



Dow University Of Health Sciences

Directorate of Procurement

NO. DUHS/DP/2016/13-16

DATED 10 January 2017

C O R R I G E N D U M

This is in reference to Notice Inviting Tender (N.I.T) No. **DUHS/DP/2016/13-16 Dated 26 December 2016** appeared in Daily Dawn, Daily Jang and Daily Ibrat on 27 December 2016 for the **PROCUREMENT OF RESEARCH & LAB. EQUIPMENT / INSTRUMENTS FOR DOW RESEARCH INSTITUTE OF BIOTECHNOLOGY & BIO MEDICAL SCIENCES (D.R.I.B.B.S)** Bid Reference No. **DUHS/DP/2016/16**.

The Section G: Technical Specifications of the bidding document has been amended / corrected / modified as follow. All the interested eligible bidders are requested to please furnish their bid in accordance with the amended / corrected / modified specifications of the equipment / instruments.

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

G: Technical Specifications (Amended / Corrected / Modified)

Item No.	NAME OF GOODS, TECHNICAL DESCRIPTION, SPECIFICATIONS, AND STANDARDS	Qty.
GROUP-1		
01	Thermal cycler (96 well) Thermo block Aluminum, •Sample capacity: 96x 0.2 mL PCR tubes and 77x 0.5 mL PCR tubes or 1x96 well PCR plate •Temperature control: range 4-99°C, •Temperature control mode Fast, Standard Safe; all in gradient mode Heating technology of the block Peltier Elements, Triple Circuit Technology, •Gradient: Yes, • Gradient block Over 12 columns Gradient range 1-20°C, •Gradient temperature range 30-99°C, •Lid temperature range 37-110°C, • Lid Type Flex lid for ergonomic lid opening, •Block homogeneity 20-72°C < ±0.3°C, 95°C < ±0.4°C, •Block temperature accuracy ≤ ±0.2°C •Maximum Cycles 99, •Heating rate approx. 3°C/s, •Cooling rate approx. 2°C/s, •Interfaces: USB, •Ethernet, CAN in/out •Power consumption 700 W, •Evaporation protection lid technology Thermal sample protection, •Networking capability to control more than one cycler with one control panel. •No of Program on device :700	03 Nos
02	Centrifuge (small table top, temperature control) with rotor 30 x 1.5/2.0 mL micro centrifuge tubes with max. 11 mm Ø capacity rotor 45° angle, • Speed up to 30,130 x g (17,500 rpm) Approx, • Compact footprint for use on all lab benches, • Aerosol-tight rotors for ergonomic rotor lid locking, • Safety Devices: Lid Interlock, Imbalance Detector, Overcurrent Circuit Breaker (Power Switch), Lid Open/Close Detector, temperature controlled -11-40oC, soft break function 0-9 acceleration time 14s, deceleration time: 15s, interchangeable rotor option: 12. Reduced vibration.	02 Nos
03	Centrifuge (swing bucket, temp control, larger speed limits) with rotors Intelligent Microprocessor Control, • Inverter Controlled Brushless Motor, • Automatic Rotor Identification System, • Instant RCF Reading, • Last Run Memory, • Over speed Protection System, • Full Lid Interlock, • Imbalance Detection System, • Self Diagnostics, • Status Indicator, • CFC - Free Refrigerant Gas , • Precool Facility , • Easy To Service, • Superior Lid Lock Mechanism, soft break function 10x10 acceleration /deceleration • Selectable Temperature Range -9oC To +40C , • Speed Range max 14000rpm, •	02. Nos



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	Maximum RCF 20,9013/4,500 x g, • Timer 1 min - 99 min with Continuous Mode, • 48 place centrifuge for 1.5 / 2.0 ml micro test tubes, With rotors for : • 96 well PCR plates, 15 ml falcon , 50 ml falcon, 1.5ml/2.0ml/5ml tubes, , interchangeable rotor option: 18. Reduced vibration	
04	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	01 No
05	Gel doc (with computer, thermal printer, and paper printer) System shall be used for detection and quantification of nucleic acids, proteins and labels, bio imaging of cells, fluorescent and calorimetric applications; high quality imaging and resolution with epi and trans UV provision; 6-8 filter wheel with atleast 4 emission filters; blue, orange, red and green; semi-motorized zoom and filter change options, real-time imaging with Trans UV, Epi-UV, and Epi-WL provision. Inbuilt CCD camera with 16-bit file format and atleast 3 MP camera resolution is required. Suitable gel capture and gel analysis software is required along with HP Laser color printer to support the printing of the images. Smart dark chamber that automatically shuts of light when door closed and maximum sample emitted light with minimum light distraction., CCD camera with atleast 3 mega pixels resolution, 16-bit file format, 6X position for filters, different UV illumination modes like Trans-UV, Epi-UV, Epi-white , light, UV converter to white light, excitation source of UV with wavelength 312 nm and suitable gel capture and gel quant analysis software to run the system. The filter range should be for blue - 470 nm, Orange - 580nm, Green - 550 nm and Red - 600nm respectively. Transilluminator dimensions should be atleast 25-26 cms length wise with width of 21cms. Compatible computing system (laptop preferred) with integrated softwares for 1 D and 2 D capture and analytical software.	01 No
06	Small horizontal electrophoresis assembly with power packs Horizontal Electrophoresis Kit: Mini unit: Complete Set - Including base gel running unit, safety lid, 7 x 10 cm gel trays, two 8-well and two 15-well combs and gel casting gates. Gel Casting Tray: Standard form; Trans illuminator, UV Power Supply: • Power Supply suitable for horizontal gel electrophoresis, , • Constant voltage and constant current modes , • Output Voltage: Adjustable from 0/5/10V to 500V/600V with an increment of 1 V or less , • Output Current: up to 800/1000 mA with increment of 1 mA , • Output power : 300W or more , • Terminals/ Sockets : 4 Pairs/4 , Safety: All necessary safety provisions like Over load, No load, Sudden change in load, power failure indication, Over Temperature and safe plugs and sockets	02 Nos
07	Horizontal Electrophoresis tank (mupid one) Electrophoresis tank Made of Heat-resistant Materials where Gel solution up to 100°C could be poured into the Gel Tray. Clean up could be performed by using boiling water, • Safety Lid with Interlock System, Voltage Variation Range , • At least seven conventional voltages should be available with peak voltage constant at 140 V and output level can be change through pulse control., 2 large gel tray , 4 small gel trays, • 4 combs (13 well and 26 wells) , Combs to be spaced according to multichannel pipettes, •Gel casting stand	01 No
08	Wide Electrophoresis Tank Horizontal Electrophoresis Kit: Wide Mini unit:	01 No



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	<p>Complete Set - Including base gel running unit, safety lid, at least two casting trays and combs. Gel Casting Tray: Two 15 x 10 cm UV transparent tray, casting gates, gel caster. Standard form; Trans illuminator, UV</p> <p>Combs sizes: two 15 and 20 well compatible with multichannel pipettes Power Supply: • Power Supply suitable for horizontal gel electrophoresis, • Constant voltage and constant current modes, • Output Voltage: Adjustable from 0/5/10V to 500V/600V with an increment of 1 V or less, • Output Current: up to 800/1000 mA with increment of 1 mA, • Output power : 300W or more, • Terminals/ Sockets : 4 Pairs/4, • Safety: All necessary safety provisions like Over load, No load, Sudden change in load, power failure indication, Over Temperature and safe plugs and sockets</p>	
09	<p>HPLC</p> <p>• Analytical scale, Flow rate 0.1-10ml/min, UV range 190nm-1100nm, Control and logging software along with computer, autosampler, thermostated column compartment</p>	01 Nos
10	<p>White Light/UV Transilluminators</p> <p>• For detection double-stranded nucleic acids that have been labeled with fluorescent dyes, • Supply UV and white light side by side, • 302/365nm UV • 20 x 20 cm, • Gel-Ruler, fluorescent with cm markings • Gel-Scooper, for transferring gels, • Gel-Tray to protects trans illuminator filter, • Plexiglass and glass filter combination builtin</p>	02Nos
11	<p>CLC Genomics Workbench</p> <p>• Genomics Workbench should enable to rapidly analyze and visualize the huge amounts of data generated by NGS machines. It should blend seamlessly into existing sequencing analysis workflows, • Genomics Workbench should include High Performance Computing accelerated assembly of High-Throughput Sequencing data as well as a large number of downstream analysis tools. • Genomics Workbench should comprehensively analyze and visualize data from all major NGS platforms, like SOLiD, 454, Sanger, Illumina and Ion Torrent. • Read mapping with Support for analysis of hybrid data, • Multiplexing, • Re-sequencing, • Identifying genomic rearrangements, • Transcriptomics Features with Digital Gene Expression, Small RNA analysis, Library construction, • Epigenomics analyses, • Classical Sequence Analysis, • Server Integration, • Complete with latest generation branded compatible hardware computing system (LAPTOP preferably 17 inch). Should be based on windows / linux platform</p>	01 No
12	<p>Spectrophotometer</p> <p>Photometric research applications such as DNA, RNA and protein analysis - a broad wavelength range (including UV area), path length correction and a fast reading speed. - Freely selectable wavelengths from 200 to 1000nm for the demands of various assays - Both microplate and cuvette reading for any throughput requirements - Visual internal software on a large color screen for quick measurements - A selection of multiple operation languages with respective software for assay design and a compact computing system</p>	02 No
13	<p>Autoclave</p> <p>150-200 litre capacity, Automatic Sterilizer, vertical top loading, operating range 100-140 centigrade, additional floating sensor for load temperature, door closure sensor, interlocking to prevent opening when pressurized, different cycle mode for liquid, semi-solid and solid objects, memory option.</p>	01 No
14	<p>Vertical electrophoresis assembly (small) with power pack</p> <p>Vertical Electrophoresis Kit: Mini unit: Complete Set - Including base gel running unit, safety lid, at least two 8 well n two 12 well combs. Gel Casting Tray Combs sizes: 1.0 mm -4 wells, 8 wells & 12 wells; 2.0 mm - 4 wells, 8 wells & 12 wells along with spacers and casting stand. Glass plates</p>	01 No



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	, Power Supply: • Power Supply suitable for vertical gel electrophoresis, , • Constant voltage and constant current modes , • Output Voltage: Adjustable from 0/5/10V to 500V/600V with an increment of 1 V or less , • Output Current: up to 800/1000 mA with increment of 1 mA , • Output power : 300W or more , • Terminals/ Sockets : 4 Pairs/4 , Safety: All necessary safety provisions like Over load, No load, Sudden change in load, power failure indication, Over Temperature and safe plugs and sockets	
15	<p>Vertical electrophoresis assembly (large) with power pack</p> <p>Vertical Electrophoresis Kit: Electrophoresis Equipment Large Format Vertical. Complete Set - Including base gel running unit (electrophoresis cell 16 x 16 cm gel size), safety lid, 4 gel capacity, includes four spacers, glass plates, sandwich clamps, casting stand, upper buffer dam, alignment card with leveling bubble Combs sizes: 10, 12, 15 ,20 Combs (other to be quoted as option) Large format vertical electrophoresis cell, 16 x 16 cm gel size, 4 gel capacity, includes four spacers, two combs, glass plates, sandwich clamps, casting stand, upper buffer dam, alignment card with leveling bubble and power pack , Power Supply: • Power Supply suitable for vertical gel electrophoresis, , • Constant voltage and constant current modes , • Output Voltage: Adjustable from 0/5/10V to 500V/600V with an increment of 1 V or less , • Output Current: up to 800/1000 mA with increment of 1 mA , • Output power : 300W or more , • Terminals/ Sockets : 4 Pairs/4 , Safety: All necessary safety provisions like Over load, No load, Sudden change in load, power failure indication, Over Temperature and safe plugs and sockets</p>	01 No
16	<p>Flourescence Microscope</p> <p>Trinocular Research Optical Fluorescence Microscope with ergonomic design, For bright filed, dark field and fluorescent imaging with camera, Image analysis software and Dust cover, Light source</p> <p>1) 30 W; 12 V Halogen lamp or higher for bright / dark field imaging With additional 1 lamp or 3 W LED/ Neo LED or higher for bright / dark field imaging (equivalent to 30 w halogen lamp)</p> <p>2) 100 W/ 120 W /130 W Mercury lamps for fluorescent imaging with fiber optics cable with lifetime of 2000-2500 hours</p> <p>Lenses: Apo chromatic or semi apo chromatic With anti glaring/ antifungal/ antimicrobial coatings Wide field Eyepiece adjustable positions as well as focusing: 10X eye piece</p> <p>Optional: 20 X eye piece Objectives For transmitted-light applications: Objective turret with 6x BF For Std. fluorescence applications: Objective turret with 3x DIC/3x BF Std. interface for HBO 50, HBO 100 HXP 120, Colibri LED fluorescence applications: Inte-grated illumination Different LED modules Synchronized switching with the reflector For Refelcted light: Standard inter-face for HAL 100 or HBO, DF Switchable diffuser Slot for polarizer slider</p> <p>Stage: X – Y movement (mechanical stage)</p>	01 No



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	<p>Preferred separate X – Y movement Optional Automatic X – Y movement Preferred separate X – Y movement With independent course and fine adjustment for very fine focusing Fluorescent Filters: Minimum 4-5 filter position or slot; with neutral density filter to control the fluorescence intensity UV filter (excitation range 330/340 nm to 400 nm) and Optional 1) Green filter (excitation; kindly mention the excitation and emission range) 2) Red filter (excitation; kindly mention the excitation and emission range) 3) UV filter (excitation range 250 to 300 nm) 4) Blue filter (excitation; kindly mention the excitation and emission range) 5) triple channel filter Phase Contrast (optional) Condenser should be compatible for phase contrast imaging Phase contrast optics 20 x phase contrast Optional 40 x phase contrast Camera; • High sensitive and high resolution CCD Color camera with peltier cooling with minimum of 5 mega pixel or more The camera speed should be in the range of 4 to 4.5 fbs minimum And 23-33 fbs maximum • Kindly provide the details of speed etc Resolution: near to 2500 to 2000 or more Image Analysis Software: Detailed calibration; measurement size, shape, position, height, orientation and intensity etc Analysis tools including statistics, histograms etc Saving options: tiff, jpeg, bmp, JPG Data saving: word/ excel/ notepad etc The complete manual for microscope as well as for software should be provided along with microscope 2. Basic tool to repair it or fixing the attachment etc must be provided. 3. Complete drawing of installation as well needed information for repair or maintenance manual should be provided Notes: a) PREFERRED: Microscope, camera and software should be from a single manufacture along with uptodate computing system b) The selection will be strictly on the basis of technical data sheet. Minimum 5- 10 samples will be analyzed on the quoted model. The supplier has to use the same quoted model for demonstration; in case of discrepancy the same will be rejected without assigning any reasons. If the obtained results during demonstration are not persistent with the supplied instrument, the same will be rejected.</p>	
17	<p>Liquid Nitrogen Tank Nitrogen Capacity: 50 liters, Neck diameter: 125mm, Outer diameter: 19.7 inches, Height: 31.7 inches, Static evaporation: 0.388L/d</p>	01 No
18	<p>Drying Oven for heat sterilization • For the sterilization of instruments and equipment that cannot withstand steam sterilization., • Temp range: 50 to 250o C, • Temp variation: Not greater than 4o C over 60 minutes, • Temp fluctuation: Not greater than 0.3o C over 30 minutes, • Temp drift: Not greater than 1o C over 2 hours, • Temp reproducibility: 1o C, • Temp overshoot: Not greater than 1o C, • Capacity: Not less than 60 liters, • Shelves: 2 off stainless steel construction, tip proof type, • Interior construction: Stainless steel, • Exterior</p>	01 No



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	<p>construction: Rust proof steel, Features, • Control panel shall be located for easy vision., • Door shall be strongly secured against a rubber seal by a self-locating door catch. • Sterilizer temperature shall be controlled by a solid state thermostat. Push button, digital, temperature setting shall indicate the set temperature. , • Unit shall be supplied with secondary over-temperature cut-out for protection in the event of main thermostat failure to comply with HTM2010, • Door should remain locked till cycle complete indication comes on with safe handling temperature. , • Should record complete cycle, • The control panel shall be fitted with a mains failure-indicating lamp., • Process timer shall be adjustable to suit individual sterilization periods. Timing shall start when the heaters start to cycle near to the set temperature.</p>	
19	<p>French press French press Homogenizer • Capacity : Up to 24 x 2mL, • Operating temperature : 4°C to 30°C, • Required for, • Dry grinding • Micronisation, • Homogenization from fresh or snap-frozen tissues, • Lysis of micro-orgnaisms, • Dissociation of living bacteria Optional: Cooling module for protection of temperature sensitive molecules throughout the entire homogenization process.</p>	01 No
20	<p>Electroporator Electroporator, • Micropulser Electroporator, • High-voltage 3,000 V with 200–3,000 V range, • Operating temperature: 3.5–35°C, • Complete with Sterile Electroporation Cuvettes x 10</p>	01 No
21	<p>Microplate reader with washer Multi Label Plate Reader: • Wavelength range: 200-1000 nm, • 2 °C to 50 °C , • Plate format: 1- to 3-well, • Shaking: linear, orbital, dual wave length, orbital, • •Microplate Reader with washer: • Multimode reader for all common assay types on 96,384 well plates. • Detection: Absorbance/Calorimetric, Luminescence, Fluorescence, UV/VIS Absorbance, • Compact in size • With respective software and computer Microplate washer: • Suitable for ELISA / Cell-based assays (model dependent) / Magnetic bead, polystyrene bead (Multiplex assays, Bead-based ELISA) / Filtration-to-waste processes • Fast and reliable plate washing; Low noise; automatic rinse setting to prevent clogging • Capacity: Up to three reagent dispensers with choice of either peristaltic pump or syringe drive technologies for different assay requirements • Applications: Washing, Dispensing and Aspirating; High throughput • Stand-alone wash and aspiration unit; Up to 6 wash cycles (fill and aspirate) per pass• Coaxial wash/aspirate • Gentle and complete aspiration of each well • Universal logic interface compatible with all Moduline Systems dispensers• Plate Formats: 96 and 384 well plates • Performance: Precision : +5% RSD (0.9% NaCl W/v) Manifold Channels: 8x12 / 1 x 32 / 4 x 32 or comparable • Residual Volume>1µL residual • Wash Volume: Up to 3000uL; Selectable in 1 µL increments • Soak time- In plate mode: 0-60 min per 1 sec interval • In strip mode: 0-16 min per 1 sec interval • Operating programs (about 50 programs storage for different plate types), self contained – no external computer required</p>	01 No
22	<p>IEF system and accessories (for 2D electroporesis) IEF System basic unit 240VAC including:• Basic unit , • Cable,, • Control software with accessories , • Electrode assemblies , • Sample cups, • Sample cup insertion tool, • Electrode wicks, • Paper bridge pads , • Spirit level , • Manifold trays (7 cm, 11 cm, 13 cm focusing trays) , • Pairs of forceps , • Mineral oil, • Cleaning brushes , • Cleaning solution , • IPG buffer</p>	01 No
23	<p>WesternBlotting (wetTransfer equipment) commodate 2 mini-format gels transfer up to two mini gels (10 x 7.5 cm) in an hour ,</p>	01 No



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	complete unit with tank, sandwich plates, at least 10 sponges, and 2 sealed ice block	
24	Orbital shaker Bench top, speed 15-200rpm or above 200rpm, flat platform, attachment option for tube, vials, flask and microplate, allows digital time and speed control preferably programmable	01 No
25	Off-gas analyser (for fermentation) Capability of connecting to preferably multiple bioreactors with software and a suitable computing system or visualization, • Measurement Range CO ₂ : 0 -20%, O ₂ : 0-100%, • Resolution 0.01% for both, • Accuracy +/-2%, • Response Rate less than 50 Sec for CO ₂ . Less than 20 Sec for O ₂	02 Nos
26	Fast Protein Liquid Chromatography Laboratory to pilot scale, Flow rate 0.01ml/min to 150ml/min, fraction collector, columns, accessories, spares, software and computing system	01 No
27	Quantitative PCR (Real-time PCR) An automated sequence detection system for a high throughput continuous detection and quantitation of nucleic acid sequences by real-time PCR technique using in-built Peltier based thermal cycler. With a simplified workflow, intuitive software, it should offer exceptional reproducibility with minimal well-to-well variation. , 2. Real-time amplification for measuring nucleic acids from purified samples using 96 and 384 well plates with 96 and 384 interchangeable block. , 3. Should accommodate the interchange of a , 96-well, 96-well Fast, 384-well, or TaqMan array card block, 4. Measurement mode - Real-time measurement, on-line continuous display of readings during the run. , 5. The system should be fully compatible with the full range of TaqMan assays including MicroRNA assays, Long Non-coding RNA assays, and Pri-miRNA assays. , 6. The System should offer latest optics and technology providing enhanced fluorescence detection enabling accurate and sensitive data analysis. , 7. The system should complete 40 cycle real time PCR reaction using fluorescent 5 nuclease assay and fast chemistries in a standard 384 well plate under 35 minutes. Instrument should also run in standard ramping mode with standard chemistry. , 8. Sensitivity: Demonstrated down to 1 copy. , 9. Resolution: Should detect as little as 1.5-fold changes in target quantities in single-plex reaction. , 10. Upto Six decoupled excitation and emission filter channels for the greatest number of dye combinations and maximum multiplexing capabilities. , Excitation & Detection wavelengths: 6 excitation (450-670 nm) and 6 emission (500-720 nm) filter sets to enable collection of up to 21 unique combinations of wavelengths during a single run for multiplexing. Calibrated dyes at installation should be FAM, SYBR, SYTO9, Fluorescein, SYPRO, JOE, TET, HEX, TAMRA, NED, BODIPY, TMRX, ROX, Texas Red, LIZ, Alexa fluor, Joda4. , 11. Should support following blocks and volumes: , Peak Block Ramp Rate: 3.0°C/sec 384-well plate , Sample Ramp Rate: ± 1.6°C/sec, System memory: USB and On-board, Temperature range: 0 to 100 Centigrade, Temperature accuracy: ±0.25°C (35°C to 99.9°C), Temperature uniformity: <0.5 °C (20 sec after reaching 95 °C), Any other block options should be also included. All blocks should be easily , changeable by the user. , 12. Full compatibility with any standard or fast-cycling 384- or 96-well plates and reagents. , 13. The vendor should provide readymade and validated TaqMan primer probe assays for different genes in human, mouse, rat etc. in 384 well preloaded ready to use format to validate microarray hits quickly and economically. , 14. Optimum reaction volumes for each application □ 5 to 100 µl. The vendor should specify minimum working volume if lower than 5 µl. Preference would be given to those platforms that minimize reaction volumes to 2 µl or less. , 15. The manufacturer should be able to provide a choice of	01 No



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	ready-made assay kits or ready-to-make assay kits for Gene Expression as well as SNP analysis. , 16. The vendor should provide comprehensive training on the operation of the instrument, chemistry options and software. This training should be provided free of cost. , 17. Any other additional protocol/accessory that would facilitate high-throughput analysis of gene expression especially using the TaqMan chemistry should be included. , A business line PC Workstation and software (including offline analysis) should be provided with the system. However, a stand-alone instrument (such as built-in touch screen that provides one touch protocols for fast and easy assay setup for broad range of applications) would be preferred.	
28	Class II Biosafety cabinets Maximum operator, product and environment protection to fulfil the following requirement:., • Negative pressure plenum, • Divided table top, • Ergonomically correct front, • Trough made of stainless steel, • Transparent side of safety glass operated for 3 valves in both sides, • Hepa filter with efficiency of min. 99.999% against particles of 0.3µm, • Low noise level, • Light intensity > 1400 lux, • Slipping sash window of glass electric hoisting, • Electric outlets, placed at right and left sides, • Microprocessor controller with velocity indicator, • Visual and acoustic alarms warning if any safety parameters are incorrect, • Key switch, • Fitted with UV light sterilisation lamp, • 1 Gas valve, • Flock filter for fan protection, • Working surface 6'	01 No
29	Shaking Incubator Temperature controlled with refrigeration.(20C below ambient to 70C temperature). Minimum dimensions (WDXH)=62x75x82cm with time & programmable, 25rpm to 400rpm. Preferable gas manifoldwith photosynthetic lighting capacity, culture drawer option	01 No
30	Carbon dioxide shaking incubator Fanless design , • Sealed inner/outer doors and advanced PI control to maintain temperature accuracy and uniformity , while minimizing costly gas consumption, • High temperature disinfection , • InfraRed (IR) CO2 sensor for measurement and accurate control of CO2 levels, • 25 mm access port for adding instrumentation or additional probes, • USB port for communication and external instrument logging, Removable stainless steel humidity pans, Temperature: • Range 4 °C above ambient to 50 °C, • Control ± 0.1°C, Stability ± 0.1°C at 37 °C, • Uniformity ± 0.25 °C at 37 °C (ambient temperature between 18 and 25 °C)• CO2 0.2 to 20%, • Orbit 1 in (2.5 cm), • Shaking speed 25 - 400 rpm, • Dimensions : Platform 612 x 356 mm (24 x 14 in)	01 No
GROUP-02		
31	PH/Conductivity meter Electrode arm, electrode lead and shorting plug. , Measurement of pH, millivolts and temperature, 0-14 ph range, Temperature compensation, 3 point calibration, preferably combined pH and conductivity measurement capacity	02 Nos
32	Osmolality meter Three point calibration, automated calibration, short measurement time, automated measurement and calculation, low sample volume of , large measuring range preferably up to 3000 mOsm/kg, installed in at least three reputed pharmaceutical or research organizations in Pakistan.	01 No
33	Spectrophotometer Photometric research applications such as DNA, RNA and protein analysis - a broad	01 No



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	wavelength range (including UV area), path length correction and a fast reading speed. - Freely selectable wavelengths from 200 to 1000nm for the demands of various assays - Both microplate and cuvette reading for any throughput requirements - Visual internal software on a large color screen for quick measurements - A selection of multiple operation languages with respective software for assay design and a compact computing system	
34	Elisa Reader Monochromator based absorbance with high performance filter-based, wavelength 200-1100nm range, fluorescence/luminescence option, low volume (2 µL) nucleic acid and protein quantification, incubation to 50 °C, dual reagent injector option, software for reader control, both linear and orbital shaking	01 No
35	ELISA Plate Washer 384 and 96-well microplates option, magnetic and polystyrene microsphere assays, ELISAs and cell-based assays, fast and efficient vacuum filtration, fast microplate washing and dispensing, capability of dispense multiple reagents without carryover, software control option	01 No
36	Electrophoresis Equipment(Mini Format) with power supply Vertical electrophoresis system, includes casting stand, casting frames, 10-well combs, short plates, and spacer plates with compatible power supply and complete Tetra blotting module, installed in at least three reputed research organizations in Pakistan	01 No
37	Electrophoresis Equipment(Large Format) with power supply Large format vertical electrophoresis cell suitable for 2 nd dimension electrophoresis system. Including all accessories spacers, combs, glass plates, sandwich clamps, casting stand, upper buffer dam, alignment card with leveling bubble and cooling system with isoelectric focusing kit and compatible power supply, installed in at least three reputed research organizations in Pakistan	01 No
38	Centrifuge (small table top, temperature control) with rotor 30 x 1.5/20 mL micro centrifuge tubes with max. 11 mm Ø capacity rotor 45° angle, • Speed up to 30,13 x g (17,500 rpm) Approx, compact footprint for use on all lab benches, aerosol-tight rotors for ergonomic rotor lid locking, safety Devices: Lid Interlock, Imbalance Detector, Overcurrent Circuit Breaker (Power Switch), temperature controlled -11-40oC, soft break function 0-9 acceleration time 14s, deceleration time: 15s, interchangeable rotor option: 12. Reduced vibration.	02 No
39	Centrifuge (swing bucket, temp control, larger speed limits) with rotors Intelligent Microprocessor Control, inverter Controlled Brushless Motor, automatic Rotor Identification System, instant RCF Reading, last Run Memory, over speed protection system, full lid Interlock, imbalance detection system, self-diagnostics, Status Indicator, CFC - Free Refrigerant Gas, precool Facility, easy to service, superior lid lock mechanism, soft break function 10x10 acceleration /deceleration, selectable temperature range -9oC to 40C, speed range max 14000rpm, maximum RCF 20,9013/4,500 x g, timer 1min - 99 min with continuous mode, 48 place centrifuge for 1.5 / 2.0 ml micro test tubes, With rotors for : 96 well PCR plates, 15 ml falcon, 50 ml falcon, 1.5ml/2.0ml/5ml tubes, , interchangeable rotor option:	02 Nos
40	Hotplate magnetic stirrer Laboratory hotplate/stirrer with warm-up time ambient to maximum of 9 minutes, approx 225 sq.cm heating surface area, , maximum temperature approx 510 deg. C, stirring range approx 100 to 1000 rpm. Unit to be supplied complete with PTFE coated stirring	03 Nos



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	rods.	
41	Microplate Shaker Temperature range 4-60, shaking speed 150-1200rpm, PID control, digital display, timer option 1 minute to 99 hours	01 No
42	Fume hood Highly chemical resistant work top, fall safe sash, 0.3 m/s velocity, sensor and alarm system, installed in at least three reputed research and/or pharmaceutical organizations in Pakistan	01 No
43	Sonicator Sound box, digital control, installed in at least three reputed research institute in Pakistan	01 No
44	Peristaltic pump Pump head to accepts 1.6mm wall thickness tubing, five materials in sizes from 0.5 to 4.8mm internal diameter, the pumps give flow rates up to 170 ml/min, compact footprint requires minimal bench top space, manual remote control or automatic control, manual control, 1-200 rpm in 1 rpm increments. Flow rates 0.001 to 170 ml/min at 2 bar (30psi)	01 No
45	Western Blotting (Semi-dry Transfer equipment) Blotting instrument, includes base, 2 cassettes to hold 1–2 midi or up to 4 mini blotting sandwiches, blot roller, and starter consumable kit, Transfer unit must be suitable for mini/midi electrophoresis also. Provision for Cooling. Semi-dry Blotting unit: Should use minimal buffer to saturate blotting papers and membranes. , Unit should accommodate mini/midi/maxi gels or multiple mini-gels side-by-side, System should have a built-in power supply with automatic Stopping feature. When the buffer becomes depleted, the transfer should stop automatically, saving the transfer before overheating, Light weight and easy to handle. System should be with power supply.	01 No
46	Gel documentation System (CHEM DOC with 1D,2D software) Gel imaging system including dark room, UV transilluminator, epi-white illumination, camera, power supply and cables. Should have chemiluminescence, fluorescence, colorimetry and gel documentation. System shall be used for detection and quantification of nucleic acids, proteins and labels, bio imaging of cells, fluorescent and calorimetric applications; high quality imaging and resolution with epi and trans UV provision; 6-8 filter wheel with atleast 4 emission filters; blue, orange, red and green; semi-motorized zoom and filter change options, real-time imaging with Trans UV, Epi-UV, and Epi-WL provision. Inbuilt CCD camera with 16-bit file format and atleast 3 MP camera resolution is required. Suitable gel capture and gel analysis software is required along with HP Laser color printer to support the printing of the images. Smart dark chamber that automatically shuts of light when door closed and maximum sample emitted light with minimum light distraction., CCD camera with atleast 3 mega pixels resolution, 16-bit file format, 6X position for filters, different UV illumination modes like TransUV, Epi-UV, Epi-white , light, UV converter to white light, excitation source of UV with wavelength 312 nm and suitable gel capture and gel quant analysis software to run the system. The filter range should be for blue - 470 nm, Orange - 580nm, Green - 550 nm and Red - 600nm respectively. Transilluminator dimensions should be atleast 25-26 cms length wise with width of 21cms. Compatible computing system (laptop preferred) with integrated softwares for 1 D and 2 D capture and analytical software.(GE/Ettan IPGphor 3 IEF System)	01 No



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Item No.	NAME OF GOODS, TECHNICAL DESCRIPTION, SPECIFICATIONS, AND STANDARDS	Qty.
47	DIGITAL WEIGHING BALANCE Precision weighing balance with 2.5 kg with two decimal place calibration	03 No
48	CLASS II BIOSAFETY CABINETS Maximum operator, product and environment protection, negative pressure plenum, divided table top, Trough made of stainless steel, transparent side of safety glass operated for 3 valves in both sides, Hepa filter with efficiency of min. 99.999% against particles of 0.3µm, low noise level, light intensity > 1100 lux, slopping sash window of glass electric hoisting, electric outlets, placed at right and left sides, microprocessor controller with velocity indicator, visual and acoustic alarms warning if any safety parameters are incorrect, Key switch, fitted with UV light sterilisation lamp, 1 Gas valve, Flock filter for fan protection, Working surface 6', installed in at least three reputed research and/or pharmaceutical organizations	02 No
49	Shaking Refrigerated Incubator Temperature controlled with refrigeration. (20C below ambient to 70C temperature). Minimum dimensions (WNDXH)=62x75x82cm with time & programmable, 25rpm to 400rpm. Preferable gas manifold with photosynthetic lighting capacity, culture drawer option	01 No
50	Microscope with camera and software infinity optical system, 12V100W halogen lamp, power supply from control box A, Built-in fly-eye lens, Built-in NCB11/ND8/ND32 filters (in/out possible, detachable, one additional filter mountable) and diffuser (in/out not possible, non-detachable), Motorized ND filter unit for light intensity control available as option, Transmitted light on/off switch, intensity control dial (Preset function provided), Image capture button, display screen, Motorized coaxial coarse/fine focusing, Built-in linear encoder, resolution: 0.025µm, eyepiece lens, 10x (22 mm), 20X, 40X, 100X	01 No
51	Ultra low temperature freezer Upright orientation, -50 to -86 °C, above 400 liter capacity, back-up liquid nitrogen option, key-lock access control, sensor alarm, 5-6 inner doors, LAN option, racks provision	01 No
52	Analytical Balance 0.001g-200gm range with casing	01 No
53	Particulate Counter Channel size range 0.3-25.0 um, Essential channel size range, 0.3,0.5,1.0,3.0,5.0,10.0 um, Flow rate 1.0 CFM, Data storage, Built in printer, Stainless steel, Body calibrate according to ISO 21501-4, Calibrate facility in Karachi, Backup service by factory trained engineer, User list should include, Top three national and multinational pharmaceutical industries.	01 No
54	Incubator Temperature range: 4 °C to 100 °C, adjustable fan speed, controller with timer and real-time programming, data recording and USB interface, installed in at least three reputed pharmaceutical or research institute in Pakistan.	02 Nos
55	Freezers -40 to -86, 5-6 compartments, with temperature sensor alarm, installed in at least three reputed pharmaceutical and/or research organizations.	02 Nos
56	Refrigerator Gross volume: Approx. 350+ Liters	02 Nos



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Item No.	NAME OF GOODS, TECHNICAL DESCRIPTION, SPECIFICATIONS, AND STANDARDS	Qty.
	Refrigerant: CFC free Insulation foam: Cyclopentane Insulation width: 55 mm Cabinet material: Stainless steel 304 Body material: Prepainted steel Glass shelves: 12, can be positioned at variable heights Standing on: Adjustable feet Doors, glass: Two individually lockable Operating temperature: 0-7°C Available operating temperature: +2 to +8°C, user selectable Closest alarm points: Operating +/-3° Warmest/Coldest alarm point: +12/-2°C Temperature display: Digital in 0,2 units Alarm display high/low temp.: Visual and audible Memory of high/low temp. Included Power failure alarm: Included Remote alarm connectable: Included Switching on/off: Key operated Door opening: Key controlled Forced air circulation: Yes Ion Deodorizing Feature	
57	MICROPIPETTE SET Adjustable Volume micro Pipette : 0.1-2 ul, 1-10 ul, 10-100 ul, 100-1000 ul	06 Sets
58	PIPETTE BOY Pipette Boy 1-100 ml	03 Nos
59	COLONY COUNTERS WITH LIGHT AND MAGNIFYING GLASS Digital colony counter with digital display, With counting pen, With magnifying glass, For counting bacterial and fungal colonies	01 No
60	MICROPLATE READER WITH WASHER Multi Label Plate Reader: • Wavelength range: 200-1000 nm, 2 °C to 5 °C , Plate format: 1- to 3-well, • Shaking: linear, orbital, dual wave length, orbital, microplate Reader with washer, multimode reader for all common assay types on 96,384 well plates, detection: Absorbance/Calorimetric, Luminescence, Fluorescence, UV/VIS Absorbance, with respective software and computer Microplate washer: • suitable for ELISA / Cell-based assays (model dependent) / Magnetic bead, polystyrene bead, Filtration-to-waste processes, fast and reliable plate washing, Low noise, automatic rinse setting to prevent clogging , capacity: up to three reagent dispensers, applications: Washing, dispensing and Aspirating; High throughput, up to 6 wash cycles (fill and aspirate) per pass, Plate Formats: 96 and 384 well plates, operating programs (about 50 programs storage for different plate types), built-in software in system with no external computer.	01 No
61	MICROINCINERATOR (WIREFEED STERILISER) Quickly and safely sterilizes metal loops, needles and glass spreader without using an open flame, sterilization via infrared heat at a temperature of 315°C (1500°F). , sterilization time for Loops and needles should be sterilized within 5–7 seconds, the heating element to be protected by a stainless steel cowl , adjusted Angle to different positions	01 No
62	Rocking Platform 220 V, dual-platform rocker with adjustable tilt capacity and speed control.	01 No



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Item No.	NAME OF GOODS, TECHNICAL DESCRIPTION, SPECIFICATIONS, AND STANDARDS	Qty.
	Rocking platform with corrosion resistant, lined with a nonslip rubber mat to keep containers in place. Rocker should have tilt capacity and variable speed control for broad range of mixing and agitation options for the following applications: Overnight incubation of liquid bacterial cultures Staining and destaining of agarose and polyacrylamide gels. (Biorad/ UltraRocker Rocking Platform 1660719EDU)	
63	Heating Block Adjustable mixing speed for gentle to vigorous shaking, Digital display of all parameters. Exchangeable blocks for micro test tubes or micro plates	01 No

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