**Shaheed Mohtarma Benazir Bhutto Medical Collage Lyari Karachi**

**Bill of Quantities**

**Supply & Installation of Departmental Equipments**

**1)Microscope 5 headed Multi Head Microscope 4Units**

The Microscope is Equipped with 5 Heads for 5 persons Observing at the Same Time. With the features of infinite Optical System, Effective illumination, LED Pointer and images Coherence, it is widely used in Clinic , Research and Teaching Demonstration.

**Specifications:**

Optical System,

infinite Optical System

Viewing Head:

Compensation Free trinocular Head, inclined at 300,360 degree Rotatable,lnterpupilary

Distance 48-75mm 1PC

Eyepiece:

Extra Wide Field Eyepiece WF10X/20 10PCS

Nosepiece:

Backward Quintuple Nosepiece

Objective

infinite plan Achromation objective 4x, 10x, 40x, 100x

Condenser

swing condenser N.A.0.9/0.25

Focusing

Coaxial Coarse & Fine Focus Adjustment, Fine Division 0.001mm,coarse stroke

37.7mm per rotation, fine stroke 0.1mm per rotation, moving range 24mm.

Double Layers Mechanical Stage 185x142mm, Moving Range 75x55mm

kohler illumination

External illumination, Halogen Lamp 12v50w

pointer

Green LED Pointer ,Brightness Adjustable

photo Attachment

video Adapter

Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**2)Semi Automatic Microtome 3Units**

• Semi-automatic precision microtome • 2 Specimen feed memory positions • Intuitive control panel • Section counter (Stroke / Distance) • Spacious, integrated section waste tray

SPECIFICATIONS

Nominal supply voltage: 100 – 240 V AC +/- 10%

Nominal frequency: 50 / 60 Hz

Power draw: 20 VA

Protective class: (1) I Power fuses: 2x T 1,6 A

Pollution degree: (1) 2

Overvoltage installation category: II

Maximum heat emission: 20 J/s

Operating temperature range: +10 °C to +35 °C

Temperature range during storage: +5 °C to +55 °C

Relative humidity: max. 80%

non condensing Humidity during storage: < 8% (1) According to IEC 1010, EN 61010

Section thickness setting range: 0.5 – 100 μm

Section thickness selection: 0 - 2 μm in 0.5-μm steps, 2 - 20 μm in 1-μm steps, 20 - 50 μm in 2-μm steps, 50 – 100 μm in 5-μm steps

Trimming thickness: 0 – 300 μm

Specimen feed: 28 mm (step motor)

Specimen feed speed SLOW: 75 / 150 / 300 / 600 μm/s

Specimen feed speed: 3000 μm/s

Specimen feed memory: 2 positions programmable Vertical specimen stroke: 60 mm Maximum specimen size: 50 x 50 mm Knife holder - north-south axis: 24 mm

Specimen retraction: 0 -200 μm, selectable

Specimen orientation, horizontal: 8°

Specimen orientation, vertical: 8°

Specimen orientation, z-axis: 360°

Section counter: Strokes [n] / Distance [µm]

Dimensions [W x D x H]: 480 mm x 610 mm x 350 mm (incl. handwheel

Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**3)Microscope Binocular 5 Units**

Binocular head 30,inclined , 360° tatable, interouplillary distance 48-75mm

|  |  |
| --- | --- |
| **Eyepiece** | Widefield 10x/20mm focussable eyepieces with foldable rubber eye guards, antifungal |
| **Nosepiece** | Reverse angle quadruple nosepiece (Ball bearing type) with click stops and rubber grip |
| **Objectives** | RP series infinity corrected DIN Plan Achromatic objectives 4x, 10x, 40x (spring loaded), 100x (spring loaded, oil), antifungal |
| **Mechanical stage** | Rackless X axis, double plate stage size 200 x 160mm, X/Y travel range 78mm x 54mm. Low drive right hand movement controls. Hard coated surface for scratch resistance. Double specimen holder clip |
| **Condenser** | Sub stage Abbe condenser NA 1.25 with aspheric lens. Iris diaphragm with blue daylight filter. Rack and pinion movements on stainless steel guides |
| **Focusing** | Coaxial coarse and fine focusing on ball drive system for smooth operation |
| **Illumination** | Halogen 6V-20W/30W or LED (built in rechargeable battery) illumination with variable illumination control. Up to 2,000 hours of Halogen (20W) lamp life and 100,000 hours of LED life  Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent |

**4)Dissecting Microscope 3Unit**

|  |  |
| --- | --- |
| Stand | Single mold aluminum die-cast with ergonomic handrests for enhanced comfort and stability. |
| Viewing Bodies | 45° inclined, 360° captive rotation, Interpupillary distance 54 - 74mm |
| Eyepiece | Widefield 10x/18mm focusable eyepieces with foldable eye guard, lockable, antifungal coating |
| Nosepiece | Quadruple nosepiece turret (Ball bearing type) with rubber grip |
| Objectives | LP series DIN Semi-Plan Achromatic objectives 4x, 10x, 40x (spring loaded), 100x (spring loaded, oil), antifungal |
| Mechanical stage | Rectangular stage 135 x 124mm, X/Y travel range 76mm x 50mm. Low drive movement controls, single specimen holder |
| Condenser | Sub stage Abbe condenser NA 1.25 with aspheric lens. Iris diaphragm with snap-in blue filter. Rack and pinion movements on metal guides |
| Focusing | Co-axial coarse and fine focusing on ball drive system for smooth operation. BRASS rack and pinion stage drive. Fine drive movement 0.3mm/rotation |
| Illumination | LED or Halogen 6V-20W illumination with variable illumination control. Up to 100,000 hours of LED life and 2,000 hours of Halogen lamp life |
| Electronics | Universal input 100V- 240V AC, 50/60Hz, built-in voltage stabilizer |

Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**5)Real time PCR consisting of: 1unit**

(A)PCR Real Time with Application Software

Features: -

Portable 12v DC energy efficient User Friendly Simple interface Small Foot Print and Light From desktop to laptop only 2.1 kg High Sensitivity As low as I copy Sample Capacity 8\*0.2ml PCR tubes Two Channels SYBR//FAM, ROX/Taxes Red Open System Compatible with most commercial Reagent

Specifications: -

Optical Light Source: High power LED Detector: Photodiodes Thermology Parameters Heating / Cooling Models: Peltier Ramping Rate (Max.): 30C/s Thermal Uniformity: ± 0.20C Thermal Accuracy: ± 0.20C Thermal Range: 4-1000C Sample Format: 8 wells Operational Reaction Volume: 10-150ul Warm up Time: 1min Sensitivity of Detection: 1 copy High Resolution Melt: Supported resolution to 0.50C Multiplexing: Detect up to 2 Dyes simultaneously. 470/520nm (SYBR/FAM) and 565/625nm (ROX/Taxes Red)

(B) Programmable Chilling Heating Dry Bath

Specifications

Temperature Range: 0-100 C

Time Range: 1min to 23hr59min

Programmable segments: 3

Display precision: 0.1 C

Temperature precision: 0.5oC

Temperature evenness: 0.5oC

Average Heating Rate: 6 C/min (16 C to 60 C)

Average Chilling Rate: 3 C/min (60 C to 16 C) 1.5 C/min (25 C to 4 C)

Operation ambient temperature: 8-30 C

(C) Tissue Grinder

Specification

Speed: Adjustable speed from 3000-8000 rpm

Power supply: 12V DC, energy saving

(D) Magnetic Frame

Feature

The magnetic farm is designed for 1.5, 2ml snap cap micro centrifuge tubes. The rack securely holds up to 8 tubes at a time. The magnetic beads are pulled up to the Sides of the tubes so that the liquid can be executed by simply flipping the rack upside down and pounding the rack on blotting paper to remove all liquid drops. Each tube position is adjacent to both a high and low magnet in order of volumes to be separated. No matter the volume in the wash or reaction liquid the beads are quickly pulled to the side of the tube

Specification Model:

Capacity; 8 samples Adaptive Micro centrifuge tube: 1.5, 2.0ml

(E) High-Performance Pro Micro Centrifuge

Technical Specification: RPM: Max. 1,000 ~13,500 rpm Max. RCF: 12,225 x g

Rotor: Including fixed angle rotor for 0.2-/0.5-/1.5-/2.0 ml x 12 tubes

Drive System: Brushless DC motor, Direct drive Noise Level :< 57dB Acceleration Time: < 15 sec (at max. speed) Braking Time: < 15 sec (at max. speed)

Cooling Device : Air Cooling system Timer & Alarm: 99min. 59sec. (Continuous run), error status and timer end.

Display: Digital LCD display with Back-light function

Controller: Digital Feedback Control with Jog Shuffle Switch (Turn + Push)

Safety Circuit: Motor Error Detector, Electronic safety lid lock system

Material Lid: PC

Material Body: ABS Material Rotor

Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**6)Adjustable Micropipette 5-50**µL 2Units

Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**7)Adjustable Micropipette 50-200**µL 4Units

Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**8)Adjustable Micropipette 200-1000**µL 4Units

Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**9)Bio Saftey Cabinet 1Unit**

Specification:

Production/Test Standard:CE

Downflow Velocity: 0.45 m/s, 90 FPm

Cleanliness level: Class 100/ISO 5

Front Sash Opening: 450 mm / 17.7”

Cabinet Material: Welded white polypropylene structure with stainless steel

Illumination: 800 LUX, Eco-friendly LED lighting

Filters: HEPA/ULPA

Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**10)Atomic Absorption 2Unit**

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| --- | --- |
| Optical system: | No lens, concave lens, total reflection, achromatic optical system |
| Monochromator: | Czerny-Turner |
| Grating: | 1800 lines/mm |
| Slit: | auto-switch 0.1,0.2,0.4,0.7, 1.4nm |
| Detector: | Photomultiplier |
| Light source: | > 8-element lamp turret |

Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**11)Analytical Balance 10Unit**

Capacity:250g

Readability:0.0001g

Repeatability:0.0002g

Weighing Units:g, mg, ct, GN, N, oz, ozt, dwt, T, custom unit

Calibration:External calibration

Stabilization Time:3.0

Pan Size:3.5" ø / 90mm ø

Linearity:0.0002g

Construction:Extruded aluminum base with a die-cast aluminum case Interface

Operating Temperature:15° to 35°C / 59° to 95°F

Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**12)Autoclave-Steam Sterilizer Digital Fuzzy Controlled, 6Litre 2Unit**

Temp. Range & Accuracy:Ambient 5 °C to 132°C, ±0.5°Cat 121°C

Pressure & Gauge:1.2 kgf/cm 2 at 121°C/ 2.0 kgf/cm 2 at132°C,0 ~ 3 kgf/cm, Kg

Display:Digital LCD Display with Back - Light Function

Controller :Digital Fuzzy-Control System (Fully Automati

Display:Digital LCD Display with Back - Light Function

Controller :Digital Fuzzy-Control System (Fully Automati

Door & Closing System:Lever-type Sliding Door / Safety Electronic Door Closing System

Safety Circuit

Over-Temp./-Pressure/-Current protection, Sensor Error Detection

Standard Type Capacity: 60 Lit.

Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**13)Biofreezer upto – 40 C 1Unit**

### Range temperature:Setting between -10°C and -42°C. Factory preset to -40°C.

### Capacity:600Litre

### Completely sealed, silent and highly efficient hermetic compressor and ventilated air condenser

### Gas:CFC Free, Absorption: 580 watt

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

### 14)Refregrated Centrifuge 15000RPM 2Unit

### Micro Prime Centrifuge with Speed upto max 15000 rpm, 10 rmp steps,timer 0-99min & hold, memory:10 progammes,Accel and Decel rates 10 programmes.

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

### 15)Chemistry Analyser Automatic 1 Unit

### Clinical Chemistry dedicated reagents

### Specification:

### - Throughput of 150 test/hour - 4 independent positions for samples and reagent racks - 24 samples for rack (maximum capacity of 72 samples in racks) - 10 reagents for rack (maximum capacity of 30 reagent bottles in racks) - 20 and 50 mL reagent bottles - Primary tubes or paediatric cups as sample containers - Unlimited STAT capabilities. Run at any time - Programming of 5 kinds of samples (serum, plasma, urine, CSF and whole blood) - Up to 15 minutes reading time - Reusable methacrylate rotor - Minimum reading volume of 200 uL - Measurement Range from -0.05 A to 2.5 A - Spectral range 340 nm to 900 nm - Filter configuration 340, 405, 505, 535, 560, 600, 635, 670 nm.

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

### 16)CO2 Incubator 4Units

### basic functionality to promote tissue cell growth by controlling Temperature and CO2 gas levels in the growth chamber.

### Volume: 200Litres

### Temperature Uniformity at 37 degree Centrigrade

### Heat Recovery

### Humidity Control

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

### 17)Cold Cabinet 2Unit

### Combined freezer and refrigerator

Capacity:Refrigerator: 350 liters; Freezer: 350 liters

Temperature range:

Refrigerator compartment: setting between +2° and +12°C.

Freezer compartment: setting between -10°C and -30°C.

Structure:External structure in hot-dip galvanized steel, anti-corrosion treated and PVC film coated.

Data Download on USB for 30days

Fully automatic defrosting cycle on refrigerator compartment. Manual defrosting on freezer compartment.

Internal ventilated evaporator in refrigerator compartment.

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**18)Cryostat Machine 2Unit**

Floor standing cryostat with convenient operation and semi automatic rotary microtome. Min 24 sample preparation freezing positions and temperature range from 0 to -35 degree centigrade.

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| Specification of Microtome:  Section thickness Setting range | 0.5 µm to 100 µm |
| Section thickness selection | 0.5 to 2 µm in 0.5 µm-steps  2 to 20 µm in 1.0 µm-steps  20 to 50 µm in 2.0 µm-steps  50 to 100 µm in 5.0 µm-steps |
| Trimming thickness setting range | 0.5 to 300 µm |
| Horizontal specimen feed | 28 mm |
| Vertical stroke | 59 mm |
| Coarse feed | motorized (600 µm/s + 3.000 µm/s) |
| Specimen retraction | 0 - 200 µm, free programmable |
| Specimen orientation, horizontal | 8° |
| Specimen orientation, vertical | 8° |
| Specimen orientation, z-axis | 360° |

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**19)Digital Hotplate Stirrer Ceramic Coated Plate 2Unit**

-Temperature Uniformity:Less than 10% on the plate at ambient temperature

-Ceramic coated plate-chemical /acid resistance for sample drying and general Lab heating applications.

-Max Temperature 350 Degree centigrade

-Certificate and traceability: Controlled by serial number, certificate ,delivery information and traceable data base system

Specification:   
Plate Size: 180×180mm Plate-type  
Material: Body Powder Coated Aluminum   
Plate: Ceramic Coated Aluminum (Chemical / Acid Resistance, Easy to Clean)  
Stirring Capa. & Motor Rating Max. 20 Lit., 9 / 4 W  
Speed Range: Max. 1,500 rpm  
Temp. Range: Max. 380℃  
Temp. Uniformity Specially Designed Heating Module : Temp. Difference   
10% less  
Heating Power/Consumption 600W   
Controller Superior Linearity PWM Controller  
Stirring Bar 3cm bar-included, Usable : up to 5cm bar  
Permissible Temp. & RH % Ambient +5 ~ 50℃, 85% RH

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**20)Digital Incubators 5Unit**

Specification:

Capacity 50 Lit

Circulation-type Gravity-air Flow

Temp. Range & Accuracy Room Temp, +5℃ ~ 70℃, ± 0.2℃ at 37℃

Temp. Uniformity & Sensor ±0.5℃ at 37℃, ±1.2℃ at 50℃, PT100 Sensor

Heat-up Time 20 min. to 37 ℃ , 40 min. to 50 ℃

Recovery Time (Door open 30sec) 8 min. to 37 ℃

12 min. to 50 ℃

Heating Power/Consumption 200 W

Timer & Alarm 99hr 59min (with delay / Continuous run.), Error status

& Timer-end

Display Seven-segments FND

Controller Digital Fuzzy Controller

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**21)Digital Orbital Shaker 2 Unit**

Specification:

Shaking Motion: Orbital Motion

Speed Range:10-300rpm

Max Load: 10kg

Amplitude Of Rotation mm: 20,30,40

Timer and alaram: 99hr 59min (with Continuous run.), rror status & Timer-end

Display: Digital LCD with Back - Light Function

Permissible Relative Moisture: 85%

Base Plateform: 350x350mm

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**22)Frezeer -85 Capacity 700 Lit 2 Unit**

Simplified Hi Efficiency freezing system at -85 °C

Touch screen controller system

Block condenser,Filter free mechanism

Capacity 700 litre

CFC free refrigerant system

Build in standard alarm and warning system

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**23)Haematology counter 1Unit**

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| --- | --- |
| Parameters | WBC, LYM, MID, GRA, LYM%, MID%, GRA%, HGB, RBC, HCT, MCV, RDWcv, RDWsd, MCH, MCHC, PLT, MPV, PCT, PDWcv, PDWsd, P-LCR%, P- LCC |
| Techonolgy | Volumetric impedance method, microfluidics sample volume |
| Aspirated   Processed | 9.6uL whole blood (open vial mode) 2.4uL whole blood (both modes) |
| Throughput  Closed vial   Open vial mode | 60 tests per hour  45 tests per hour |
| Precision  (CV, max) | WBC: 3%, RBC: 2%, MCV: 2%, HGB: 2%, PLT: 5% |
| Reagents | Cyanide free reagents |
| QC management | Levey-Jennings chart Radar chart |
| Storage capacity | 40,000 test results including histograms |
|  |  |

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**24)Universal Kymograph Assembly with Built in Stimulator 5Units**

Speed Range:Infinitely variable from 0.006 to 625 mm/sec with 500 mm

circumference cylinder; 0.012 to 1250 mm/sec with 1000 mm

circumference cylinder, cylinder not supplied

Spindle Rotation:Either continuous or single revolution using manual

start/stop control

Contact Arms:Two fully variable ,opto-triggering,producing a short circuit across contract sockets

Writing Medium:Smoke or ink, dependent on recording cylinder

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**25)Digital Precise Water Bath 4Units**

Capacity: 6 Litres

Temp. Range & Accuracy: Room Temp: +5C~ 100C +0.1C

Temp. Resolution 0.1C-Display, 0.1C-Control

Temp. Uniformity & Probe +1.0, PT100

Heating Power 800 W

Timer & Alarm 99hr 59min (Delay & Continuous run), Error status & Timer-end

Display Digital LCD with Back-Light Function

Controller Digital Fuzzy Controller with Jog - Shuttle Switch (Turn+Push)

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**26)Vortex Mixer**

Ideal for Mixing Solutions in Test Tubes or Small Flasks with Circular,

Oscillating Movement

Variable Speed Control Allows Slow Speed Shaking Action up to

High Speed Vortexing

Speed Range 0 ~ 3,300 rpm

Shaking Motion Orbital

Control Analog Phase Controller

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**27)Viscometer 1 Unit**

Viscosity Range: 20 - 40,000,000 mPas/cP

Accuracy **:** 1% of full scale

Repeatability: 0.2%

Speeds Rpm: 0.3, 0.5, 0.6, 1, 1.5, 2, 2.5, 3, 4, 5, 6, 10, 12, 20, 30, 50, 60, 100, 200

Temperature Range: -15ÂºC a + 180ÂºC

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| --- | --- |
| temperature Resolution | 0.1 |
| Temperature Accuracy | 0.1 |
| Spindles | (6 spindle R2 |
| Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent **28)UV-Spectrophotometer 4Units**  Wavelength: 190~1100nm  Wavelength Accuracy: ≤1±2.0nm  Wavelength Reproducibility: ≤1nm  Monochromator: Single-beam C-T type, grating 1200L/mm  Photometric Accuracy: ≤±0.5%T  Photometer Reproducibility: ≤0.3%T  Stray Light: ≤0.1%T (Nal at 220nm NaNO2 at 340nm)  Spectral Bandwidth: 5nm (1, 2, 4nm optional)  0%T Stability: ≤0.2%T (30min)  100%T Stability: 0.001A/30min (at 500nm, after warning up)  Operation Mode: T, A, C, E  Photometric Range: -0.3~3A  Display: 16x2 LCD  Detector: Silicone Photodiode  Light Source: Tungsten halogen lamp, D2 Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent **29)Reflex Kit 2Unit**  This kit can be used for human tendon jerk, reflex and nerve stimulation experiments.  **Includes:**   * [Tendon Hammer](https://www.adinstruments.com/products/tendon-hammers) * [Goniometer](https://www.adinstruments.com/products/goniometers) * [Recording Bar Electrode](https://www.adinstruments.com/products/recording-bar-electrode) * [Stimulator Rod with Cable](https://www.adinstruments.com/products/stimulator-rod-cable)  Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent **30)Electrolyte Analyzer 1Unit**  Measurement parameters: Na+, K+, Cl- Measurement sample: Whole blood, Plasma, Serum, Diluted Urine, Hemo-Dialysis solution A(Acid concentrates), Solution B(Bicarbonate), Solution A+B Balanced,  Measurement speed: 100 samples/hour Very accuracy result is less than C.V. 0.5%. Low and economic running cost. High sensitive electrodes allow calibration once a day. Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent |  |
|  |  |

**31)Incubator 105 Litre 4 Unit**

Capacity: 105 Lit.

Dimension (w x d x h): Interior (mm): 485 x 410 x 533

Exterior (mm): 635 x 695 x 841

Heater Power: 300W

Temp. Range: Room Temp +5C to 70C

Fluctuation: + 0.20C at 370C, +0.30C at 500C Variation: + 0.4 at 370C, + 0.7 at 500C

Sensor: PT 100

Control Resolution: +0.10C

Heat-up Time: 17 min. to 37 0C, 30 min. to 500C

Recovery Time: 3 min. to 370C, (Door open 30sec): 4 min. to 500C

Controller: Digital Fuzzy Control by Advanced Microprocessor Jog-Dial with Push Button RS232

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**32)Power Lab with all related accessories for Pharmacology 1 Unit**

PowerLab data recording system complete with accessories and LabChart Software (32 Channels). The LabChart 32 channels software is capable of recording maximum speed of 400,000 samples per seconds (aggregate) from multiple devices to a single file on hard disk. It is compatible with instruments, signal conditioners and transducers supplied in the tender. The PowerLab features a wide range of low-pass filters, AC or DC coupling and adaptive mains filter. The unit features a USB interface for connection to Windows or Mac OS computers and a sampling rate of 100 000 samples/s per channel. Front-ends can be connected through the I2C connector. Includes LabChart software,High grade Isotonic Transducer and Bridge Amplifier.

* High-throughput full-bandwidth sampling of any analog signal 2 mV - 10 V
* Full 16-bit ADC resolution;
* 200 kHz maximum sampling rate (aggregate)
* Built to last for 10 years, ISO certified, with a hardware warranty of up to 3 years
* Flexible Connectivity
* Analog outputs for external device control or stimulation protocols
* DIN connectors for precalibrated transducers and low-cost amplifiers
* Digital input and output connectors for signaling to/from TTL devices
* 2 channel analogue inputs
* 1 built in animal stimulator
* USB and Power Cable
* Software CD, upgradable to five years

Tissue Bath One channel is supplied with a 25 mL tissue bath. The steel base is coated to resist corrosive salt solutions. The perfusate flows from a water jacketed, temperature controlled 1-liter reservoir to the tissue bath through a pre-heating coil built within the water jacket of tissue bath. The bath is emptied via a bottom drain controlled with a stopcock. The bath may also be used in a constant flow mode with excess perfusate exiting an overflow outlet at the top of the bath. Both overflow and drains may be routed to permit monitoring the release of endogenous substances, drug metabolites, or to design a cascade system configuration. Bath aeration is finely controlled via a removable Teflon needle valve Oxy-tube.

This 6L Digital Precise Circulation Water Bath has Features , temperature range of 5 to 100 degree Celsius with +/- 0.1 accuracy and 14L/min pump speed and weight is 11kg. Other features include innovative Patented Easy-to-Use Digital Fuzzy Controller and is CE certified. It has a stainless steel bath and lid for superior durability, high thermal efficiency, prevents evaporation and keeps constant temperature. Nozzle 7mm ID 11mm OD

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**33)Power Lab with all related accessories for Physiology 2 Unit**

PowerLab data recording system complete with accessories and LabChart Software (32 Channels). The LabChart 32 channels software is capable of recording maximum speed of 400,000 samples per seconds (aggregate) from multiple devices to a single file on hard disk. It is compatible with instruments, signal conditioners and transducers supplied in the tender. The PowerLab features a wide range of low-pass filters, AC or DC coupling and adaptive mains filter. The unit features a USB interface for connection to Windows or Mac OS computers and a sampling rate of 100 000 samples/s per channel. Front-ends can be connected through the I2C connector. Includes LabChart software,High grade Isotonic Transducer and Bridge Amplifier.

* High-throughput full-bandwidth sampling of any analog signal 2 mV - 10 V
* Full 16-bit ADC resolution;
* 200 kHz maximum sampling rate (aggregate)
* Built to last for 10 years, ISO certified, with a hardware warranty of up to 3 years
* Flexible Connectivity
* Analog outputs for external device control or stimulation protocols
* DIN connectors for precalibrated transducers and low-cost amplifiers
* Digital input and output connectors for signaling to/from TTL devices
* 2 channel analogue inputs
* 1 built in animal stimulator
* USB and Power Cable
* Software CD, upgradable to five years

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### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**34)Power Lab with all related accessories with NIBP system 1Unit**

PowerLab data recording system complete with accessories and LabChart Software (32 Channels). The LabChart 32 channels software is capable of recording maximum speed of 400,000 samples per seconds (aggregate) from multiple devices to a single file on hard disk. It is compatible with instruments, signal conditioners and transducers supplied in the tender. The PowerLab features a wide range of low-pass filters, AC or DC coupling and adaptive mains filter. The unit features a USB interface for connection to Windows or Mac OS computers and a sampling rate of 100 000 samples/s per channel. Front-ends can be connected through the I2C connector. Includes LabChart software,High grade Isotonic Transducer and Bridge Amplifier.

* High-throughput full-bandwidth sampling of any analog signal 2 mV - 10 V
* Full 16-bit ADC resolution;
* 200 kHz maximum sampling rate (aggregate)
* Built to last for 10 years, ISO certified, with a hardware warranty of up to 3 years
* Flexible Connectivity
* Analog outputs for external device control or stimulation protocols
* DIN connectors for precalibrated transducers and low-cost amplifiers
* Digital input and output connectors for signaling to/from TTL devices
* 2 channel analogue inputs
* 1 built in animal stimulator
* USB and Power Cable
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Tissue Bath One channel is supplied with a 25 mL tissue bath. The steel base is coated to resist corrosive salt solutions. The perfusate flows from a water jacketed, temperature controlled 1-liter reservoir to the tissue bath through a pre-heating coil built within the water jacket of tissue bath. The bath is emptied via a bottom drain controlled with a stopcock. The bath may also be used in a constant flow mode with excess perfusate exiting an overflow outlet at the top of the bath. Both overflow and drains may be routed to permit monitoring the release of endogenous substances, drug metabolites, or to design a cascade system configuration. Bath aeration is finely controlled via a removable Teflon needle valve Oxy-tube.

This 6L Digital Precise Circulation Water Bath has Features , temperature range of 5 to 100 degree Celsius with +/- 0.1 accuracy and 14L/min pump speed and weight is 11kg. Other features include innovative Patented Easy-to-Use Digital Fuzzy Controller and is CE certified. It has a stainless steel bath and lid for superior durability, high thermal efficiency, prevents evaporation and keeps constant temperature. Nozzle 7mm ID 11mm OD

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**35)Power Lab with all related accessories with Student Legendorff Apparatus with Acc(1Unit)**

PowerLab data recording system complete with accessories and LabChart Software (32 Channels). The LabChart 32 channels software is capable of recording maximum speed of 400,000 samples per seconds (aggregate) from multiple devices to a single file on hard disk. It is compatible with instruments, signal conditioners and transducers supplied in the tender. The PowerLab features a wide range of low-pass filters, AC or DC coupling and adaptive mains filter. The unit features a USB interface for connection to Windows or Mac OS computers and a sampling rate of 100 000 samples/s per channel. Front-ends can be connected through the I2C connector. Includes LabChart software,High grade Isotonic Transducer and Bridge Amplifier.

* High-throughput full-bandwidth sampling of any analog signal 2 mV - 10 V
* Full 16-bit ADC resolution;
* 200 kHz maximum sampling rate (aggregate)
* Built to last for 10 years, ISO certified, with a hardware warranty of up to 3 years
* Flexible Connectivity
* Analog outputs for external device control or stimulation protocols
* DIN connectors for precalibrated transducers and low-cost amplifiers
* Digital input and output connectors for signaling to/from TTL devices
* 2 channel analogue inputs
* 1 built in animal stimulator
* USB and Power Cable
* Software CD, upgradable to five years

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### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**36)Centrifuge Machine digital 4Unit**

RPM: Max. 1,000 ~13,500 rpm

Max. RCF: 12,225 x g

Rotor: Including fixed angle rotor for 0.2-/0.5-/1.5-/2.0 ml x 12 tubes

Drive System: Brushless DC motor, Direct drive

Noise Level :< 57dB

Acceleration Time: < 15 sec (at max. speed)

Braking Time: < 15 sec (at max. speed)

Cooling Device : Air Cooling system

Timer & Alarm: 99min. 59sec. (Continuous run), error status and timer end.

Display: Digital LCD display with Back-light function

Controller: Digital Feedback Control with Jog Shuffle Switch (Turn + Push)

Safety Circuit: Motor Error Detector, Electronic safety lid lock system

Material Lid: PC

Material Body: ABS

Material Rotor: PC

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**37) Set of Functional Models 1 Set**

**38) Vitalograph with colour screen up gradeable 2 Set**

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

**39)** **Micro Heamotocrit Machine 1Unit**

Brake:toggle switch

Max speed:approx 12000rpm

Max rcf:14490 x g

**Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent**

**40)** **Student auscultation Manikin 1Set**

**41)Cardiac auscultation (self teaching system) 2Set**

42) **Heart functional model(blood circulation) 1Set**

**43)Laceration of Brain 1Set**

**44)Nose cut off with knife 1Set**

**45)Nose bitten off with teeth 1Set**

**46)Life Size Muscular Anatomy Set Featuring the Male 1Set**

**and Female Multi-Torso with Musculature**

**47) Torso Five in one Configuration 1Set**

**48)Skeleton with Hand painted and labelled 1Set**

**muscle attachment**

**49)Life Size axial torso**. **1Set**

**50)Tissue Embedding System 1Unit**

### Country Of Origin of Manufacturer.USA/Uk/Europe/Japan or equivalent

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