

1. HOT AIR OVEN

TECHNICAL SPECIFICATIONS:-

- Should be operated on 230V, 50Hz single phase AC supply and having temperature ranging between 50-200°C
- Should be made of double walled chamber -Inner made of stainless steel SS 304 grade and powder coated outer surface.
- Should provide with three heating elements on three sides of the equipment for uniform temperature on all shelves.
- Should be provided with air circulating fan.
- Should provide with a variable microprocessor based digital temperature controller with digital display and thermometer should be provided separate.
- Should have a minimum chamber size of (L*B*H) 450*450*450 with 2 stainless steel trays with holes.
- Should provide with air ventilations.
- Warranty period preferably 3 years.

2. SPECIFICATION FOR BRIGHT FIELD / PHASE CONTRAST / FLUORESCENCE RESEARCH MICROSCOPE WITH CAMERA

Frame	: Rigid and vibrations free frame
Illuminator	: Built-in-Koehler illumination for transmitted light 12V100W halogen bulb (pre-cantered) with motion sensor detects when an operator leaves and automatically turns off the light for long life of bulbs, light preset switch, built in filters
Observation tube	: Wide field trinocular observation head with field no. 22-25 mm
Eyepieces	: Wide field eyepieces with field No. 22-25 mm
Stage	: Rectangular Mechanical Stage, Ceramic-coated coaxial stage with right hand lowdrive control with rotating mechanism and torque adjustment mechanism.
Focus	: Vertical stage movement 25mm stage stroke with coarse adjustment stopper. Torqueadjustment for coarse adjustment knobs. Stage mounting position variable, high sensitive fine focusing knob with minimum adjustment graduation should be 1µm.
Objectives	: Plan Achromat Objectives 4X/0.1Fluorescence/Semi Apochromat Phase Contrast Objectives 10X/0.3 Fluorescence /Semi Apochromat objective 20X/0.5, (spring)Fluorescence /Universal Plan Semi Apochromat Phase Contrast Objective 40X/0.75, (spring)Universal Plan Super Apochromat Objective 60X/1.35, (spring, oil) Universal Plan Super Apochromat Objective 100X/1.4, (spring, oil)

- Condenser** : Universal Turret Condenser NA 1.1 for Bright Field, Phase Contrast and DarkField Microscopy
- Fluorescence Unit** : Fluorescence with alignment free 130W mercury/LED illumination .Fluorescence axis should have six to eight cube filter turret with Zero Pixel Shift technology. Single narrow band Filters for UV, Blue & Green range excitation and one triple band filter for UV/Blue/Green excitationCooled Digital Monochrome
- Camera** : Monochrome camera, 1.4 or more Mega pixel for High Resolution Images,Progressive scan interline CCD, Pixel size 6.45um x 6.45um,1280 - 1392 x 1020- 1040 pixels,10fps frame rate, Mono, 12bit, includes camera head,1394 Fire wire digital interface, power supply. High-Speed Readout < Previewing & focusing in real time 10fps full resolution@12bits(165fps maximum with binning and ROI functions), Tight synchronization with flash , lamps automated filters, shutter & microscope stages. Linear Full Well 18,000e-(22,000e-with 2x2 binning), Dark current 1.5e /p/s .Minimizing thermal noise during low light, long exposure imaging, 2/3 inch optical format. 2/3 inch C mount adapter. System should be capable of handling brightfield and fluorescence object
- Magnification changer** : Having option of 1X, 1.25X, 1.6X and 2X.Imaging and analysis System: Image analysis Software for Measurements, EFI, Time lapse imaging, unmixing,colour merging for fluorescence maging, image stitching, image overlay, line profile, geometry/ combine/ filter processing and should be capable of driving the camera for capture of Images in Real Time.
- Basic Image Acquisition** : Live image acquisition: Captures live images in various formats, compares live image with previous snapshot, displays crosshair in live image, saves and loads acquisition settings to reproduce capture conditions. Movie: Creates .avi movie files. Camera settings Saves and loads camera settings to reproduce its snapshot conditions.
- Basic Image Tools** : Image history and properties: Displays image history and properties. Image navigator: Enables tool window for image navigation and zooming. Gallery view: Displays thumbnails of open images in a gallery. Layers: Enables viewing, extraction and deletion of single image layers. Adjust display: Adjust display settings manually or automatically. Combine RGB images: Enables to combine multiple RGB images in one multi-layer image. Image processing tools: Enables to adjust RGB, to adjust

intensities, to optimise contrast, to perform white balance, and to invert images. Projections of display: Calculates projections of image display (min, max, mean). Static annotations: Draws text, arrows, lines, rectangles and ellipses on the image.

- Basic Customisation : Saves and manages layouts: Creates, customises, saves and restores interface layouts. Dark skin: Interface skin with coloured icons against a dark background
- Basic Reporting : Data export and statistics: Exports measurement data to MS Excel and cellSens workbook format enables statistical analysis of measurements. Time lapse: Captures still images over time frequency.
- Extended Image Tools : Image geometry: Enables to mirror, rotate, resize and crop images, to shift channels, and to adjust image stacks (cellSens Dimension only). Image Enhancement: Edge detection filters (sobel, roberts and laplace); smoothing filters (rank, median, sigma, low pass and NxN); sharpen filters (sharpen and high pass), adjust intensity and contrast, shading correction and background subtraction and dynamic contrast enhancement (DCE). Morphological filters: erosion, dilation, top hat, open, close, gradient, skeleton and watershed. Mode : Enables to convert bit-depth and colour space. Automatic image calibration Automatically calibrates acquired images based on microscope configuration and current magnification reading from encoded or motorised nosepieces.
- Extended Measurement : Interactive measurements: Enables field of view measurements to measure distances, angles, rectangles, circles, ellipses and polygons: point, arbitrary line, perpendicular line, polyline, three points angle, four points angle, rectangle, rotated rectangle, three points circle, two points circle, rotated ellipse and closed polygon. Saves and loads measurement of an object from the image.
- Data Storage and Display System : Suitable latest branded system having Intel 3rd gen.corei7 Processor with 3.0MHz or more. HDD 750 GB or more, 6 GB RAM or more with 21" LED monitor, Windows 7, 1GB graphics card, USB mouse, Key Board, Fire wire port, on line UPS with 30 minutes to one hour backup.
- Warranty : Preferably 3 years.



3. BINOCULAR MICROSCOPE

Technical Specifications:-

- Optical System: Universal infinity system
- Illumination system: Built-in-transillumination system 0.5 LED
- Focussing: Course movement stroke-20mm, Fine focus graduation 2.5 micrometre
- Revolving Nose: Fixed quadruple nosepiece
- Stage: Wire movement mechanical fixed
- Observation tube: 30 degree incline binocular tube
- Condenser: Abbe type N.A:1.25
- Objective: 4 X, 10X, 40X, 100X
- Eye piece: 10 X
- Voltage: 100-240V
- Warranty: Preferably 3 years.

4. MONOCULAR MICROSCOPE

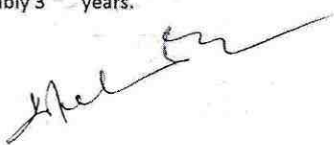
Technical specifications:-

- A compound microscope with a single eyepiece.
- Optical System: Universal infinity system
- Illumination system: Built-in-trans illumination system 0.5 LED
- Focussing: Course movement stroke-20mm, Fine focus graduation 2.5 micrometre
- Revolving Nose: Fixed quadruple nosepiece
- Stage: Wire movement mechanical fixed
- Condenser: Abbe type N.A:1.25
- Objective: 4 X, 10X, 40X, 100X
- Eye piece: 10 X
- Voltage: 100-240V
- Warranty: Preferably 3 years

5. ANAEROBIC APPARATUS.

Product Specification:-

Body Material	:	Seamless stainless steel
Knob	:	Single
Needle valves on lid	:	Two
Range	:	30 psi (- 1 kg/cm + 30 psi (2.1 kg/cm)
Features	:	A compound gauge (manometer) eliminates guesswork in monitoring cycle process, Semi Lucas type indication facility.
Warranty	:	Preferably 3 years.



6. BOD INCUBATOR

Technical Specifications:-

- Double walled construction, inner chamber stainless steel.
- Inside full length observation glass/transparent door.
- Size of inner chamber approximately 50 x 60 x 50 cm.
- Facility for adjustable shelves to convenient heights, 4-5 removable shelves of stainless steel/anodized aluminum to be supplied.
- Interior lighting facility, insulated door fitted with heavy hinges handle locking, mechanical door lock.
- Microprocessor controlled.
- Temperature ranges 5° to 60° with accuracy 0.5° C.
- Independent temperature measuring through PT 100 sensor with indicator LCD display.
- Recovery time short, precise regulation of temperature and acoustic alarm.
- Digital safety thermostat (class 3)
- Audiovisual alarm and sensor to cut off supply in case of temperature malfunction.
- Adjustable ventilation rate 10- 100 % thin form air circulation.
- Environmental factors: The unit shall be capable of operating continuously ambient temperature of 10 – 45°C and relative humidity of 15 – 95 %.
- Power supply: - Power input to be 220 – 240VAC, 50Hz.
- Resettable over current breaker shall be fitted for protection.
- Suitable UPS with maintenance free batteries for minimum one hour back-up should be supplied with the system.
- Warranty preferably 5 years.

General Specifications:

- Satisfactory working report of the quoted model from three reputed government institutes/hospitals should be included (within two years of submission of bid).
- All equipment's should specify Design qualifications, installation qualifications, and Operational Qualifications and Performance qualifications. Validation and calibration reports should have traceability towards applicable national/internationals standards.
- Original product catalogue should be provided by the firm. Necessary documents, technical write up in English shall be attached with the offer both in hard and soft copies. Performance, efficiency, others factors such as distortion etc. as applicable be also furnished.
- Installation: the bidder must arrange for the equipment to be installed by certified or qualified personnel; any prerequisites for installation to be communicated to the laboratory in advance. Onsite, in lab customer training to be provided. The equipment should be supplied with 2 meter cord at input and fitted with plugs of appropriate rating (5/15 Amp.)
- 5 years back to back warranty followed by 5 year CMC should be provided by the company and warranty should commence only after delivery of satisfactory working report.



7. WATER BATH

Technical specifications:-

- Stainless steel SS304 chamber interior
- Capacity: 15 litres
- Temperature range: 235 to 99.9 degree C
- Temperature Stability: ± 0.5 degree C
- Dimension: (335 X 408 X 280) mm
- RTD Temperature sensor
- PID Temperature controller
- Accurate temperature control
- Over temperature protection
- Thermostat equip with flowing water cooler
- Variable fluid level to allow different sample sizes without refilling or overflowing.
- Should have safety feature including audible alarm, adjustable digitable overtemperature protection, low level detection and high temperature cut-off.
- Warranty: Preferably 5 years.

8. MICROBIOLOGY MODELS & CHARTS :-

Technical specifications:-

- Life cycle of Plasmodium vivax
- Life cycle of Ancylostoma duodenale (Hookworm)
- Life cycle of Ascaris lumbricoides (Round worm)
- Life cycle of Taenia saginata (Beef tape worm)
- Life cycle of Taenia solium (Pork tape worm)
- Herpes simplex virus
- Hepatitis B virus
- Influenza virus
- Cultivation of virus in Egg – MB 309

Charts:-

- HIV Replication cycle
- Characteristics of sexually transmitted diseases (STD): Bacterial pathogens
- Characteristics of sexually transmitted diseases (STD): Fungi, protozoa & viruses
- Synthesis of a bacterial cell wall
- Comparison of Prokaryotic and eukaryotic cells
- Bacteria cell and Bacterial cell wall

9. DIGITAL WEIGHT BALANCE

Technical Specification:

Capacity : 20gm
Readability : 0.01mg



Range	:	1 microgram to 10 gram
Repeatability	:	0.02 mg
Linearity	:	0.04 mg
Response time	:	5-8 Sec
Display	:	Alpha numeric LCD
Calibration	:	Auto internal time and temperature control smart calibration.
Units of Measure	:	Gram, Milligram, Microgram.
Power supply	:	Should be adjustable with existing department power supply
Warranty	:	3 years.

11. BACTERIOLOGICAL INCUBATOR

Technical Specifications:

- Name of the Equipment: Micro Controller Based Bacteriological Incubator

Range	:	1 microgram to 10 gram
Repeatability	:	0.02 mg
Linearity	:	0.04 mg
Response time	:	5-8 Sec
Display	:	Alpha numeric LCD
Calibration	:	Auto internal time and temperature control smart calibration.
Units of Measure	:	Gram, Milligram, Microgram.
Power supply	:	Should be adjustable with existing department power supply
Warranty	:	3 years.

11. BACTERIOLOGICAL INCUBATOR

Technical Specifications:

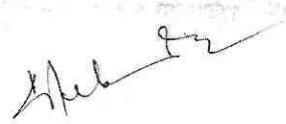
- Name of the Equipment: Micro Controller Based Bacteriological Incubator

- Temperature Range: 5°C above ambient to 60°C
- Temperature Accuracy: $\pm 0.5^\circ\text{C}$
- Temperature uniformity: Better Than $\pm 2^\circ\text{C}$
- Standard Models: Inner Stainless steel 304, 0.8 mm & Outer mild steel, 1.0 mm powder coated
- Capacity: 200 Ltrs.
- No. of Trays: 3
- No. of Doors: Single
- Internal Size (cms) (WxDxH): 43x40x60
- External Size (cms) (WxDxH) 58x72x129
- Control System: Micro controller based temperature indicator cum controller with Digital display and PT 100 sensor.
- PC Interface: Through RS-485
- Memory: 500 Records
- Alarm: Audio Visual Alarm if the temperature deviates from the preset temperature
- Heating System: U shaped S.S. Nichrome wire air heaters
- Air Circulation: Motor and blower arrangement to have uniformity of Temperature under Loaded condition.
- Insulation: 3" Thick CFC free PUF Insulation.
- Lighting: Interior illumination for working area.
- Observation Door: Inside see through unbreakable acrylic door
- Validation Port: 50 mm validation Port with silicone rubber seal to insert sensors for validation purpose.
- Trays: Specially designed solid stainless steel wire mesh trays ensure even temperature distribution
- Other: Castor wheels, MCB, Adjustable Tray Height arrangements. Heavy duty latch with lock & key
- Power: Works on 230 V AC single phase 50Hz.
- Safety feature: Additional safety thermostat to cut off the air heater in case of overshoot of temperature
- Certifications: ISO 9001: 2008, ISO 13485: 2012
- Documentation: LABTOP will provide IQ, OQ, PQ documents with Material Test Certificates and Calibration reports
- Warranty: 5 years.

12. REAL TIME PCR SYSTEM

Technical Specifications:

- Fully functional high throughput and fast Real-Time PCR system for qualitative and quantitative detection of nucleic acids, mutation screening and SNP analysis.
- It should be an open system capable of running different chemistries using TaqMan, Molecular Beacon, SYBR green etc.
- System should have 96 well block in plate format to accommodate 0.1/0.2 ml tubes/strips/plate.
- System should support the reaction volume less than 30 μl . The lesser will be preferred.
- Temperature range of thermal block should be preferably 4 to 99°C and temperature accuracy should be about ± 0.20 to 0.50°C .
- System should support fast PCR protocol with ramp rate of preferably $4^\circ\text{C}/\text{sec}$ or more.



- System should be capable of multiplexing with at least 5 different fluorescent reporters.
- System should be pre-calibrated for detecting at least five dyes (FAM/SYBR Green, VIC/JOE, TAMRA, Texas red & CY5 or similar wavelength fluorophores).
- It should have an LED or Tungsten Halogen excitation source with either photodiode or CCD or PMT detector. The technology should be such as to avoid cross talk between fluorophores in a multiplexing reaction.
- The software must allow analysis of multiple gene expression. The instrument software must be capable of detecting and analysing a different gene, SNP or pathogen target in every well of the 96-well plate. Software should support performing Absolute quantification, Relative quantification, Allelic Discrimination, Plus/Minus assays. Along with this system should be able to conduct High Resolution Melting (HRM) experiments for genotyping and mutation scanning experiments. The HRM software must be provided essentially along with quoted system.
- The vendor should have a functional laboratory and technical support team to support and troubleshoot problems.
- System should be supplied with three years warranty on all part including excitation source (LED/lamp) and on-demand repair services as and when required.
- Installation, testing, validation, and demonstration/technical presentation should be conducted. The vendor should provide comprehensive training on the operation of the instrument, chemistry options and software. This training should be provided free of cost with all the consumables required for demonstration.
- The equipment should be supplied along with 1.5 ton (5 STAR rating) split air-conditioning unit with appropriate stabilizer in order to maintain ambient temperature while the equipment is functioning.
- The following accessories must be supplied with the equipment:
- Suitable on line UPS with a minimum 60 minutes power back up on full load.
- A desktop computer of a reputed make having following configuration: Processor-Intel Core i7 3rd gen., 4GB RAM, 500 GB HDD and at least 23 inch flat screen LCD/LED monitor and a colour laser printer with a licensed Windows 7 professional OS and licensed original MS Office 2013.
- Start-up consumables (including plastic ware & chemicals) for 1000 reactions.
- Indian user's list for the quoted models along with complete contact details including telephone no. & e. mail should be provided.
- Technical features described above should exclusively be supported by authentic original illustrated company catalogue of the instrument/equipment quoted. Photocopy or computer print-out of catalogue may not be accepted.
- Vendor's business record is to be authenticated by producing Income Tax return for at least 3 consecutive previous years.
- Optional accessories: Spare light source (LED/Tungsten halogen lamp) should also be quoted separately as optional accessories.
- Warranty: 5 years.

13. PCR Thermal cycler

Technical Specifications

- Technical Specification
- 96 wellx0.2ml PCR tubes/one 96 well plate

- Gradient PCR= capable of testing 12 different temperatures simultaneously across a gradient range of 1-20 and a temperature gradient from 30-99°C, with minimum 0.1°C increment in gradient
- Peltier based heating and cooling,
- Thermo block made of silver
- Should be capable of testing temperatures at Denaturation, Annealing & Extension steps
- Block ramp rate: 5.0°C/Sec.
- Adjustable ramp rate
- Sample ramp rate: 4.4°C/S
- Temperature range 4-99°C/S
- Temperature accuracy: $\pm 0.2^\circ\text{C}$
- Temperature uniformity: $\pm 0.3^\circ\text{C}$ (20-72°C)
- Gradient technology should ensure identical ramp rates in both gradient and normal operations
- Should have Administrator and user login with or without PIN for enhanced security
- Inbuilt advance scheduling feature for users convenience will be a preference
- Customized programming allows a maximum of 20 steps and 99 cycles
- Programmed templates
- Programmable protocols, storage of minimum 1000 programmes
- Auto Restart facility with user defined time interval when power fails and resumes
- E-mail Notification
- Temperature control modes providing flexibility for different applications
- Adjustable user defined ramp rate to meet sensitive experimental conditions
- Lid temperature range of 33-110°C
- Display: LCD touch screen, about 8.5 in.
- Advanced security features
- Monitor should indicate the step, cycle and remaining runtime during the run
- Minimum two USB ports
- Ethernet port
- Log book function for error messages and new calibration
- Power save Standby function
- Should have calibration certificate from reputed international agencies
- Certificate from reputed organizations or institutions mentioning no hazardous chemicals are present in the instrument
- Compatible UPS should be provided with minimum 1 hour backup
- Minimum 1 year warranty
- AMC terms and conditions beyond the warranty period should be specified

14. Centrifuge (compatible) for PCR Strip Tubes

Technical Specifications:-

- Stepless speed regulator.
- Safety Lid interlock to prevent cover opening during centrifugation.
- Digital speed meter and 0-60 minutes digital countdown timer.
- Brushless Induction motor with frequency drive.
- Stable speed output even under unstable voltage condition.
- 7 segment LED display of speed (R-8C BL).

- Digital countdown timer.
- Safety lid interlock to prevent lid opening during centrifugation.
- Dynamic brake for quick deceleration.
- Imbalance & Inverter fault detection with auto shutdown.
- Minimum 1 year warranty
- AMC terms and conditions beyond the warranty period should be specified

15. VERTICAL AUTOCLAVE.

Technical Specifications:-

- Sterilization chamber volume of ≥ 70 litres.
- Sterilization chamber dimensions (width 30-40 cm. height 70-80 cm)
- Microcomputer controlled system.
- The sterilization chamber – triple walled unit constructed of corrosion resistant stainless steel (SS 304).
- Heating device (steam generator) horizontally mounted, preferable separated from the chamber with minimal water volume (4-7 litres)
- Air removed by upward displacement.
- Automatic water feed, connection to a demineralized water supply.
- Integrated pump to equalize pressure variations in external supply lines.
- Automatic lever control before, during and after the sterilization cycle.
- Low water level cut out device.
- LCD/LED Display for temperature, steam pressure, sterilization time, stage of cycle and warning/alarm checks along with control panel.
- Automatic sterilization system for unattended operation.
- Maximum operating temperature 134°C.
- Maximum operating pressure: 2.5 bar.
- Sterilization timer 1/250 minutes.
- The pressure gauge attached to the front side for easy check.
- A control panel with
 - Temperature setting keys to increase/decrease temperature.
 - Real time temperature display.
 - Graphical display which shows the progress of sterilization cycle throughout the process.
 - Time display and keys to set time.
- The instrument should have Mechanical Safety Devices:-
 - Over current protection.
 - Over temperature protection by automatic power cutoff.
 - Over pressure protection by automatic and manual safety valve.
- The instrument should have Safety Warning System/alarm.
 - Over temperature warning.
 - Sterilization fail warning.
 - Low water level.
- Supplied with two suitable stackable perforated stainless steel bucket with handle for sterilization.
- Supplied with an extra silicone or suitable gasket.
- Lid made of SS304 with insulation cover to prevent hot burns to user.
- Top opening lid, should have foot mediated opening facility also. Fast safety lid lock.

- Control lock-out switch that prevents starting a cycle if the door is not locked safely.
- Control that prevents opening the door until chamber is depressurized.
- Temperature dependent door locking system according to international standards.
- Exhaust valve knob and air release knob should be present.
- An exhaust bottle to recover and cool down the steam exhausted from the chamber. The steam should not be exhausted openly in the room.
- Warranty: 5 years.

16. Inspissator (Digital)

Technical Specifications:-

• Dimensions (h x d x w)	:	380 x 600 x 1040mm
• Temperature range	:	Ambient +5 to 100°C
• Standard temperature	:	85°C
• Uniformity	:	0.7°C (tray)
• Display	:	LED
• Display resolution	:	0.1°C
• Heat up time 20 to 85°C	:	3.5hrs
• Working area/tank opening	:	820 x 594
• Tank capacity (nominal)	:	45L
• Safety (over temperature protection)	:	Fixed cut-out
• Electrical power 230V 50Hz	:	1500W
• Electrical power 120V 60Hz	:	1400W
• Heater power 230V	:	1400W
• Heater power 120V	:	1300W
• Voltage V	:	120V or 230V
• Weight kg	:	43kg
• Warranty	:	Preferably 3 years.

17. Automated media preparatory and dispenser system

Technical Specifications:-

- Rapid preparation of variety of culture media with a capacity to prepare 1L – 8L with 50 to 400 plated at a time.
- Sterilization temp. of 95 degree to 130 degree with a dispensing temperature in range of 25 – 80 degree.
- Additional vent to add ingredients during the process.
- It should have capacity to store programs and monitor while in process.

- The plate pourer system should have a system e.g. UV light while filling to reduce risk of plate contamination and it should be a rapid process. There should be flexibility to the size of the plate to be used.
- Culture media dispensing should be possible in various sized of tubes, flasks, bottles etc. with no compromise to sterility, consistency and quality of the culture media.
- Warranty: 5 years.

Handwritten signatures:
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Hester
D. J.