



West Bengal University of Technology

Tender Form Equipments

Notice No : BIO/FO/12-13/22

Date of Issue : 22nd January, 2013

D.D. No. for the Tender Price :

**Address:
BF-142, Sector-I,
Salt Lake City,
Kolkata-700064**

**Tele-Fax No:
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List of Equipments

1. Spectrophotometer (A)
2. Spectrophotometer (B)
3. pH meter
4. Analytical Balance(4th place)
5. Analytical Balance(3rd Place)
6. Standing Water Bath
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8. Cyclomixer (Vortex)
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13. Horizontal Autoclave
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19. Normal Centrifuge
20. Gradient PCR
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22. Fluorescence Microscope (Upright)
23. Binocular Dissecting Microscope
24. Laminar Air Flow (fabricated)
25. Fluorescence Spectrophotometer
26. Gene Gun
27. Chlorophyll meter
28. Leaf Area Meter
29. pH Electrode
30. Ultra Low Temperature Freezer
31. Cold Centrifuge
32. Cold Light Source for Binocular Dissecting Microscope (with stand)

Tender Paper for Equipments

Ref: Tender Notice No. BIO/FO/12-13/22 dated: 22nd January, 2013

a) Name & Address of the Firm:

b) Telephone No:

c) Mobile No.:

d) Fax No:

2. Name of the items for which the Firm is interested:

3. Name of the Proprietors/Partners/Directors etc:

4. Trade License No (With Photocopy):

5. VAT License No:

6. Service Tax Registration No (With Photocopy):

7. Additional Information if the party wants to include:

8. Copies of Testimonials/credentials/certificates regarding services/experience etc:

Signature with Stamp

Please give sealed quotation for the following Equipments clearly superscribing the tender notice number on the envelope.

1. Specifications of Spectrophotometre-A

1. Xenon pulse lamp source, Unique full-spectrum Xenon flash lamp (80 Hz) with typical lifetime of not less than 10 years.
2. 1.5 nm fixed spectral bandwidth
3. 190–1100 nm wavelength range.
4. 24,000 nm/min maximum scan rate that allows complete spectral range scanning in under 3 seconds, ideal for fast kinetics or high sample throughput.
5. Focused beam measuring 1.5 x 1.0 mm ensures efficient energy coupling to accessories including fiber optic probes and ultra-microvolume cuvettes for measurement of low volume samples.
6. Double beam Czerny-Turner monochromator and Holographic grating, 27.5 x 35 mm, 1200 lines/mm, blaze angle 8.6° at 240 nm.
7. Beam splitter and 2 silicon diode detectors for simultaneous sample beam and reference beam measurements.
8. UV-Vis limiting resolution (nm) ≤ 1.5 nm.
9. Toluene/hexane limiting resolution (EP/BP and TGA test) ≥ 1.5
10. Wavelength accuracy (nm) ± 0.5 at 541.94 nm.
11. Wavelength reproducibility (nm) ± 0.1 nm
12. 1 Photometric accuracy (Abs) Using NIST 930E filters at 1 Abs ± 0.005 Abs At 0.2, 0.5 & 0.75 Abs (14.2% w/v KNO₃, TGA method) ± 0.01 Abs, 0.292 to 0.865 Abs (60.06 mg/L K₂Cr₂O₇, BP method) ± 0.01 Abs.
13. Photometric range (Abs) ± 4.0 Abs.
14. Photometric display ± 9.9999 Abs, $\hat{A} \pm 200.00$ % T
15. Photometric reproducibility (Abs)
 - a. Using NIST 930E filters, at 465 nm, 2 s SAT
 - b. Maximum deviation at 1 Abs < 0.004 Abs
 - c. Standard deviation for 10 measurements < 0.00050 Abs
 - d. Using NIST 930E filters, at 546.1 nm, 2 s SAT
 - e. Maximum deviation at 0.5 Abs < 0.003 Abs
 - f. Standard deviation for 10 measurements < 0.0030 Abs
16. Photometric stability (Abs/hour) 500 nm, 10 s SAT < 0.0004 Abs
17. Photometric noise (Abs, RMS) 500 nm, 1 s SAT At 0 Abs < 0.0001 Abs, At 1 Abs < 0.0005 Abs, At 2 Abs < 0.005 Abs 260 nm, 1 s SAT At 0 Abs < 0.00015 Abs
18. Baseline flatness (Abs) 200 to 850 nm, smooth 21 filter applied, baseline corrected $\hat{A} \pm 0.001$ Abs
19. Compartment size (width x depth x height) 130 mm x 523 mm x 123 mm.
20. Sample compartment access -Top and front.
21. Minimum sample volume 0.5 μ L.

2. Specifications of Spectrophotometer-B

1. Compact UV – VIS spectrometer to quantify sample using standard volumes (50 μ l to 2ml) and temperature controlled kinetic measurements
2. Must have option to quantify undiluted sample at nanolitre volume (< 2 μ L),
3. Must be able to operate without PC
4. Must have low power consumption: Approx. 30 W in the operating step, approx. 5 W with dimmed display and temperature control is switched off
5. Small foot print ;W x D x H: 300 mm x 400 mm x 150 mm
6. Must be light weight: < 6 kg
7. Light Source: Xenon flash lamp

8. Receiver must be: CMOS photodiode array
9. Wavelength range: 200 nm to 830 nm
10. Wavelength Selection: Method-dependent, freely selectable
11. Spectral bandwidth: ≤ 4 nm
12. Wavelength increment: 1 nm
13. Systematic wavelength error: ± 1 nm
14. Random wavelength error: ≤ 0.5 nm
15. Photometric measuring range: 0.0 to 3.0 A at 260 nm
16. Photometric reading accuracy: $\Delta A = 0.001$
17. Random photometric error: ≤ 0.002 at $A = 0$, ≤ 0.005 (0.5%) at $A = 1$
18. Systematic photometric error: ± 1 % at $A = 1$
19. Cuvette type: Plastic disposable for standard methods and standard Quartz cuvettes for Kinetic measurements. Microliter cell for low volume measurements.
20. Temperature control: Must have built in peltier controlled cuvette shaft with incubation temperature range of 20deg.C to 42deg. C
21. Temperature increment: 0.1deg. C
22. Must have inbuilt methods for :
23. Absorbance with one or more wavelengths, scans
24. Nucleic acids, Proteins, OD 600, dye labeling
25. Evaluation via factor, standard and calibration curve
26. Dual wavelength with subtraction and division evaluation, kinetic method: end point, two point, linear regression
27. Display: 5.7" VGA TFT display
28. Must have interfaces: USB master for USB stick; USB slave for connection to PC;
29. Must have serial RS-232 for thermal printer
30. Memory should be > 100 method programs on the instrument, > 1000 results with data, evaluation results and used parameters
31. System must be supplied with suitable voltage stabilizer

3. Specifications of pH meter

1. Bench Top pH meter for Measurement of pH, mV and Temperature.
2. Imported
3. Measuring Range - 1.99.....19.99
4. Resolution (pH)- ± 0.01
5. Accuracy (pH) ± 0.005
6. Calibration point (max.): 3
7. mV measurement measuring Range in mV : - 1800.....+1800
8. Resolution (mV): ± 0.1
9. Accuracy (mV): ± 0.2
10. Temperature measurement measuring Range in deg.C : - 5..... +105
11. Resolution (mV): ± 0.1
12. Accuracy (mV): ± 0.2
13. Automatic buffer reorganization
14. Easy, One-button calibration.
15. Electrode check showing the slope for two or three calibration-point standardisation.
16. Easy-to-understand symbols and icons for reliable readings.
17. Simultaneous pH, temperature and buffer display.
18. Press Mode to choose between pH, absolute mV or relative mV value.
19. Automatic electrode test during calibration
20. Automatic Temperature compensation

21. Electrode Holding Arm.
22. Technical buffer
23. Display : LCD
24. A/C Adaptor.
25. Dimensions should be: 230X120X80 mm
26. Weight : <1500 g.
27. 28. Electrode : Glass body; electrolyte: KCl 3 mol/l; free of silver ions;
 - a. platinum junction; toughened, low resistance glass, PH range : 0...
 - b. 14. Temperature Range: $-5\text{ }^{\circ}\text{C} \dots 100\text{ }^{\circ}\text{C}$
28. TRIS compatible and should be ISO 9001 / 14001 quality certified.

4. Specifications of Analytical Balance (4th place)

1. Microprocessor based Electronic Analytical balance with Internal calibration and adjustment facility.
2. Weighing capacity----- 220g
3. Readability----- 0.0001g (0.1mg)
4. Tare range (subtractive)----- 220g
5. Repeatability ----- $\pm 0.0001\text{g}$
6. Linearity ----- $\pm 0.0002\text{g}$
7. Pan size (diameter) 90mm
8. Monolithic Weighing Cell Technology for fast and accurate reading
9. Two Tare Keys
10. 1 Backlit LCD Display
11. Bi-directional RS-232 DATA INTERFACE PORT
12. Built-in application programs : Net-total formulation, weighing in %, counting, mass unit conversion by toggling, dynamic weighing etc.
13. Equipped with Overload protection.
14. Below balance weighing.
15. 4 User selectable filter levels for ambient conditions.
16. Power supply : AC adapter
17. Glass draft shield
18. Plug for attaching an antitheft locking device
19. Should be ISO 9001 / 14001 quality certified
20. DUST COVER

5. Specifications of Analytical balance (3rd place)

1. Microprocessor based Electronic High Precision Balance, External Calibration & Adjustment facility,
2. Weighing Range220 g.
3. Readability.....0.001g.(1mg)
4. Tare range (subtractive).....220 g.
5. Repeatability..... $\pm 0.001\text{g}$.
6. Linearity..... $\pm 0.002\text{g}$.
7. Pan size (diameter).....115 mm
8. Monolithic Weighing Cell Technology for fast and accurate reading.
9. Two Tare Keys
10. Backlit LCD Display
11. Bi-directional RS-232 DATA INTERFACE PORT
12. Built-in application programs : Net-total formulation, weighing in %, counting, mass unit conversion by toggling, dynamic weighing etc.

13. Equipped with overload protection.
14. Below balance weighing.
15. 4 User selectable filter levels for ambient conditions.
16. Power supply : AC adapter
17. Glass draft shield
18. Plug for attaching an antitheft locking device
19. ISO 9001 / 14001 quality certified.

6. Specifications of Standing Water Bath:

1. One-piece Stainless
2. Digital PID Controller
3. Touch-Key
4. Auto tuning
5. Insulation: Glass wool 40mm
6. Bath Size: 495 x 290 x 150(H)mm
7. Bath capacity: 21 Liter
8. Power: 220V, 5.4 A, 1200 W, 60 Hz
9. Temp. Range: Ambient : + 5°C to 99°C
10. Temp. Accuracy: $\pm 0.2^{\circ}\text{C}$ at 37°C
11. Temp. Controller: Digital P.I.D controller
12. Display: LED Display
13. Material(IN): Stainless steel
14. (OUT): Power coated SS
15. Lid: Stainless steel

7. Specifications of Shaking Water Bath:

1. Orbital Type
2. Brushless Motor
3. Digital PID Controller
4. Auto Tuning
5. Flask Holder Rack
6. Temp. Range: Ambient +5°C to 99°C
7. Temp. Accuracy: $\pm 0.1^{\circ}\text{C}$ at 37°C
8. Temp. Controller: Digital P.I.D. controller
9. Speed Range: 0-250 RPM
10. Speed controller: Solid state Electronic controller
11. Drive Motor: Brushless Motor
12. Shaking Motion: Orbital
13. Dimension(In): 400 x 450 x 245(H)mm
14. (Out): 600 x 560 x 620 (H)mm
15. Capacity: 44 Liter
16. Material (In): SUS 304
(Out): Steel plate with powder coating
17. Lid: SUS 304
18. Standard plate: Holder Plate/ 250ml x 12EA
19. Power: 220V, 6.5 A, 1.4KW, 60Hz

8. Specifications of Cyclomixer (Vortex):

1. Speed Range: 0-3000 RPM
2. Operation Mode: Touch On & Constant On
3. Material: Aluminum Die-casting & ABS

4. Head: Rubber Mixing Cup
5. Dimension: 130 x 155 x 155(H)mm, 2.7kg
6. Power: AC220V, 0.14A, 60Hz

9. Specifications of Magnetic Stirrer:

1. Speed Range: 30-1500 RPM
2. Temperature Range: Ambient to 350°C
3. Temp. Controller: Hydraulic Thermostat
4. Heater: Interchangeable plate heater
5. Plate Area: 180 x 180 mm
6. Top Plate: Ceramic coated plate
7. Dimension: 185 x 260 x 120(H)mm
8. Power: AC 220V, 3.7A, 60Hz

10. Specifications of Dancing Shaker

1. Three dimensional combination of rocking and orbital motion.
2. Used for staining and destaining gels, blotting techniques and mixing of lab samples.
3. Non-slip platform adjustable from horizontal to a steep angle.
4. Low foaming agitation and uniform mixing at low speed.
5. Speed adjustable from 0-60RPM.
6. Maximum permissible load is 2kgs.

11. Specifications of Rocker

1. Must have powerful DC motor with variable speed.
2. All moving parts should be fitted with bearings for smooth and quiet running.
3. Speed should be between 10-50rpm.
4. Timer should be 99hours 99mins.
5. Platform dimension should be 30cmx30cm.
6. Overall dimension should be 30cmx30cmx20cm.
7. Maximum load should be 10kgs.
8. Power 230V,50Hz.

12. Specifications of Dry Bath

1. Temperature range: ambient to 110 degree C. Controlled to +/- 0.2 deg. C (or better) by Solid State Time Proportional Temperature Controller.
2. Digital-Display using PT-100 Sensor.
3. Must be Supplied with 3 Nos. interchangeable aluminium blocks of
4. 75x50x50 mm size for Accommodating 0.5 ml, 1.5 ml. Eppendorf Tubes,
5. 12mm, 16mm or 19mm Test tubes or Two Block of 150x75x50 mm size for accommodating 100 Tubes of 10mm Dia for LAL TEST.
6. The body made: of Heavy M.S. and painted with Epoxy Powder Paint. The Front Panel should be provided with an Acrylic Door with lock and key.

13. Specifications of Horizontal Autoclave

1. Fully Microprocessor controlled with password protection secure access control, cycle information recovery in case of power failure/cycle interruption, auto start, cycle fail alert,

- door alert and RS 232 for PC connection & controlled by ADMC software (optional). Digital display of temperature, time, pressure, water level, error messages with graphic display of operating time.
2. The pressure chamber made from long lasting 316Ti grade stainless steel as specified by ASME Code Sec VIII, EN 10028-7 PED 97/23 EEC for pressure equipment.
 3. Sterilisation standard DIN 8951 Series, ISO 17665-1:2006
 4. Quality system: ISO 9001:2000, ISO 13485:2003
 5. Autoclave safety standard IEC/UL/EN61010-1, IEC 61010-2-040 and EN61326
 6. Safety: Pressure & temperature dependent door lock, Over pressure valve. Door lock safety switch, Water reservoir with Water level safety switch, Excess temperature safety switch. Integrated reservoir for feed water, with water level control and steam recirculation. External heating element No heating element within the chamber.
 7. Double Independent Monitoring mechanical and digital. It must have water level detector, current leakage breaker, lid interlock, overheat prevention, overpressure prevention, open temperature sensor detector, and extra pressure safety valve.
 8. Drain protection: The exhaust drain may be mixed with cold tap water
 9. The PT-100 temperature sensor in a reference vessel ensures that the set sterilization temperature is actually attained when sterilization starts. Temperature ranges up to 140°C or even programmable.
 10. It must have liquid sterilizing, sterilization, sterilization-heating and drying operating cycles to be operated with 6 nos. preset standard sterilisation programmes which are also editable by user.
 11. It must have multiple choices of exhaust speed.
 12. Ports should be available for external temperature sensors for validation and qualification purpose. Optional printer for GLP/GMP practice. . IQ/OQ/PQ Package should be available on demand.
 13. Automatic standby mode if not operated for 4 hours. Feed water for steam generation is automatically regulated
 14. Chamber volumes in litres : 40 litres. Chamber dimensions : ϕ x depth in mm : 310 x 500, External dimension(W x D x H) : 580 x 780 x 415 mm\
 15. Heating performance in KW: 3.3kw
 16. Temperature, pressure and time should be freely selectable

14. Specifications of Vertical Autoclave:

1. Fully Microprocessor controlled with password protection secure access control, cycle information recovery in case of power failure/cycle interruption, auto start, cycle fail alert, door alert and RS 232 for PC connection & controlled by ADMC software. Digital display of temperature, time, pressure, water level, error messages with graphic display of operating time.
2. The pressure chamber made from long lasting 316Ti grade stainless steel as specified by ASME Code Sec VIII, EN 10028-7 for pressure equipment.
3. Sterilisation standard DIN 8951 Series, ISO 17665-1:2006
4. Quality system: ISO 9001:2000, ISO 13485:2003
5. Autoclave safety standard IEC/UL/EN61010-1, IEC 61010-2-040 and EN61326
6. Safety:Pressure & temperature dependent door lock, Over pressure valve.
7. Door lock safety switch, Water level safety switch, Excess temperature safety switch. Integrated reservoir for feed water , with water level control and steam recirculation. External heating element No heating element within the chamber.
8. Pressure & temperature dependent door lock with double Independent Monitoring mechanical and Electronic for maximum safety. It has water level detector, current leakage

breaker, lid interlock, overheat prevention, overpressure prevention, open temperature sensor detector, and extra pressure safety valve.

9. Drain protection: The exhaust drain is mixed with cold tap water
10. The PT-100 temperature sensor in a reference vessel ensures that the set sterilization temperature is actually attained when sterilization starts
11. It should have liquid sterilizing, sterilization, sterilization-heating and heating-warming operating cycles to be operated with 6 nos. preset standard sterilisation programmes (including Dry Cycle facility) which are also editable by user.
12. It should have multiple choices of exhaust speed.
13. Ports should be available for external temperature sensors for validation and qualification purpose. Optional printer for GLP/GMP practice. . IQ/OQ/PQ Package is available on demand.
14. Automatic standby mode if not operated for 4 hours.
15. Feed water for steam generation is automatically regulated
16. Temperature, pressure and time are freely selectable
17. Chamber volumes in liters : 85 liters.
18. Chamber dimensions : ϕ x depth in mm : 380 x 690
19. Chamber material: Stainless steel.
20. External dimension (W x D x H) : 660 x 525 x 875 mm
21. Heating performance in KW: 4.8 KW
22. Net weight (kg): 83
23. Vertical type autoclave
24. Operating temperature is user selectable and upto 140 deg. C.
25. Dry heating facility in programmes and dry-heating time is user selectable
Six standard factory-set programmes which are editable for customized needs of the user giving unlimited methods to generalise and optimize the use of the steriliser.
26. Auto stop with audio-visual indication showing err. msg when there is no water inlet. Pressure and temperature dependent door-lock to ensures highest safety
27. Door-lock releases at the end of the programme
28. Safety valve for release of pressure during programme run and in case of emergency
29. Single touch start button to start programmes in which timer functions are incorporated
30. Rapid cooling facility is available
31. All programmes and settings should be password protected to avoid unauthorised access
Network compatible for upload/ download of programmes, datafiles, codefiles of parameters.
ADMC 28. software is also available for realtime monitoring of all sterilisation parameters and hardware as well as software parameters of the equipment on personal computer by connecting the equipment to computer through standard RS-232 port.
32. Suitable for basic and advanced laboratory applications with media sterilisation.
33. Data logging facility allows to take hardcopies of the status of each cycle including error reports, mains power failures etc. on the inbuilt printer (on demand) as well as those can be saved / printed through personal computer when monitored by ADCM software, thus conforming criterion for GLP/GMP practice.

15. Specifications of Refrigerated Cabinet :

1. Temp. range : 2 to 8 deg C :
2. Capacity : Minimum 260 L or above max upto 400 L.
3. Microprocessor control, digital display , temp. adjust with an increment of 1 deg C;
4. Finned-tube evaporator design, temp. lower down faster;
5. Excellent alarm system, audible buzzing alarm and visible flashing alarm, alarms conditions include higher or lower temp. alarm, sensor malfunction alarm, open door alarm, remote alarm, power failure alarm , refrigeration system, malfunction

alarm.

6. Danfoss compressor and Germany EBM condenser fan support an excellent refrigeration.
7. **See-through glass door.**
8. Forced-air cooling system, large airflow with optimized air channels to guarantee inner temp. consistency
9. Shelves / inner door : 4
10. Power : 340 W :Voltage (V/Hz) : 220 / 50
11. External dimensions (WxDxH): 620x655x1720 mm
12. Interior dimensions (WxDxH) : 555x460x1065 mm
13. Net weight / Gross weight : 88 Kg/ 100 Kg.

16. Specifications for Gel Electrophoresis system with power supply:

MINI VERTICAL ELECTROPHORESIS CELL :-

1. Mini vertical electrophoresis cell, 10 well, 1.0mm thickness, complete system should include buffer tank, combs, glass plates, casting clamp assembly, sample loading guide, electrophoresis module
2. Gel Size :8.3 x7.3cm (W x L): the system should be capable of running 2 to 4 gels simultaneously
3. Glass Plate Size:
 - a.-Inner - 10.1 x 7.3 cm
 - b.-Outer - 10.1 x 8.2 cm
4. Same system should be able to perform also western blotting, 2D/tube gel electrophoresis & electro-elution with the help of different module.
5. Regulatory Certification – IEC 1010, CE preferable.
6. Additional spacer plate with 0.75mm , 1.0mm,1.5mm and compatible combs
7. Power Supply:

Specifications:

Programmable Output range:

10 – 300V, fully adjustable in 1V steps

4 – 400mA, fully adjustable in 1mA steps;

Maximum Power: 75W

Output Type: CV or CC with automatic crossover facility.

Built-in timer range – 0 – 999min, fully adjustable.

Output Terminal: Four (04) pair recessed banana jacks in parallel.

Pause / Resume function: Yes

Display: 3-digit LED

Operating Conditions: 0 – 40 deg C; 0 – 95% humidity

Regulatory certification – EN-61010, CE Certified.

Safety Features:

No-load detection;

Sudden load change detection;

Over-load / short-circuit detection;

Overload protection.

Input protection: Fuse on both hot and neutral

Input power: 198 – 268VAC, 60Hz, auto-switching.

17. Specifications of Semi Dry Blotter

1. Apparatus must be able to operate using the power system whose specs are spelt in item no. 16. It should be able to transfer two polyacrylamide gels in a stack and use low current and voltage for transfers.
2. Should possess appropriate specifications for a standard Semi-dry Blotter.

18. Specifications of B.O.D. Incubator :

1. SIZE: 560mm x 420mm x 380mm (3 cu. ft.)
2. Inner chamber : Made of S.S.304 grade
3. Outer Chamber : Made of Mild steel duly painted
4. Inside Door : Fitted with unbreakable transparent acrylic
5. Outer Door : Thick, insulated, powder coated
6. Compressor : Fitted with standard make Kirloskar / Shriram
7. Circulating Fan : 2 Nos. fitted inside the chamber
8. Shelf : 3 Nos. made of SS wire. The trays can be adjusted anywhere at a distance of 4cms.
9. Working Temp. : 5°C to 50°C or 10°C to 50°C when lights are ON.
10. Temp. Accuracy : $\pm 1^\circ\text{C}$ (or 0.5°C under ideal conditions)
11. Temp. Readability: 0.1°C
12. Power supply: 220 V, 50 Hz, Single Phase AC supply
13. Feather touch controller, plate mounted on the door.(no Separate panel)
14. Digital Display L.E.D + L.C.D. Both
15. Continues display of set temperature, attained temperature, time, day, date, etc
16. As soon as the set temperature is attained, timer start automatically & raise the
17. alarm after the set time is over (Fully automatic).
18. Indication LED of Door Open (Optional)
19. Battery operated controller with indication of power failure (optional)

19. Specifications of Normal Centrifuge:

1. Digital Speed Indicator.
2. Stepless speed regulator
3. 0-60 minutes digital countdown timer
4. Safety Lid interlock to prevent cover opening during centrifugation
5. Press Switch for quick acceleration to full speed
6. Max. Speed – 5250
7. Max RCF-3600g
8. Max Capacity-400ml
9. Dimension-365x415x350
10. Rotor capacity – 8x15 or 8x50 or both(Swing out)

20. Specifications of Gradient PCR

1. The system should be a 96 well Thermal Cycler with 6 separate peltier blocks to provide independent temperature zones to run – six different assays with varying annealing temperatures at the same time.
2. Each block to accommodate 16 wells and having the ability to set up PCR with a specific temperature differential of up to 5 degree centigrade between blocks.

3. Run up to 6 separate temperatures in the same plate with user defined time to determine the optimal annealing temperatures.
4. On board Tm calculator facility to approximate the optimal annealing temperature.
5. The system should provide for Standard and Fast run modes in a single instrument with the ability to use 0.2ml / 0.1ml PCR tubes or micro-well plates.
6. The system should support PCR volumes ranging from 10 to 80 microlitre.
7. Mouse or stylus free navigation capability with VGA colour touch screen allowing for easy intuitive graphical user interface programming.
8. Choice of saving the methods up to 800 to the instrument or unlimited to a USB memory stick.
9. Programmable heated lid cover from for efficient PCR optimization.
10. Scalability: capability to interlink up to 11 PCR systems via single Ethernet hub.
11. Security: The system should have the ability to store most important methods on a memory stick.
12. Portability: The system should have a USB port to transfer methods from one machine to another.
13. The system should allow easy product updates via USB port.
14. The machine should be duly certified / authorized for PCR process and the vendor should produce the certificate for the same.
15. All necessary optimized reagents and plastic ware for standard and fast thermal cycling should be made available by the vendor.

21. Specifications of Deep Freezer:

1. Capacity : 262 lts. Temperature range:(-10oC – 40oC)
2. Defrost : Manual, Door lock facility,
3. Single Door. 340watts.
4. Outer Dimension (WxDxH) : 657x685x1665mm
5. Drawer:7
6. Net Weight : around 80 kg

22. Specifications of Fluorescence Microscope (Upright)

Fluorescence Research Microscope for Observation under Bright Field & Phase with Scientific Digital camera and software

Microscope:

1. Sturdy and rugged microscope stand with dual focussing knobs for coarse and fine focussing, built in regulating electronic stabilized power supply for 12V/100w illumination for detachable transmitted light illumination, Light Control man. with RS 232 interface.
2. Built-in disengageable double filter wheel with neutral density, blue and green filters and field diaphragm.
3. X-Y mechanical stage with co-axial drive knobs with scanning area of 75x50 mm, with hard coat anodized surface for scratchproof operation.
4. Reversed revolving objective nosepiece with minimum 7 positions to mount minimum 7 objectives.
5. High quality, infinity color corrected, objectives for 10x, 20x, 40x & 100x(oil) for observation under Bright Field & Phase Contrast.
6. Trinocular tube with 15° viewing angle for upright image, suitable for minimum field of

- view of 25 mm.
7. High resolution Achromatic Aplanatic universal turret condenser for Bright Field, Phase Contrast & DIC, suitable for objectives 1x to 100x.
 8. Revolving Fluorescence filter turret with provision for accommodating minimum 6 FL filters. The filter changing mechanism should be push & click type without use of any tools.
 9. High efficient Fluorescence filter with light trap mechanism for DAPI, Rhodamin, GFP, etc.

Digital Photomicrography:

1. Cool CCD monochrome camera with minimum resolution 1388x1040, minimum chip size $\frac{2}{3}$ ", minimum pixel size 6.45 μm x 6.45 μm with fire wire connection & selectable "ROI"
2. 1x1 to 5x5 binning facility
3. Suitable desktop PC with 19" TFT monitor, licensed OS & UPS for Digital Photomicrography and Image Analysis.

Image Analysis Software:

1. Software for Image Acquisition, Management & processing.
2. Interactive measurement of morphological parameters e.g., length, area, box, perimeter, gray values, angle and all other contour-based measurement data.
3. Post processing of images with brightness, gamma, colors, smoothing, sharpening and geometric correction.
4. Movie recording with AVI.
5. μ bar scaling
6. text annotation
7. Image gallery view and report generation.

23.Specifications of Dissecting Stereo Zoom Microscope:

- 1) Continuous & stepwise horizontal zoom drive with Plan-achromatic objective
- 2) Magnification range should be 7x upto 50x without any supplementary objective & can be extended upto 100x with 2x high magnification objective.
- 3) Ergonomic Binocular phototube inclined at 35° with built-in Plan-achromatic objective and widefield eye piece 10x with 23 mm or more field of view that covers large area of sample 35.4mm to 4.6 mm. and should be Greenough principal based Optical system for sharp 3D image
- 4) Working distance 92mm with & Complete with for higher magnification 2.0x objective with working distance 31 mm
- 5) Complete with bigger stand of height at least 260 mm and 150 Watt cold light source illumination with double swan neck light guide arm for incident light illumination & Trans-illumination accessory for transmitted light.
- 6) All Optics should be anti-fungus treated & certified upto three years from the principal.
- 7) All illumination with proper contrast to be appropriate for *C. elegans* (nematode) work.

24.Specifications of Laminar Air Flow Cabinet (fabricated)

- 1.Filter Type - HEPA (vertical)
- 2.Size of HEPA filter machine – 23.62 inc/47.62 inc/9.125 inc
- 3.Rated flow – 650 [CPM@90.0](#) FPM
- 4.Length of table – 63 inc

5. Breadth of table – 24 inc
6. Height of the table from HEPA filter – 30 inc
7. Height of the table from ground – 28.8 inc
8. Length of the granite stone – 66 inc
9. Breadth of the granite stone – 27 inc
10. Length of the laminar cabinet – 48.6 inc
11. Breadth of the laminar cabinet – 24.7 inc
12. Height of the laminar cabinet from the working base of the laminar hood (where the granite stone is laid) – 30 inc

25. Fluorescence Spectrophotometer with all accessories

1. For non-destructive and destructive sample.

26. Gene Gun System

General Specifications for scientific work

27. Chlorophyll meter

General Specifications for scientific work

28. Leaf Area Meter

General Specifications for scientific work

29. Specifications of pH electrode

1. Domain of measure pH 0...14
2. Temperature range : 0...100 °C
3. system reference Argenthal (Ag/AgCl)
4. Electrode -225mm.
5. Sterilizable pre-pressurized gel-filled electrolyte pH electrode
6. Pressure resistance (bar) up to 2.5 bar overpressure
7. Pressure resistance (psi) up to 36 psi overpressure
8. Diaphragm ceramic
9. Number of diaphragms 1
10. Sterilizable, Autoclavable

30. Specifications of Ultra Low Temperature Freezer:

1. Capacity: around 400 L
2. Must be capable to hold ≥ 24000 nos of 2ml vials
3. Must have space saving foot print (WxD): 80 x 85 cm
4. Must have 5 compartment with 4 adjustable height shelves
5. Lowest temperature must go upto -86°C
6. Must maintain -86°C even at $> 32^{\circ}\text{C}$ room temperature,
7. Pull down time must be ≤ 4.5 hrs.
8. Micro Processor control of temperature and alarms with non-volatile memory,
9. Automatic reset to prevent microprocessor controller from failure caused by power spikes.
10. Display should be in the eye level.
11. Circulation by single fan to reduce energy will be preferable
12. Must have hermetically-sealed two stage cascade system (Compressor 2 x $\frac{3}{4}$ HP)

13. Insulation by 5” thick polyurethane foam,
14. Power consumption must be $\leq 550W$, Electric requirement 5 amp.
15. Two pass through port 20mm dia
16. 4-digit password to prevent unauthorized use,
17. Must have autodialer option in the event of alarm condition
18. Should have On-Off switch behind the locked panel, preventing power from being accidentally turned off.
19. Should have battery backup to activate alarms and display temperature during power outage.
20. Should have audible and visible alarms for temperature, filter clean, power out, low Battery, system fail, fault analysis,
21. Should have diagnostic software for fault condition.
22. Outer door must be fitted with low temperature safe silicone triple point seal
23. Must have heated air vent with manual plunger to prevent vacuum formation,
24. Must have auto restart function after power failure,
25. Certification : CE and CSA certified,
26. Shipment via air only

31. Specifications for Cold Centrifuge:

1. Product Type :	Microcentrifuge
2. Max rpm :	13,300
3. Max RCF :	17,000 x g
4. Rotor :	Fixed Angle
5. Speed range :	13,300 rpm
6. Power (VAC) :	230
7. Max capacity :	2mL
8. Refrigerated :	Yes
9. Tube capacity :	fixed angle, 24 x 1.5-2.0mL tubes
10. Variable speed:	Yes
11. Speed control :	Digital
12. Rotor (included):	Yes
13. Temp range :	-9°C to 40°C (1° increments)
14. Timer :	1 to 99 minutes
15. Temp control	Digital
16. Capacity :	1.5-2.0mL
17. Power (Hz) :	50/60
18. Max RCF (x g)	17,000
19. Dimensions	11-19/32"W x 12-29/32"H x 17-1/2"D (295 x 330 x 445 mm)

32. Cold Light Source for Binocular Dissecting Microscope (with stand)

- 1) High magnification 2x objective.
- 2) Complete with bigger stand of height at least 260 mm and 150 Watt cold light source illumination with double swan neck light guide arm for incident light illumination & Trans-illumination accessory for transmitted light.
- 3) All illumination with proper contrast to be appropriate for C. elegans (nematode) work.

Tender Submission Details

General conditions:

1. The tenderers are required to deposit the tender forms along with relevant papers (mentioned in the form).
2. **All technical bids and financial bids to be deposited in sealed covers separately mentioning “financial bid” or “technical bid”, as may be on top of the cover, and clearly mentioning the serial number of the equipment on top of each cover.** For those parties quoting for more than one equipment should quote respective equipments under separate covers as mentioned before.
3. The university reserves the right to accept or reject any tender without showing any reason.
4. Tender for providing the previous work experience list (customer list) mentioned in the notice may be submitted in full or in part.
5. Tender fee of **Rs. 500/-** (non refundable) has to be deposited along with the tender papers **in a separate envelope** clearly mentioned on top **“Tender Fee”**. **Do not staple / attach the draft either with tender form, financial or technical bids.**
6. All payments should be made through demand drafts **in favour of the 'West Bengal University of Technology' payable at Kolkata.**
7. The last date of receiving of tender paper in the **prescribed box** (near the ground floor reception section) mentioned **“Tender for Equipments for the Dept. of Biotechnology”** is **February 07, 2013** before noon. Opening of tender shall be announced shortly.
8. Incomplete tender shall be summarily rejected.
9. Subcontracting in any form will not be entitled by the University.
10. All legal disputes shall be subject to jurisdiction of Calcutta High Court.
