard Warning and Alarm Functions, RS232 Communication Link, Remote Control Software; Power Consumption -458 w/h; Electrical Requirements. 1 Phase, AC 220V, 50 / 60Hz; 1-year Warranty on parts and services; Training on equipment use</p>	1 unit	15 calendar days from receipt of NTP
2	<p>LABORATORY FREEZE DRYER</p> <ul style="list-style-type: none"> - Allows Automatic or Manual Process Control, LCD Indicates Temperature and Vacuum, Rapid Integrated Hot Gas Defrost Function for Quick Next Cycle Turn-around, LED Indication Light On in Case of Suitable Temperature and Vacuum, Can be Controlled Temperature and Timer at Automatic Mode, Homogeneous Temperature Distribution across all Shelves in Dry Chamber, Chamber & Max Condenser Capacity Chamber : 8 Lit., Max Condenser : 10 Lit.; Sublimation Rate(Lit/day) 3 Lit/day; Max. Temperature Cold Trap : -90°C, Condenser : -40°C; Set Temperature Range -60°C ~ -90°C Compressor & Defrost-type Compressor : 1/2 HP, Defrost-type : Manual Display Digital LCD with Back-Light Function; Material Stainless-steel (SUS304); Dimension(mm) & Weight Exterior: w400xd530xh415, Condenser: Φ300xh150mm, Net Weight: 55 kg Packing Dimension: w560xd760xh675, Gross Weight: 60kg; Electrical Requirements: 1 Phase, AC 220 V, 50 / 60 Hz Inclusions: <ol style="list-style-type: none"> 1. Acrylic Dry Chamber, 8-port, for Connecting 3/4" Vacuum Handle Valve with Silicon Stopper 2. 3-stage Shelf, Stainless-steel(STS), for Acrylic Dry Chamber 3. 3/4" Vacuum Handle Valve, Neoprene Rubber & PP for Connecting Flask 	1 unit	

	<p>4. 3/4" Glass Tube Adapter, Φ19/1.8t\timesL80mm for Connecting Middle & Large-size Flask Top</p> <p>5. Flask Top, Silicone, 3/4" Middle-size Flask Top, for 200-/300-ml Flask</p> <p>6. Glass Flask, DURAN® Glass α 3.3, 200mϕ, Φ65/2.2t\timesh100mm</p> <p>7. Vacuum Pump, 100/120Lit./min, 50/60Hz, 220V</p> <p>8. Vacuum Pump Connection-set, Tube / O-ring / Clamp</p> <p>9. 2-stage Table Cart for Freeze Dryer & Vacuum Pump, with Stop-on Caster and Vacuum Pump Oil Tray, w504\timesd604\timesh780mm;</p> <p>10. with compatible UPS/AVR;</p> <p>11. 1 year Warranty on parts and services</p> <p>12. Installation</p>		
3	<p>MOISTURE ANALYZER</p> <p>Capacity: 51g</p> <ul style="list-style-type: none"> • Min. Display-Moisture Content 0.01%/0.1% • Min. Display-Weight 0.001 g • Temp: 50-200°C With • SRA (Secondary Radiation Assist) filter. With SHS (Super Hybrid Sensor). • High moisture content measurement at 0.001% resolution. • Standard Win CT-Moisture software (for MS&MX) for real-time graph displaying. • With Sodium Tartrate Dihydrate standard for accuracy checking; With RS-232C bi-directional GIP/GAN/ISO, External Calibration, Data Memory; <p>Dual Power - AC and DC; 1 year warranty on parts and service</p>	1 unit	
4	<p>ROTARY EVAPORATOR</p> <ul style="list-style-type: none"> ■ Cooling Surface 1,300 cm² ■ Ideal for Distill of (Mixed) Solvent, Condensation Solution and Suspension, Concentrate Liquid, Re-crystallization, Dry Powder and Granulate, Synthesize Chemical, Soxhlet Extraction, Recycle Solve ■ Included 2\timesEvaporating Flasks: 1\times0.5Lit. & 1\times1Liter, 2x compatible collection flask, compatible condenser. ■ The Temperature adopts PID Control, which ensures accurate Temperature Control. <ul style="list-style-type: none"> ▪ The heating controller with built in over temperature protection ▪ Heavy Duty support frame ■ Speed Display, Operate Visually and easily <p>* Digital Speed Display, Digital Temp. Display on Water Bath.</p> <p>* Double Sealing with PTFE and Fluorous Rubber to ensure High Vacuum Degree.</p> <p>* The Air Extraction Nozzle of Condenser is set down, and it is Safer after Connection with Vacuum Pipe</p> <p>* Building Block Design is Easily to be Extended.</p> <p>* Easy Operation of Lifting, move up and Down Smoothly and Easy to Lock.</p>	1 unit	

	<ul style="list-style-type: none"> * Dedicated Electric Machinery, Worm and Gear Drive Steadily. * The Separation of Bath and the Mainframe makes Configure Flexible. * These Rotary Evaporators Could Set with Circulation Aspirator Pump * Include Water Bath with own digital display and speed, temperature controller * Water bath is PTFE coated stainless steel * Integrated Vacuum control * Include all necessary valves and seals * Warranty on parts and services - 1 year * Training on equipment use 		
5	<p>HOT PLATE MAGNETIC STIRRER</p> <p>500°C Hi-Temp. Hotplate Stirrers, Solid Ceramic Glass Plate, 200×200mmwith Large LCD, Optimum Insulation Layer. Accurate Temp. Control, Touch-button Controller, Hot-Top Indicator, Max. 500°C, Accu. ±0.3°C; W/ magnetic spin bar (1 inch, half); with speed controller; spin bars/ magnetic bars (0.5" and 1"); Warranty on parts and services - 1 year, with compatible AVR</p>	1 unit	
6	<p>TOP-LOADING BALANCE</p> <ul style="list-style-type: none"> • Hygienic and chemically resistant stainless steel weighing pan • Adjustable response characteristics to help cope with the effect of drafts and vibrations • Multiple weighing units: g, oz, lb, ozt, ct, mom, dwt, grain <p>Capacity: 2000 g; Readability: 0.1 g; Weighing pan: 170 mm × 133 mm</p> <ul style="list-style-type: none"> • Warranty on parts and services – 1 year • With compatible AVR 	1 unit	
7	<p>ANALYTICAL BALANCE</p> <ul style="list-style-type: none"> • High-speed weighing with 2-second stabilization • Removable, shatterproof breeze break with antistatic coating • Compact foot print: 198 mm × 294 mm (smaller than an A4 sheet of paper) <p>Weighing capacity: 252 g Minimum weighing value: 0.1 mg; Repeatability (Standard deviation): 0 to 200 g: 0.1 mg; 200 to 252 g: 0.2 mg; Linearity: ±0.3 mg; Sensitivity drift (10 °C to 30 °C): ±2 ppm/°C. Weighing pan: Ø90 mm. with compatible AVR; warranty on parts and services – 1 year</p>	1 unit	
8	<p>Vortex Mixer</p> <p>Speed Range: 0-3,300 rpm, Shaking Motion: Orbital, Circuit Orbit: 4.0mm, Control: Analog Phase Controller, Motor: Brushless AC Motor, Head: included Pop-off Cup Head and 76mm Platform, Max. Load: 0.5kg, Material: Aluminum Die-casting w/ Powder Coating, Dimensions (wxdxh) (mm): 140x190x123mm, Weight: 3 kg, Power Consumption: 30W, Electrical Reqts.: 1 Phase, AC 220V, 50/60Hz, Others: 3-position Power Switch Operates, Aluminum Die-Casting with Power Coating, included Pop-off Cup Head and 76mm Platform with compatible AVR; 1 year warranty on parts and services</p>	1 unit	

9	<p>FAT ANALYZER</p> <p>* Microcomputer control system. * Audio and visual alarm function. * Integral dry heating, wide scope and high precision of temperature control. * Electric circuit is isolated from the extraction space, ensuring devices security * Over-temperature alarm and timer reminding functions. * Abundant interface contents give simultaneous display of given temperature, actual temperature, given time and heating time * Unique air insulation for temperature heating protection and constant temperature. *6 to 12 capacity per batch; Thimble volume- ca 25 ml; Speed of Extraction – Typically 30-60 min, depends on sample type. *Power Supply: AC220V±10%, 50Hz. With compatible AVR; 1-year warranty on parts and services</p>	1 unit	
10	<p>Kjeldahl Apparatus</p> <p>a. COMPACT DIGESTION SYSTEM</p> <ul style="list-style-type: none"> • Microprocessor built-in the case • Programmable auto-start • All programs can have up to 18 steps for temperature/incubation • Nine user free programs, intended use: Analysis of protein Nitrogen in organic substances as: nourishing products, fertilizers, seeds, beer, meat, sauces, water, petroleum, etc. <p>Features:</p> <ul style="list-style-type: none"> • Mode: automatic • At least 20 positions graphite heating block • Temperature: Auto calibration • Stability of the heating block temp.: 0,1°C@50°C • Homogeneity of the heating block temp.: ±2°C • Precision of the heating block temperature: ±0,5°C • Digestion time range: from 1 to 999 minutes or continuous • Time selection: 1 minute • Quick and safe manipulation of samples • Used together with “SCRUBBER” does not need fume hood • Integrated support for sample tubes enabling an easier cooling • Sample size: Solids: 5 gr. (macro), 1 gr. (micro) • Liquids: 15 mL. (macro), 3 mL. (micro) <p>Supplied with the following accessories:</p> <ol style="list-style-type: none"> 1. One tube holder rack with digestion tubes (tubes included) 2. One fume collector 3. 60 pcs compatible digestion tubes <p>b. SCRUBBER</p> <ul style="list-style-type: none"> • Vacuum pump included, 28 l/min 10mbar to 800mbar • Saving of refrigerating water in digestion heating blocks. • Fumes neutralization closed system. • Filtration and neutralization of fumes <p>Features:</p> <p>The gas produced during the digestion is extracted by the action of a vacuum pump.</p> <p>This gas is passed first, through a phase of condensation that acts as preliminary extractor for steams and dragged liquids, avoiding a warming or increase of the volume in later washing solution. The acid or alkaline steam is washed and neutralized in the next step.</p>	1 unit	

	<p>In this neutralization phase, most of the unwanted particles are retained by means of granules of activated coal. The used air is taken directly to an extractor or outdoors. The neutralization unit "Scrubber", is connected by a flexible tube to the digestion fume collector.</p> <p>Advantages:</p> <ul style="list-style-type: none"> ● Optional kit for automatic titration. ● Boric acid pump ● 20 user programs ● Pumps calibration by end-user ● Electric steam generator with control level of water. ● Sample suction ● Open door detection <p>Features:</p> <ul style="list-style-type: none"> ● Control of the system by microprocessor with LCD screen ● Additionally, the system has three fixed programs: - Ammonium sulphate test / Preheating of the system / Washing ● 9 preset programs to: <ul style="list-style-type: none"> - Alcohols, cereals, lactics, meats, fish, sewage waters, fertilizers, Nuts, animal feed ● Furniture in stainless steel epoxy painted <p>c. PROTEIN-NITROGEN DISTILLER</p> <p>Safety:</p> <ul style="list-style-type: none"> ● Closed door detection. ● Digestion tube detection. ● Over-temperature thermostat. <p>Performance: Measurement range: de 0,1 a 200 mg de N</p> <p style="padding-left: 40px;">Nitrogen recovery: 99,5 %</p> <p style="padding-left: 40px;">Reproducibility: ± 1 %</p> <p style="padding-left: 40px;">Distillation time: 4 minutes for 100 mL</p> <p style="padding-left: 40px;">Cooling water consume: 1,2 L/min.</p> <p style="padding-left: 40px;">Electric power: 2000 W (100%)</p> <p style="padding-left: 40px;">Number of Programs: 20 user programs</p> <p>Programmable parameters and values:</p> <p style="padding-left: 40px;">Water for dilution: 0-200 mL; NaOH solution: 0-200 mL; H3BO3 solution: 0-200 mL; Reaction time (delay): 0-30 minutes; Distillation time: 0-30 minutes or indefinite; Steam power regulation: 30-100%</p> <p>Supplied with the following accessories:</p> <ol style="list-style-type: none"> 1. tube series macro Ø 42x300 mm 2. 2 containers of 10 liters for H2O, NaOH and 1 container of 5 liters for H3BO3. 3. Several connection tubes. 4. Compatible AVR for Digestion and Distillation set-ups 5. Industry Standard Warranty on parts and services 6. Training on equipment use 		
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Name of Bidder over Printed Name

Date