OFFICE OF THE DIRECTOR PROCUREMENT
DOW UNIVERSITY OF HEALTH SCIENCES
Procurement Directorate at Library Block,SUPARCO Road, off Main University Road, Gulzar-e-Hijri, Scheme No. 33, Karachi.
Direct No. Tel: 99261497 **Website:** www.duhs.edu.pk, **E-mail:** director. procurement@duhs.edu.pk

No. DUHS/DP/2022/(Cor-1)/-182 Dated 10 May 2022

CORRIGENDUM

Reference to the Invitation for Bids (IFB) No. DUHS/DP/2022/-182 Dated April 04, 2022 for the **procurement of Laboratory Equipment / Instruments for IBBPS, Microbiology DDRRL and Histopathology DDRRL at Dow University of Health Sciences,** appeared in Daily Dawn, Daily Jang and Daily Kawish on 22 April 2022 and uploaded on Dow University of Health Sciences (DUHS) and Sindh Public Procurement Regulatory Authority (SPPRA) website at PPMS NIT ID No. T00582-21-0029.

Following changes have been made in the above-referred tender:

1. Section V: Technical Specifications have been corrected / modified, which may be downloaded from the websites of SPPRA (ppms.pprasindh.gov.pk/) and DUHS (duhs.edu.pk). All the interested eligible bidders are requested to please furnish their bid in accordance with the corrected / modified specifications.

2. The Bidder shall submit an original and one copy of the bid, clearly marking each "ORIGINAL BID" and "COPY OF BID," as appropriate.

3. **Address for submission and opening of bids:** Office of the Manger Supply Chain, Procurement Directorate at Library Block, Dow University of Health Sciences (Ojha Campus), SUPARCO Road, off Main University Road, Gulzar-e-Hijri, Scheme No. 33, Karachi.

4. The closing date for tender purchasing and tender submission has also been extended as per following schedule.

Last Date for Tender Purchase	Bids Delivery Date & Time	Bids Opening Date & Time
28 May 2022	30 May 2022 at 11:00 Hrs.	30 May 2022 at 11:30 Hrs.

NOTE: ***All other terms and conditions of the tender shall remain unchanged.***

Director Procurement
Dow University of Health Sciences (Ojha Campus)

SECTION V:

Corrected / Modified Technical Specifications

Item No.	Name of Goods, Technical Description, Specifications, and Standards	Required Quantity
01	**Digital Weighing Analytical Balance** Precision weighing balance with minimum weighing capacity 0.1 mg, Internal automatic calibration, high-stability mode and other filter settings, air draft protection, short stabilization time, shock proof construction, LCD display. Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model. Original Equipment Manufacturer and Certificate of Origin Certificate (Embassy Attested) USA/EU/Japan (Other country will be accepted if 30+ number of functional units are installed in Pakistan and meets all specification, list of installation must be provided with contact details, with any 2 certifications (510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare))	01 No.
02	**Culture Plate Rotator (Turn plate rotator)** Flexible start-stop controls or a timer function with adjustable rotation times of 1-25 seconds. For longer applications, the time can be extended to up to 125 seconds or switched to continuous operation, Petri dishes up to a size of 100 mm, An exceptionally low construction enables comfortable work; the stainless steel housing ensures maximum sterility and stability. Stainless steel case, Step less speed control 14-210 rpm, Short-term timer 1-125 seconds or continuous operation, Turntable with silicone insert & centering ring (autoclavable), Switching on and off with a hand movement or optional foot pedal, UV-resistant and flame-retardant, Minimal space requirement Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including.	05 Nos.

	Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model. Original Equipment Manufacturer and Certificate of Origin Certificate (Embassy Attested) USA/EU/Japan (Other country will be accepted if 30+ number of functional units are installed in Pakistan and meets all specification, list of installation must be provided with contact details, with any 2 certifications (510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare))	
03	**Vertical Freezers** -20°C, 5-6 compartments 200-300L. CFC Free, shelf must be included, datalogging option, temperature sensor alarm, installed in at least three reputed pharmaceutical and/or research organizations Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model. Original Equipment Manufacturer and Certificate of Origin Certificate (Embassy Attested) USA/EU/Japan (Other country will be accepted if 30+ number of functional units are installed in Pakistan and meets all specification, list of installation must be provided with contact details, with any 2 certifications (510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare))	02 Nos.
04	**Pharmaceutical Refrigerator** A Lab Refrigerator, Double Door Unit should have Ergonomic design & Forced – Air	03 Nos.

	Circulation, Volume or capacity should be more than 900-950L Temperature range should be 2 ~ 8°C (Ambient 10°C ~ 32°C) Microprocessor Controlled Audible & Visual alarm should be present Cabinet type: Upright Auto defrost 10 or more adjustable shelves Clear & large LED display Unit should have double glass door. CFC free Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model. Original Equipment Manufacturer and Certificate of Origin Certificate (Embassy Attested) USA/EU/Japan (Other country will be accepted if 30+ number of functional units are installed in Pakistan and meets all specification, list of installation must be provided with contact details, with any 2 certifications (510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare))	
05	**High Speed Centrifuge** Intelligent Microprocessor Control, • Inverter Controlled Brushless Motor, • • Full Lid Interlock, • Imbalance Detection System, • Self Diagnostics, • Status Indicator, • Multiple Acceleration / Deceleration Rates, • Speed Range 15000 rpm, • 200ml Bowl Volume centrifugation, • Continuous centrifugation of 2-15L Volume with adapters and complete accessories. Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 50+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model. Original Equipment Manufacturer and Certificate of Origin Certificate (Embassy Attested)	01 No.

	USA/EU/Japan (Other country will be accepted if 300+ number of functional units are installed in Pakistan and meets all specification, list of installation must be provided with contact details, with any 2 certifications (510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare))	
06	**Media Pouring Machine** Media Preparation Capacity 2.5L to 30L Temperature Range (Tº) 95-125°C Distribution Temperature Range (Tº) 25-80°C, stirring technique 2 magnets Stirrer, Traceability USB ports 5 Ticket printer with WIFI Ethernet, with safety valve, with anti-shock body, different dispensing port 17mm,12mm, and 6.4mm dispensing tubing, Integrated Master Flex Pump, Carrousel Capacity 440 dishes, built in Peltier, built in UV light, pouring accuracy±1%, Pouring Range 00.1 - 99.9ml plate and tube pouring control Panel with touch screen .Print out of documentation of work and print date and batch on each plate. Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model. Original Equipment Manufacturer and Certificate of Origin Certificate (Embassy Attested) USA/EU/Japan (Other country will be accepted if 30+ number of functional units are installed in Pakistan and meets all specification, list of installation must be provided with contact details, with any 2 certifications (510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare))	01 No.
07	**Carbon Dioxide Incubator** Internal volume of 25-35 cu. ft. • Fanless design, Heated triple-pane glass door minimizes condensation and permits a clear view of your product. • Sealed inner/outer doors and advanced PI control to maintain temperature accuracy and uniformity • minimizing costly gas consumption Horizontal airflow provides tighter temperature uniformity for the optimum culturing environment. • Adjustable rH system – three convenient settings: low, medium and high. Microprocessor Message Center allows you to control all parameters without complicated programming Temperature: • Range 4 ºC above ambient to 50 ºC, • Control ± 0.1°C, Stability ± 0.1°C at 37 °C, • Uniformity ± 0.25 ºC at 37 ºC (ambient temperature between 18 and 25 ºC)• CO2 0.2 to 20% Or Equivalent	01 No.

	All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model. Original Equipment Manufacturer and Certificate of Origin Certificate (Embassy Attested) USA/EU/Japan (Other country will be accepted if 30+ number of functional units are installed in Pakistan and meets all specification, list of installation must be provided with contact details, with any 2 certifications (510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare))	
08	**Incubator** Capacity 750 L • Flexible shelf system for optimal use of chamber volume, • Automatic over temperature alarm system •Door alarm •ambient +5 °C to 75 °C, •decontamination cycle • Sealed inner/outer doors and advanced PI control to maintain temperature accuracy and uniformity Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model. Original Equipment Manufacturer and Certificate of Origin Certificate (Embassy Attested) USA/EU/Japan (Other country will be accepted if 30+ number of functional units are installed in Pakistan and meets all specification, list of installation must be provided with contact details, with any 2 certifications (510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare))	02 Nos.

09	**Double Head Microscope** **Optical System** Infinity optical system Built in Koehler illumination with LED illumination **Illumination** -High luminescent white LED illuminator 60,000 to 100,000 hours lifetime -Built in fly-eye lens -Light intensity management features. -Light intensity is automatically adjusted. **Focusing** Coaxial coarse & fine focusing (located on both sides) **Focusing stroke** Up 5 mm/Down 13 mm, coarse: 37.7-40 mm per rotation, fine: **Focusing Fine** 0.2 mm per rotation, minimum reading: 1-2 µm With coarse focus knob torque adjustment ring and stage vertical movement stopper **Eye Pieces** 10x (F.O.V. 22mm)Eye Pieces Diopter adjustment in both eyepieces and inter pupillary distance adjustment **Tube** Trinocular0 Tube with 30 degrees inclination F.O.V 20-25 mm **Nosepiece** Quintuple Nose piece **Stage** Rectangular mechanical stage within main body, specimen holder up to 2L and Vernier calibrations, cross travel: 74 (X) x 50 (Y) -76 (X) x 52 (Y) mm or equivalent **Objectives** Plan Achromat 2X N.A. 0.10, W.D. 25-30.0 mm Plan Achromat 4X N.A. 0.10, W.D. 25-30.0 mm Plan Achromat 10X N.A. 0.25, W.D. 10.5-15.0 mm Plan Achromat 40X N.A. 0.65, W.D. 0.56 mm, Spring-loaded Plan Achromat 100X Oil N.A. 1.25, W.D. 0.20 mm spring loaded oil immersion **Condenser** Abbe Condenser, N.A. 1.25 vertical adjustment focusing stroke: 27mm **Polarizer** P-SA Analyzer & E2-DP Simple Polarizer / CN **Fungus Proof Treatment** Fungus Proof coating **Accessories** -Teaching unit for face to face observation. -Pointer unit. -AC/DC Adaptor for Pointer Unit. -Binocular tube. -10 xs with diopter adjustment. Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Firm is also required to maintain a stock of spare parts in stock as recommended by the	07 Nos.

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10	**Ice Lined Freezer** Cabinet Type Chest Maximum Volume 250-300 Liter Maximum Storage Capacity 211 Noise Level <40 Freeze Protection Level A CFC-Free Refrigerant Super Performance: Work under ambient temperature 10~47°C, Holdover time more than 24 hours Microprocessor Control: More accuracy, more reliable. Microprocessor control and digital display, power on/off indicator. Lockable Design: Keep the vaccine more safe. Door lock to prevent unauthorized access. Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model. Original Equipment Manufacturer and Certificate of Origin Certificate (Embassy Attested) USA/EU/Japan (Other country will be accepted if 30+ number of functional units are installed in Pakistan and meets all specification, list of installation must be provided with contact details, with any 2 certifications (510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare))	02 Nos.

11	**Biosafety Cabinet Class II A2** 4 ft.(1.2m) Cabinet Width Type Class II, Type A2 Main body Material Stainless Steel 304, 18 gauge Electrogalvanized sheet with white epoxy polyester antimicrobial powder coated finish. Work Zone 1.5 mm (0.06") 16 gauges Stainless steel 304 with no. 4 Finish. Antimicrobial coating on all painted surfaces inside and outside to minimizes contamination. Single-piece work tray, spill retaining and easy to clean Description 4 ft.(1.2m) Cabinet Width Type Class II, Type A2 Main body Material Stainless Steel 304, 18 gauge Electrogalvanized sheet with white epoxy polyester antimicrobial powder coated finish. Work Zone 1.5 mm (0.06") 16 gauges Stainless steel 304with no.4 Finish. Antimicrobial coating on all painted surfaces inside and outside to minimizes contamination. Single-piece work tray, spill retaining and easy to clean. Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model. Original Equipment Manufacturer and Certificate of Origin Certificate (Embassy Attested) USA/EU/Japan (Other country will be accepted if 30+ number of functional units are installed in Pakistan and meets all specification, list of installation must be provided with contact details, with any 2 certifications (510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare))	02 Nos.
12.	**Water Bath** Chamber Material 304 Stainless Steel Capacity. 20-30 L Working temperature 5 to 95C Setting accuracy 0,1°C up to +99,9°C Temperature Stability ±0.1°C Stirring Range 50 to 100 rpm Display LED for indications of programme status Temperature controller Microprocessor PID temperature controller Electrical requirement. 220 V 50/60 Hz Heating Capacity 1200 w Includes Gable Cover Or Equivalent	01 No.

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13.	**Autoclave** Capacity 90-100 L Function Fully automatic Temperature 5°C-135°C Pressure range 0-6Kg/cm2 Operating system Microcomputer control system Warming Time Display Digital Display of operation/ Parameter setting Single Door Top Loading Operating service Electrical Steam Sterilization cycles Vacuum, sterilization, cooling with error records Internal/External body Stainless Steel (316 L with mirror finish) Power Supply 220 V, 50/ 60 Hz Drain mechanism Safely Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, pre installation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation	01 No.

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14.	**Colony Counter** Camera Color high definition CCD CCD resolution (Pixels) 5M or better Counting software English Colony size resolution >0.1mm Colony color recognition 8 colors Applicable method Spread plate, pour plate, membrane filter, spiral plate Counting speed less than 3 seconds Long life dual LCD light source Petri dish 90mm and 55mm standard Power supply AC220V±10%, 50Hz Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model. Original Equipment Manufacturer and Certificate of Origin Certificate (Embassy Attested) USA/EU/Japan (Other country will be accepted if 30+ number of functional units are installed in Pakistan and meets all specification, list of installation must be provided with contact details, with any 2 certifications (510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare)	01 No.
15.	**Double Door Autoclave** High pressure steam sterilizer each with built-in Electrical Stem Generator in standard configuration and option for external steam supply. Double Door and gasket channel should be formed from a single piece stainless steel Chamber Capacity: 100 to 150 Liter 5 inch Color TFT LCD Screen on both loading and unloading sides. Temperature and pressure recorder. Chamber pressure indicator.	01 No.

	Preset programs for the most common sterilization processes for general-purpose hospital use. Standby, Auto sleep and auto warm up functions to save electricity and time, and low water consumption. Mechanical air removal with a series of vacuum/pressure pulses to effectively remove air for assuring sterilization. The chamber dimensions are adapted to sterilization, using wire baskets according to SPRI & ISO, or containers according to DIN. Human friendly mobility during Transport with heavy duty casters and firm fixing mechanism after installation. Chamber, jacket, doors, generator and Pipes AISI 316 L/Ti stainless steel with proper insulation. Device should operate with Stainless Steel AISI 316 Grade pneumatic valves only Side panels should be free of screws and attached with firm fasteners for instantaneous access into the service area. Application: A sterilizer for general-purpose steam sterilization of surgical instruments, textiles, liquids, fluids and hospital utensils in central sterilization departments, operation departments, laboratories and laundries. The temperature range is from 105°C–135°C. Standard Sterilization Cycles: 134oC High Cycle for Surgical Instruments 134oC High Special for Linen/Gowns 121oC Low Cycle for Silicone Implants 121oC for Rubber Goods 134oC High Cycle for Prion 134oC High Flash Cycle 121oC Low Cycle for Liquids Waste Bag Liquid Waste Test/Diagnostic programs: Bowie & Dick Test. Vacuum Leak Test. Accessories: - · Complete with all standard accessories and removable shelves, capable of taking both, packets and containers of all standard sizes. · One loading and unloading trolleys and loading Shelve compatible with the system. UPS for controller with backup of 30 min FDA 21 CFR Part 11 Compliant Must include compatible RO system and Air compressor (as per manufacturer recommendation), make and model must be quoted. Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for	

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16.	**Compound Microscope** Stand Single mold sturdy stand with anti-rust materials. Extended base for better stability. Trinocular Viewing Head at 30°IncIined,360 rotatable, Interpapillary distance (48-75mm) Eyepiece Focusable wide field eyepiece 10/20mm with foldable eye guard with ocular meter for the measurement of particle/crystals along with calibrated stage micrometer for the calibration purpose. Nosepiece Revers angle Quadruple Nosepiece (Ball bearing Type) with click stops and rubber grip. Objective Achromatic Objective 4X,10X,40X,100X Mechanical Stage Reckless X axis, double plate stage size 200 x 160mm, X/Y travel range 78mm x 54mm. Condense Abbe NA1.25 with aspheric lens. Iris Diaphragm with blue day light filter. & Filter Focusing System Coaxial Coarse and Fine Adjustment, Fine Division 0.002mm, Coarse Stroke 37.7mm per Rotation, Fine Stroke 0.2mm per Rotation, Moving Range 28mm Illumination S-LED Illumination, Brightness Adjustable Halogen Lamp 100V-240V/ 6V20W, upto 2000 hours of Halogenated Lamp life. Plan-concave Mirror Camera Specifications. CCD Sensor 1/2.5" 5.0 Megapixel Color CMOS Active area: 5.70mm x 4.28mm Sensor Resolution 2592 x 1944 pixel Digitization 12 Bit RGB Pixel Clock 48 MHz Dynamic range 68 Db Integrated slot SD card Slot for SD and SDHC cards Recording Button for image capture Analogue Interface NTSC/PAL toggle switch on board External Power Optional power adapter available for when USB power not available PC should be supplied with microscope for transferring the image Utility requirement Electrical Supply 100V - 240V AC, 50/60 Hz Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model.	01 No.

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17.	**Drying & Sterilization Oven** Working temperature range; above ambient temperature to +300 °C Setting accuracy temperature up to 99.9 °C: 0.1 / from 100 °C: 0.5 Setting temperature range +20 to +300°C Temperature sensor 1 Pt100 sensor Single DISPLAY. Adaptive multifunctional digital PID-microprocessor controller with high-definition TFT-colour display Digital backwards counter with target time setting, adjustable from 1 minute to 99 days the process time does not start until the set temperature is reached natural convection Fresh air Admixture of pre-heated fresh air by electronically adjustable air flap Vent connection with restrictor flap Temperature control adjustable electronic overtemperature monitor and mechanical temperature limiter TB, protection class 1 according to DIN 12880 to switch off the heating approx. 20°C above nominal temperatur Auto diagnostic system for fault analysis fully insulated stainless steel door with 2-point locking (compression door lock) calibration certificate Interior easy-to-clean interior, made of stainless steel Volume50-60 L Max. number of internals 4 Voltage220 V, 50/60 Hz Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model. Original Equipment Manufacturer and Certificate of Origin Certificate (Embassy Attested) USA/EU/Japan (Other country will be accepted if 30+ number of functional units are installed in Pakistan and meets all specification, list of installation must be provided with contact details, with any 2 certifications (510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare))	01 No.

18.	**Cool Incubator (20° to 25°C)** Temperature Uniformity. ±1.2°C Temperature sensor 2 Pt100 sensors Volume 90-120 L\ digital PID-microprocessor controller with high-definition TFT-color displays. Digital backwards counter with target time setting, adjustable from 1 minute to 99 days +10 °C, +25 °C and +40 °C Type 304 stainless steel, electropolished Forced ventilation by Peltier fan Door Outside stainless steel, fully insulated, inside .2-point locking (compression door lock) Window Glass window Alarm visual and acoustic Accessories 3 Shelves Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Training of Biomedical Engineer Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model. Original Equipment Manufacturer and Certificate of Origin Certificate (Embassy Attested) USA/EU/Japan (Other country will be accepted if 30+ number of functional units are installed in Pakistan and meets all specification, list of installation must be provided with contact details, with any 2 certifications (510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare))	01 No.
19.	**Hot Incubator with digital logger (20°C to 80°C)** Temperature Range 20C° to 80°C Temperature Accuracy ±0.1°C Volume120-160L Temperature sensor 2 Pt100 sensors Chamber; stainless steel, electropolished Forced ventilation by Peltier fan Double Door Outside stainless steel, fully insulated, inside glass Digital backwards counter with target time setting, adjustable from 1 minute to 99 days Glass window PID microprocessor temperature controller, temperature set 0.1°C steps 3 Shelves Vendor should provide all the accessories required to operate the machine as FOC.	02 Nos.

	Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Training of Biomedical Engineer Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model. Original Equipment Manufacturer and Certificate of Origin Certificate (Embassy Attested) USA/EU/Japan (Other country will be accepted if 30+ number of functional units are installed in Pakistan and meets all specification, list of installation must be provided with contact details, with any 2 certifications (510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare))	
20.	**Freezer -40^{o}C** Data Logger: 24/7 automatic temperature recorder in the form of data logger should be provided with the fridge and that can download the data via micro SD card / USB Alarm Controller and alarm battery back up Door open alarm Power failure alarm High temperature alarm Low temperature alarm Working temperature range Minus 10 to minus 40 C Defrost Off cycle auto defrost CoolingFan assisted cooling Access port CFC Free Door lock with keys Self closing door Real time temperature display for two temperature probes Internal light Remote alarm contacts Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer.	04 Nos.

	Training of Biomedical Engineer Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model. Original Equipment Manufacturer and Certificate of Origin Certificate (Embassy Attested) USA/EU/Japan (Other country will be accepted if 30+ number of functional units are installed in Pakistan and meets all specification, list of installation must be provided with contact details, with any 2 certifications (510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare))	
21.	**Pharmacy Fridge** 24/7 automatic temperature recorder in the form of data logger should be provided with the fridge and that can download the data via micro SD card/USB Alarm Controller and alarm battery back up Door open alarm Power failure alarm High temperature alarm Low temperature alarm Temperature recording Minimum/maximum temperature recording and display Working Temp 0-8C Defrost Off cycle auto defrost assisted cooling CFC Free Door lock with keys Self-closing door Real time temperature display for two temperature probes Internal light Or Equivalent All the options available for this system should be quoted separately. Demonstration may be requested for Technical Evaluation Should have 2 years comprehensive warranty with 95% uptime including service, spare parts on manufactures letter head including. Must have installed and successfully maintain units in 15+ different institutions across Pakistan (list of installation as per sample form must be provided) Operational, preinstallation, installation, Maintenance, service, Spare parts manuals, PPM checklist, software, and system backup in soft copy to be supplied the end-user/Engineer. Training of Biomedical Engineer Firm is also required to maintain a stock of spare parts in stock as recommended by the manufacturer. The list of which may be provided, and physical inspection may be done by the customer. Complete list of spare parts and prices must be provided. Must have all tool, instruments, and calibration equipment in Karachi PPM/calibration, IQ, OQ & PQ to be performed by the vendor with complete documentation as per manufacturer recommendation Must comply with 510(k) FDA (Food & Drug Administration)/ European MDD 93/42/EEC (Medical Device Directive) / Japanese MHLW (Ministry of Health, Labor & Welfare) for specific quoted model. Original Equipment Manufacturer and Certificate of Origin Certificate (Embassy Attested)	04 Nos.

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22.	**FTNIR** Optical system: Must be Single-beam optics Interferometer: Must be Michelson Interferometer. Must be sealed and desiccated airtight with a built-in automatic dryer which electrolytically removes the moisture inside the interferometer. FTIR Spectrophotometers which utilize desiccants that requires regular replacement is not preferred. Must include built-in advanced auto-dynamic alignment function and aligned during scanning. & Should be capable of acquiring data in both scanning directions to ensure the maximum signal-to-noise ratio in the shortest possible time. Must be aligned automatically when the beam splitter is being replaced and it must be kept optimized and stable constantly. Interferometer window plate must be KBr with a moisture-resistant protective coating and user can be exchange it. It can be changed to optional KRS-5 window which is free from deterioration can even if it is wet. . The interferometer must utilize retro-reflecting cube corners for instantaneous correction of instability due to mirror tilt. Maximum resolution: Must be 0.25cm^{-1} or better (Middle IR). Spectral range: ZnSe 5100–600 cm^{-1}or better Wavenumber Range: Fully covers practical wavenumber range from 5100–600 cm^{-1}. User can change Beam splitter, Light source and Detectors to expand wavenumber range. The option to purge the spectrometer optics and the sample compartment should be available. Light source: Must be a high energy air-cooled ceramic light source for Middle/Far IR Must come with 5years guarantee. Detector: Must be a high sensitivity temperature-controlled DLATGS/DTGS detector with a built-in temperature regulator to ensure excellent stability. Mirror Speed: Must be 4 step selections of 1- 9 mm/sec or better All mirrors should be gold-coated to maximize optical throughput in the Mid-IR spectral range. Optionally can be selected one of 10, 20, 30, 40mm/sec, and maximum 20 spectra /sec can be obtained. Laser: Must be He-Ne laser for Data Sampling. Atmosphere correction: Must be incorporated to reduce influences of water vapor and CO2. Can be automatically executed after scanning. Can be applied to already obtain spectra as post analysis. Sample compartment and Accessories: The main sample compartment should have a center focus to accommodate the complete range of commercially available accessories and large customized accessories. Automatic Accessory Recognition capability must be available to enable the FTIR to automatically recognizes the accessory type and ID number and optimum scan parameters for the accessory are automatically set.	01 No.

Utility	While FTIR is not used, power can be OFF or only a few standby power is used.
	While FTIR is not used, Light source and Laser must be off to expand its lifetime.
	Library should be builtin.
Warranty	5 years with maintenance parts and services free of cost 5years warranty for consumables free of Cost. 5 year warranty for desiccants & other Parts free of cost.
	CFR 21 Part 11 Compliant Software for FTIR Data Handling
	Standard comprehensive warranty and support should be three years. • Details of Annual Maintenance Contract after standard warranty.
	Installation: the price should be inclusive of full installation on site with full functionality demonstration.
	IQ, OQ/PQ interval programmable including alarm indicator
Installation:	• Training & Installation at Lab site should be done free of cost
Calibration	Calibration Built-in calibration procedures for speed, temperature control,
	Validation and qualification of equipment included IQ, OQ & PQ with documents are included in equipment price
	All Certification must be provided by the vendor
	Certification All components certified to USP / EP requirements
	5 year annually calibration free of costs.
Standard	USP Standards (for In-process Calibration) should be supplied as FOC.
Training	Operational and troubleshooting training must be given by the Factory trained engineer for end-users
Software Specification	The software must offer optional packages for dedicated applications:
	Creation of customized spectral libraries and search in spectral libraries. Next to single component search this package should allow multicomponent search and mixture analysis to be useful for analyzing spectra showing contributions of several components.
	Structure editor and search of structures in libraries
	Identification of substances and substance classes. The identification software package must include cluster analysis and an unlimited number of hierarchical structured libraries
	Signal Sampling Over-sampling delta-sigma converter. Communication USB, wireless and TCP/IP interface allows direct connection with LAN. Instruments can be configured with wireless router communication. Atmospheric Compensation Minimizes effect of atmospheric water on the sample spectra without the need for reference or calibration spectra. Operates at various instrument settings without having to recalibrate the correction. Instrument parameters are optimized for the installed accessory. Accessories information stored with spectral data. Error Trapping All sample spectra is checked for common spectroscopic and sampling problems.
Validation:	Instrument should has Internal Validation system with Serialized, traceable standards wheel including 1.5 MIL, (38 micron) NIST traceable polystyrene
Diamond-ATR accessory:	The ATR module should include a very robust diamond crystal. The diamond crystal should be mounted in the plate by soldering.

			The fixation of the crystal by glue does not assure the required stability and will therefore not be accepted.	
			The life time of the diamond ATR module should be extremely long. The warranty period is expected to be 10 years.	
			The diamond-ATR crystal should be monolithic to allow the measurement over the full Mid-IR spectral range according to	
			The optical configuration of the spectrometer. No optical components should be used which limit the spectral range.	
			Vendor must perform IQ/OQ of software and hardware through manufacturer certified engineer.	
			IQ/OQ protocols must be automated and locked as per manufacturer protocols.	
			Complete training of end user for operations of machines provide locally at site.	
			Vendor must present at least 5 References of successful installations with end user satisfactory statement with in last 2 years for above mentioned specification.	
			Data Management	
			I7 Intel, 3GHz or better	
			16GB RAM Memory (256 SSD)	
			DVD-RW ROM	
			HDMI	
			101 keys keyboard	
			Mouse & mousepad	
			Laser Printer	
			Manufacturer origin must be USA, Europe & Japan.	
			UPS required according to KVA used by equipment & computer system.	
			Manufacturer origin must be USA, Europe & Japan.	
			21 CFR compliance, Auditrial Installed. Computer System Validation must be Provided by vendor.	
23.	**Atomic Absorption**			01 No.
		General Specifications:	The equipment must come from a reputable brand in the market with direct manufacturer support - engineer, application and logistics locally.	
			Atomic Absorption spectrometer should have Flame atomizer and furnace atomizer.	
		Spectrometer:	The spectrophotometer must have measurable wavelength range from 185.0 to 900.0 nm. Or better	
			Spectrometer must work in emission mode as well as absorption mode.	
			Spectrometer must have minimum 6-lamp turret supplied with capability to lit 2 lamps simultaneously (to avoid delay between two methods) or better.	
			The monochromator must be aberration-corrected Czerny-Turner mounting with at least 300 mm focal length. Diffraction grating area must ≥ 1800 lines/mm grooves.	
			The monochromator must use non-spherical toroidal mirrors to optimize the focusing characteristics at the inlet of the monochromator to reduce optical aberrations.	
			Spectral bandwidth selection must be automated with choice of at least 4 slit sizes within 0.1- 1 nm range. Or better.	
			Detector must be of wide-range photomultiplier with auto-gain function to reduce the effects of atomic emission interference.	

			Optical system must consist of double-beam optics with optical double-beam for excellent stability in flame measurement and high-throughput single-beam in furnace measurement for higher sensitivity. The photometric system must be set automatically.	
		Flame Atomizer:	Flame atomizer must be able to operate Air-C_2H_2, N_2O-C_2H_2 flames with automatic changing between the two flame types.	
			Burner head must be made from highly resistant titanium with 10 cm slot size (5 cm titanium slot burner for N_2O-C_2H_2 flame must be available).	
			The burner angle should be adjustable from 0 to 90° to extend working concentration range (not possible in case of dual atomizer system with furnace).	
			Nebulizer must be Pt-lr capillary type with PTFE orifice and ceramic impact bead; capable of handling hydrofluoric acid containing samples.	
			The burner chamber must be made from inert engineered plastic with angled design to minimize drain accumulation.	
			Burner atomizer must have ability to align burner head at optimal lateral and vertical position automatically using software	
			Also system must be able to do automatic search for optimum fuel flow rate to achieve maximum sensitivity.	
			Two types of background (BG) correction methods must be provided for flame technique with at least one background correction method applicable over entire wavelength range 185-900 nm.	
			System must be provided with the safety measures such as : a) Gas pressure monitor b) Ability to automatically detect fuel gas leak, when the power is turned on, c) Flashback detection, d) Flame monitor, e) Prevent use of incorrect burner head, f) Drain tank level monitor, g) Automatic flame extinction upon power outage or sudden power interruption, h) Internal fan stop sensor, and i) Use of flame-retardant materials for the instrument external covers and atomizer unit.	
			System must include earthquake/ vibration sensor to perform automatic flame extinguishing in case of emergency. The nebulizer also has an adjustable sample uptake rate, essential for optimum performance with refractory element or organic solvent. The whole flame automization system is easily removed for cleaning or for change over to graphite furnace.	
		Flame Autosampler:	Autosampler for flame mode analysis must have the following features:	
			Auto sampler should be directly triggered from AAS unit via RS-232 communication having completely software-controlled operation.	
			Autosampler should have minimum 50 vial positions of ≥15 mL vial capacity or better.	
			Rinse port with overflow wash mechanism should be provided to avoid any carryover or contamination from Autosampler probe between two sample runs.	
			Autosampler should permit random access to any vial location of samples and standards.	
			Autosampler should have minimum 60 vial positions (2ml capacity) for samples and 8 vial positions (20 ml capacity) for reagents. Or better	
			Probe rinse using solvent discharge method should be provided to avoid any carryover or contamination from autosampler probe between two sample runs.	
			Autosampler should permit random access to any vial location of samples, reagents and diluents with capability to mix sample with at least 4 types of reagents.	

	Autosampler should be provided with integrated cover (lid) to avoid any contamination from environmental dust.
	Sample injection syringe should permit for injection volume of 2-90 µL.
	Autosampler should be capable of automatic standard preparation (from stock) and automatic dilution of over-range samples up to 300-fold.
	Minimum 60 sample vials and 8 reagent vials should be provided along with autosampler.
Furnace Atomizer:	System should have high-sensitivity mode setting and capability to increase sensitivity up to 20 times using boosting function.
	Automatic optimum temperature search function for furnace program should be provided.
	Furnace atomizer unit must have ability to align furnace at optimal lateral and vertical position for best sensitivity automatically using software
	Two types of background (BG) correction methods must be provided for furnace technique with at least one background correction method applicable over entire wavelength range 185-900 nm.
	System must be provided with the safety measures such as : a) Cooling water flow rate monitor, b) Gas pressure monitor, c) Overcurrent protection unit (double check by circuit protector and optical sensor), and d) Furnace block cooling check.
Hydride generator:	AAS system should be provided with hydride generator system employing use of sodium borohydride ($NaBH_4$) for high sensitivity analysis of elements like As, Se, Sb and Hg.
	Hydride accessory must have completely automated software-controlled operation.
	Signal measurement should be done by using continuous flow method.
	System must enable easy operation with online mixing of Sample, reductant ($NaBH_4$) and acid (HCl); so as to avoid any need of pre-acidification of sample.
	Two reagent bottles and two quartz absorption cells should be provided along with the hydride system.
	Hydride system should be able to perform automatic sample analysis using autosampler provided with AAS system.
Utility requirements:	Main AAS unit and all accessories should be capable to operate with single phase power supply of 200-240V.
	Cooling water circulator (chiller) should be provided for furnace operation as standard with instrument and not from local supplier.
	Single hose exhaust should be sufficient for total AAS system. Blower Vent Assembly should be included.Ducting) All setting of equipment & Ducting must be done by vendor in Lab.
Software:	Operation of the system should be easy and intuitive via latest Windows Operating System.
	Software measurement mode must comprise of flame method and furnace method with display of signal analog output for two channels (atomic absorption and background signal).
	Software must have automatic baseline correction of baseline drift and automatic calibration curve correction function using sensitivity monitoring.
	Software should calculate and display sample concentration using either calibration curve method or standard addition method; based on sample volume, dilution rate, fixed volume and factor inputs.

	Software must have capability to analyze up to 20 replicates and must display average value, standard deviation (SD) and RSD values directly.
	The furnace technique signal processing should be possible with both peak height and peak area.
	Software should automatically check for proper functioning of lamp, detector and background corrector before starting analysis.
	Software must be able to record the used lamp time (hours) and monitor lamp warming-up time.
	Sample results must be displayed in table or worksheet format which is easy to print, copy and report.
	Software should have security management using login ID and password to have controlled user access based on user privileges. Software should have log record, audit trail and electronic signatures.
Others requirements:	Compliance: All modules must be GLP/GMP compliant/ a declaration of Conformity certificate must be provided.
	Instruction Manual: Hardcopy of the instruction/ user's manual for main instrument and all other accessories must be included in the quote.
	Training: The supplier must provide training for the users and biomedical engineer of the instruments at site as well as at the supplier's application laboratory, after installation and commissioning. Details of the training program must be attached with the tender.
	System Warranty and Technical Support
	On installation, commissioning and training by factory-trained Engineer is required. Calibration and maintenance services provided by local engineers of vendor for 3 years free of cost.
	All necessary Accessories required runn the system by vendor. Including the Gas Cylinders with regulators, Blower vent assembly, gas panel with fittings
	UPS required according to KVA used by the equipment
	Calibration standards for all Metals mentioned below.
	Zinc, Lithium, Arsenic , Nickel , chromium, sodium , Potassium, magnesium, Calcium, chlorine, cadmium, Iron ,Mercury , Selenium Lamps for all above mentioned metals
	5 years Warranty for Lamps of all metals free of cost. 3 years warranty for other consumables free of cost 3 Years Warranty of Parts free of cost.
	Manufacturer origin must be USA, Europe & Japan.
UPS	UPS required according to KVA used by the equipment & Computer.
	21 CFR compliance, Audit trial Installed. Computer System Validation must be Provided by vendor.
Additional Requirements:	Vendor must perform IQ/OQ of software and hardware through manufacturer certified engineer.
	IQ/OQ protocols must be automated and locked as per manufacturer protocols.
	Complete training of end user for operations of machines provide locally at site. International Training of 2 end user free of Cost.
	Vendor must present at least 5 References of successful installations with end user satisfactory statement with in last 2 years for above mentioned specification.
	Data Management
	Core I 7 intel processor

		16GB RAM Memory	
		250GB Hard disk Storage	
		DVD-RW ROM	
		HDMI	
		101 keys keyboard	
		Mouse & mousepad	
		Laser Printer	
24.	**Karl Fischer Titrator**		01 No.
	Automated System	Touch Screen option available in a system that provides clear information to the end-user.	
		Determinations from 100 ppm to 100% water – fast and precisely.	
		Determinations from 1ppm to 5 % for low Water content Samples.	
	Solvent Manager	Titrator must come with solvent manager with liquid handling device.	
		For Gas-Phase Extraction autosampler is required, to place the sample into vials.	
		Automated In Motion Karl Fischer Oven to determine the water content of up to 10 samples or better.	
		Auto recognition of burette and filer	
		Minimum no of methods 05 or better.	
		No of samples per series allow minimum 120 or better.	
		Safety stop function must be available in Titrator	
		Polarization current range: 0 to 20µA or better	
	Measurement Range	Repeatability 0.3% at > 10 mg H 2 O or better	
		Measurement range should be -2000 + 2000mv or better	
		Resolution 0.1 mv or better	
		Burette resolution 0.25ul for 5ml or better	
		Drift measurement < 6µg/min or better	
		Limit of error : 0.3 %	
	Accessories	Silicone Grease , Burettes (Burettes 5ml, 10ml, 15ml qty 05 each.), Metal Sensors, Titaration Stand, Titrant 5 litre , Glass beaker 100-150 ml with stirrer (5 pieces), Titrators 10 Litres	
		Security Access: Systems that Security access shall require a Login Name and Password. Access todifferent areas of the system shall be defined in terms of Roles i.e. user, Supervisor or power user and administrator control etc Roles shall be defined in terms of View, Edit and Function Privileges.	
	Consumables	The system should be an easy-to-use next generation 32-bit software that incorporates the latest Windows technology. Data can be exportable on PDF for reporting purpose.	
	Security	Equipped with multiple functions like Graphical User Interface, Assistant Bar, Data Explorer, Wizard software and long-filename compatible.	
		Flexible Graphical User Interface to display instrument status, show real time plot and change all instrument set points.	
	Software System	Computer System Validation (CSV) Required with Proper	

	Documentation. The vendor must provide a CSV report with a performance at least for 3 years as FOC.
	System must come up with own built-in software platform also compliant with 21 CFR Part 11 with audit trail.
	Should have full GLP/GMP support in terms of security, audit-trail and validation support.
	QA/QC (statistical) functions, batch auto-stop function, run user program function, supports pre-run programs, OLE automation compatibility (Batch analysis, etc).
	Emergency stop mechanism shall be located at easily accessable position near the operating Person
	In case of Power Failure Equipment should stop in save condition, Equipment should not restart of its own without user permission.
Data Transport	Via USB into PDF Format / Ethernet .
Warranty and Calibration service	3years calibration with maintenance services as FOC by Factory trained engineer. 3-year comprehensive warranty with parts replacement (consumables and fixed parts) free of cost. Quoted model should be the latest version and spare parts should be available for the period of the next 10 years (Required certification from manufacturer/vendor).
Printer	A compatible Printer is required with the system.
Installation	Installation: the price should be inclusive of full installation, on-site with full functionality demonstration and IQ, OQ & PQ documents.
Training	Operational and troubleshooting training at site should be done free of cost by the factory-trained engineer
Certification	Certification All components certified to USP / EP requirements
UPS	UPS required according to KVA used by the equipment & Computer
Country origin	Manufacturer origin must be USA, Europe & Japan.

25.	**Micro Analytical Balance**	01 No.

Software Compliance	21 CFR Part 11
User Management	Name , ID , Password & User option available
Maximum Capacity	220 g or better
minimum readibility	0.0001 g
Adjustment	Internal / FACT
Weighing Pan Diameter	80 mm or better
Display	High contrast display (HCD)
Settling Time	10 seconds or better
Voltage Electrical load	220 Volt
Linearity, typical	0.03 mg or better
Linearity ±	0.1 mg
Battery Option	yes
Antistatic Kit	Required
Evaporation Trap	Required
Guaranteed Repeatability	0.04 mg
Housing	Die-cast aluminum, plastic PA-12 Builtin Calibration Weight LIMS Interface should be included.

	Vendor must provide one year standard warranty service for equipment and 3 years extended warranty services with parts replace (including all Major parts and Consumable parts)	
	3 years performance calibration and maintenance services as free of charge service. Warranty of Consumables.	
	IQ, OQ & PQ to be performed by the vendor with complete qualification documents and manual.	
	All other necessary accessories should be supplied by vendor for equipment running. For eg Spatulas , dust brush, tissues.	
	vendors should submit the Certificate for availability of Spare parts of quoted model upto 10 years	
	Quoted model should be latest version	
	Latest model should be quoted with printer. (50 Printer Cartidages) (50 printer Rolls)	
	Training: Comprehensive (operational & trouble shooting) training to end-user	
	complete USP weigh Box with certificate.	
	Printer Compatible with constant un removable ink 20 Printer rolls, 5 printer cartridges.	
	weigh boat 100 pcs (for Small Weights)	
	Stainless steel spatulas set (For Minimum to Maximum weigh) small grooved spatula 6	
	Brushes for instrument cleaning (At least 6 Brushes), Fibre Free tissue boxes 5.	
	IQ OQ PQ document Required .	
26.	**Analytical Balance (for Micro Lab. IBBPS)**	01 No.

Maximum Capacity	220 g or better
minimum readibility	1 mg
Adjustment	Internal / FACT
Weighing Pan Diameter	80 mm or better
Display	High contrast display (HCD)
Settling Time	10 seconds or better
Voltage Electrical load	220 Volt or better
Linearity, typical	0.03 mg or better
Linearity ±	0.1 mg or better
Battery Option	yes
Housing	Die-cast aluminum, plastic PA-12
Vendor must provide one year standard warranty service for equipment and 2 years extended warranty services with parts replace (including all Major parts and Consumable parts)	
3years performance calibration and maintenance services as free of charge service. Warranty of Consumables .	
IQ, OQ & PQ to be performed by the vendor with complete qualification documents and manual.	
All other necessary accessories should be supplied by vendor for equipment running.	
vendors should submit the Certificate for availability of Spare parts of quoted model upto 10 years	
Quoted model should be latest version	
Latest model should be quoted with printer.	
Training: Comprehensive (operational & trouble shooting) training to end-user	
complete USP weigh Box with certificate	
Printer Compatible with constant un removable ink 20 Printer rolls, 5 printer cartridges.	
weigh boat 100 pcs (for Small Weights)	
Stainless steel spatulas set (For Minimum to Maximum weigh) small grooved spatula 6	

	Brushes for instrument cleaning (At least 6 Brushes), Fibre Free tissue boxes 5.	
27.	**GC Mainframe** **The GC Mass Spectrometer should have the following configuration:** Head Space sampler with 12 Vials capacity. FID detector, TCD detector Must be able to support at least 2 inlets, 3/4 detectors and 3/4 signals acquisition. Must be possible to have at least 2 detectors mounted, with more is preferred and monitored simultaneously on the GC and software. Must be able to install up to 6 electronic flow control units, providing control of up to 18 channels. Must have advanced intelligent self-diagnosis feature. Electrical system, flow control systems and sensors must be fully supported by the operating software. Must provide software that monitors GC counters and provides control via Coloured LCD Touch screen as well as from the PC software. Also must provide a real-time notification via indicator/advisor when a counter limit has been reached. GC must have an independent display on the instrument. Must provide a run time deviation log created for each analysis. Context-sensitive online help must be available. Should have 10 files for analytical conditions storage. Built-in column bleed compensation for the use of packed column. Standard atmospheric pressure and temperature compensation must be available. Retention time repeatability : <0.008% (or equivalent to 0.0008min) Area repeatability : < 1% RSD An extensive self-diagnosis function with safety features helps prevent unexpected instrument malfunctions. It enables a detailed diagnosis of the septum and inserts usage status, whether there is a temperature sensor error, gas supply pressures, control status of each gas, ignition function, DC voltage, AD converter, and other factors.	01 complete Unit
27.1	**Column Oven** Operating temperature range: ambient + 10°C to 450°C or better. Oven temperature set point resolution must be 0.1°C. Oven Ramps/Plateaus should be 20/21 or better with negative ramps allowed. Oven must support 10 ramps and negative ramps must be allowed. Maximum achievable temperature ramp rate must be 100°C/min or better. Oven temperature program set point resolution for the temperature ramp rate must be 0.1°C. Maximum run time of at least 998 minutes Oven cools down from 450°C to 50°C must be less than 4 mins (under non-specific conditions), with faster cooling speed is preferred	01 No.
27.2	**Split / Split less Injector** Must be able to install at least one independent temperature-controlled injector unit. Must be suitable for all capillary columns of 50um to 530um internal diameter. The pressure controller must come with compensation for barometric pressure and ambient temperature changes as standard. Must be able to select pressure units as psi or kPa. Must be able to select carrier and makeup gas types: Helium, Hydrogen, Nitrogen or Argon. Split ratio range: 0 to 7500 or better must be available to avoid column overload. Maximum operating temperature up to 400°C. Must consist of at least 2 pressure programming methods, including the constant pressure mode. Ramped mode is not considered as an independent programming method, for instance the ramped pressure and constant pressure modes are not different as both employ the same	01 No.

	pressure calculation for programming. The flow has to be stable against temperature coefficient within 0.2%/^{o}C change. Must be able to set total flow range: 0 to 1,200mL/min for He, 0 to 1,200mL/min for H_2, and 0 to 200 mL/min for N_2. The flow of H_2 is capped for safety purposes. Built-in automatic carrier shutoff if the inlet pressure drops significantly, i.e. in the case of leakage. Efficient gas saver mode built-in to reduce gas consumption during standby without affecting performance. Must have electronic septum purge flow control to eliminate carry-over.	
27.3	**Quadrupole MS** The quadrupoles should be made up of metal rods and should be cleanable. The quadrupoles must have the pre-rods as filter to minimize the influence of contamination and thus increase the sensitivity. The mass spectrometer must have Electron Ionization (EI) modes supplied as standard. Positive Chemical Ionization (PCI) and Negative Chemical Ionization (NCI) available as options. The mass spectrometer must have EI/CI source as option that allow switching between EI / CI mode without changing ion source. The mass spectrometer must be equipped with an ultra-high sensitivity ion source that has an ion optical system with high transport efficiency and excellent temperature homogenization of the ion source box to prevent the formation of adsorption sites inside the ion source due to cold spots. It should have a mass range of 1.5 to 1000 amu or better with unit mass resolution over the entire mass range. It must be able to perform calibration manually as well as auto-tune at m/z 1066 [Tris (perfluorononyl)-S-triazine), molecular weight of 1485] to obtain accurate mass spectrum for high molecular weight compounds such as halogenated and derivatized compounds. The mass spectrometer should be able to scan at faster scan rate in order to achieve more information and more data points for accurate quantitation. The scanning speed capability should be 20,000 amu/sec (single scan). Higher scan rates are preferred It should have faster scan cycles in order to obtain highly precise data for fast GCMS and should be able to support advance applications such as comprehensive GC x GC. The mass spectrometer should have a stability of +0.1u / 48 hours. The ion source and transfer line must be independently heated over a user- selectable temperature range: Ion Source: 100 to 350°C Transfer Line: 50 to 350°C The ion source must be accessible from the front for ease of maintenance without the need to remove the top cover. The mass spectrometer should have Twin-Line capability to eliminate the need to swap columns when switching applications. The mass spectrometer must have a dynamic range of 8 x 10^6 .or better. It should have high performance synchronous SIM/Scan with automated SIM set up that can convert a full scan method to a SIM or SIM/Scan method. The software must automatically configure the number of SIM group, SIM cycles across the peak and the ions added to each group. Software must have automatic SIM table creation function included to create SIM window base on elution time. The system should be able to automatically set up a SIM/Scan method from an injected standard. EI scan sensitivity: Signal-to-noise (S/N) 1500:1 or better at m/z 272 for 1 pg octafluoronapthalene (OFN) in EI scan PCI scan sensitivity: Signal-to-noise (S/N) 1200:1 or better at m/z 183 for 100pg benzophenone in PCI scan NCI scan sensitivity: Signal-to-noise (S/N) 2000:1 at m/z 272 for 100fg octafluoronapthalene (OFN) in NCI scan	01 No.

	The NCI ion source should have the flexibility to perform EI analysis without changing ion source. The vacuum system should consist of high capacity turbo molecular pump with differential vacuum exhaust system. Minimum 255 L/Sec or better capacity is required higher capacity is preferred to allow higher flow rates up to 8 ml/min or more. The vacuum system must be able to accommodate flow rates up to 10.0ml/min of helium enabling highly effective evacuation speeds and increases allowable column flow rates. The mass spectrometer should have capability to install two narrow-bore capillary columns into the MS simultaneously in order to eliminate the need to swap columns. There should be an automatic interrupt system which provides protection against damage such as filament failure. In case of power failure, vacuum integrity and cleanliness should be maintained by not venting to atmospheric pressure automatically. There should be 2 filaments available for both EI and CI ionization mode allowing automatic switching to another when one fails. Fully automatic start-up and shut-down of the GCMS by simply one-click of a button on the computer screen must be available when replacing columns or repairing ion sources. Should have eco-friendly feature which reduces the power consumption in analysis standby mode. Auto tune should be available in both CI and NCI for all 3 types of reagent gases (Methane, Isobutene and Ammonia).	
27.4	**Auto sampler** Sample injection system with a minimum 12-sampler rack as standard. Multifunctional, high throughput sampler which can accommodate up to 150 samples must be available as an optional accessory. Must be able to install the Autosampler easily without the need for alignment. Must allow random access in sample sequencing. Must have priority sampling mode to allow priority sample and method to be inserted into the sequence at any time Number of sample injections: 1 ~ 99 injections per sample. Sample volume injection should be in the range of 0.1 ~ 8.0 µl. Optionally, should be capable of 0.5 ~ 40 µl & 2.5 ~ 200 µl injection. Syringe speed: Selectable in two stages. Plunger movement speed: Selectable in three stages. Cross contamination of $<10^{-4}$. Stand-by time: 0 ~ 99.9 after sample suction; 0 ~ 99.9 sec after sample injection. Number of syringe pumping: 0 ~ 20 with pre-wash and post-wash after injection of samples. Depth of syringe insertion into the vial: Changeable in up-down directions to access different layer of sample solution. Solvent flush method and Standard Addition Mode should be available. Multi-injection up to 18mL should be possible for large volume injection. Area repeatability of injection amount must be less than 2%. Able to prepare ahead, for example washing the syringe with solvent prior to the next analysis.	01 No.
27.5	**Data Management and Acquisition System** I7 Intel, 3GHz or better 8GB RAM Memory 250GB SSD DVD-RW ROM HDMI 101 keys keyboard Mouse & mouse pad Laser Printer	01 No.

27.6	**Software System** The system should be an easy-to-use next generation 32-bit software that incorporates the latest Windows technology. Equipped with multiple functions like Graphical User Interface, Assistant Bar, Data Explorer, Wizard software and long-filename compatible. Flexible Graphical User Interface to display instrument status, show real time plot and change all instrument set points. Able to identify target analyte correctly in the event where retention time has shifted from the originally supposed retention time. or Automatic Adjustment of Retention Time (AART) software must come as standard to identify target analyte correctly in the event where retention time has shifted from the originally supposed retention time. The software package should allow for the complete control of the GC. Furthermore, the software must include the capability to control up to 4 GCs at any one time (9 detectors simultaneously), method development and automation, data acquisition, data analysis, generation of custom reports, etc. Should have full GLP/GMP support in terms of security, audit-trail and validation support. Must have the following data acquisition capabilities: Snapshot function, supports single analysis and batch analysis, Batch Table Wizard, add or insert analyses, Supports extended analysis time, automatic time, automatic data file creation QA/QC (statistical) functions, batch auto-stop function, run user program function, supports pre-run programs, OLE automation compatibility (Batch analysis, etc). Must have the following data processing and data analyses functions: Peak integration manipulation, identification (supports multiple relative retention times and grouping) Quantitation (percentage area method, corrected percentage area method, internal standard method, external standard method, standard addition method, index calculation, manual coefficient input) Calibration points and levels (16 levels x 10 points), manual calibration curve creation, column performance calibration, data comparison functions. Must have more than 10 types of report items – sample information, environment settings, methods, chromatograms, peak tables, calibration curves, grouping results, diagrams, text, etc.), OLE object compatibility, layout customization and preview functions, summary report. Must allow clock-time programming with the ability to automatically start/stop a GC at the user-specified scheduled time. Must be capable of performing detector auto-ranging. 21 CFR compliance, Audi trial Installed Computer System Validation must be Provided by vendor System check (GC self-diagnosis), status log must be available to allow continuous monitoring of GC in real-time to alert user maintenance needs and instrument problems. System Control must be Via Touch screen, Via Software and Via WIFI.	01 No.
27.7	**Database/Library** Latest NIST library. Optimized method for toxicology analysis must be available. Optimized method for metabolite analysis and library must be available as optional product.	01 No.
27.8	**Accessories that must be included into the system** GC startup kit Two unit of moisture trap, oxygen trap and hydrocarbon trap. All gas Cylinders like He, H2, Air and N2 with regulators required for normal functioning must be included All gas regulators required for normal functioning must be included Two gas tight syringe for gas samples 5 boxes of 100 samples vials with caps suitable for GC injection	01 Set

	Gas Panel with fitting tubbing's. All on site management setting of equipment by vendor free of cost.	
27.9	**Other Ancillaries Services & Warranty** 3 years with maintenance services free of cost by vendor. Consumables warranty for 3 years free of cost. Parts warranty for 3 years free of cost. Installation: the price should be inclusive of full installation on site with full functionality demonstration. IQ, OQ/PQ interval programmable including alarm indicator.	---
27.10	**Training & Installation** Training & Installation at our site should be done free of cost. Training must be given by the vendor Internationally for 3 end user.	---
27.11	**Calibration:** Calibration Built-in calibration procedures for speed, temperature control, Validation All IQ & OQ documents included Computer System Validation with Documentation required by the vendor All Certification must be provided by the vendor Certification All components certified to USP / EP requirements 3 year annually calibration free of costs.	---
27.12	**Standard** USP Standards. (for In-process Calibration)	---
27.13	**Other Accessorize** 8 GC columns (specification will be given later) manufacturer. Head Space Sampler with 12 Vials capacity. DB35 DB5 DB wex DB 624 (Other specs will be define later)	---
27.14	**UPS** UPS required according to KVA used by the equipment & Computer system.	---
27.15	Manufacturer origin must be USA, Europe & Japan. **And must have at least 10 installations in Pakistan**	---
Note:	**The bid of the GC Mainframe shall be considered on package basis for all the above-mentioned Equipment, Accessories, Services etc. (from Item No. 27 to Item No. 27.15). The bid(s) for individual goods / services in respect of Item No. 27 or its sub item(s) shall not be accepted and rejected by the procuring agency.**	---