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LIST OF EQUIPMENTS/ INSTRUMENTS/ MATERIAL/ FURNITUREE AND OTHER MATERIAL ETC. REQUIRED FOR ESTABLISHMENT OF STATE OF ART LABORATORIES

Sr. No.	Name of Instrument/ Equipment	Specification
1	**Autoclave Vertical Manual**	• Vertical Double wall design has single chamber for steam and water
		• Working chamber made of stainless steel LM 304 grade of 2mm thickness
		• Outer cover made of stainless steel 1mm thick
		• Lid, flange & bottom sheet also made of stainless steel. All joints argon welded
		• Joint less silicon gasket. Heavy duty industrial flange heater
		• Pressure range : 15 to 22 PSI, factory set at 15 PSI
		• Lid fitted pressure gauge 0-30 PSI, safety spring loaded pressure valve, and steam release valve
		• Hydraulically tested at 60PSI
		• Electrical : 230V / 15A / 50 Hz
		• Pressure manually maintained by a spring loaded valve, which blows open to release excess pressure beyond set value.
		• Supplied without Digital controller
		• Size of working chamber 14” x 22” i.e.52 liters
2	**Small Autoclave**	• Should be fully SS 304, seamless die pressed body and lid
		• Should have easy twist and lock lid, automatic purging
		• Should be supplied with dressing drum 270x220 mm and spare gasket
		• Capacity should be more than 15 liters, inner chamber size 300x230 mm
3	**Gel Documentation System**	• Gel documentation system for imaging DNA and RNA gels with in-built high contrast medical grade touch screen computer display with magnesium reinforced glass for robustness
		• Should have motorized zoom lens with automatic control of the camera, lens and lighting for an unrivalled ease of use.
		• Dark room with full slide out UV transilluminator on pull-out rails for comfortable

		work
		• UV safety shutoff with widely accessible door to handling gels while placing or moving gels on transilluminator table
		• Transilluminator should have Superbright technology so as to have publication quality gel image with no UV tube background noise
		• Scientific grade, zero defect CX5 camera is must with native image resolution of 2600 (H) x 1950 (V) yielding image resolution of 5 megapixels extendable to 20 megapixels
		• System should be capable of producing images of 16-bit – 65,536 grey levels
		• USB 3.0 interface for faster image transfer
		• Maximum field of view must be at least 26 x 21 cms
		• System should have 4-position filter wheel with F-590 emission filter for ethidium bromide, SYBR Green, SYBR Gold, Gel Red, Gel Green, Lumitein, SYPRO Ruby, etc.
		• System should have option for future upgrade for colorimetric gel imaging and for blue conversion screen
		• System should be supplied with multi user licensed analysis software for image enhancement, image analysis includes molecular weight calculation, band quantification, distance calculation.
		• Software should have Apps Studio, a complete library of applications to ensure reproducibility and ease of use.
		• 3D Dynamic Scan feature to understand saturation and to rule out artifacts is a must
		• System should be supplied with necessary desktop computer system.
4	**PCR system with flexibility , PCR setup and post PCR analysis**	• PCR system with flexibility to use 0.1 mL / 0.2 mL / 0.5 mL PCR tubes / 96-well PCR plate in the same block with no requirement to swap or change the block.
		• Preprogrammed PCR templates in addition to conventional protocol should include touchdown PCR, long range PCR, low volume PCR, nested PCR, Reverse transcription, etc.
		• Peltier technology based heating and cooling with patented Triple Circuit Technology, to ensure precise control of temperature
		• Temperature control range: from 4 °C to 99°C, with ramp rates of 3 °C/s (heating) & 2 °C/s (cooling)
		• Temperature Control Mode: Fast, Standard and Safe
		• Lid Temperature range: 37 - 110 °C

		• Block Temperature Accuracy: ± 0.2°C
		• Block Homogeneity:≤ ±0.3° C (20° C to 72° C); ≤ ± 0.4° C (95° C)
		• Lid descent and closing pressure - Flexlid technology with Thermal sample Protection
		• Intuitive Graphic programming with larger display
		• Administrator and user login with or without PIN for enhanced security
		• Booking schedule allow users to reserve the instrument in advance
		• Time or Temperature increment with cycles in PCR program
		• Adjustable ramp rate from 0.1° C to 3.0° C to meet critical amplification conditions
		• Customized programming allows a maximum of 20 steps and 99 cycles
		• Auto Restart facility with user defined time interval when power fails and resumes
		• Instrument status indicates the step, cycle and remaining runtime during the run
		• Runtime display shows remaining time in larger font for better view from distance
		• Two USB ports: for Protocol transfer, Self-test, USB, printer / mouse
		• Log book function for error messages and new calibration
		• E-mail Notification
		• Power save Standby function
		• Cooling vents at bottom and rear allow placing other instruments in limited bench space
		• Option to connect up to any of TWO Mastercycler nexus eco variants in future for ultimate throughput
		• Optional Self-test dongle to check functionality of all 6 peltier elements
		• Interface: USB, Ethernet, CAN in, CAN out
		• Calibration of PCR machine is to be according to NIST (USA), DKD/PTB (Germany) UKAS/NPL (UK), UL/cUL listed
		• Compact centrifuge with rotor to handle 1.5 mL tubes and adapters for 0.2 mL PCR tubes to use in the same rotor, which can go up to 13,400 rpm or 12,000 g.
		• Should include PCR reaction preparatory consumables such as 1.5 mL Safe-lock tubes and 0.2 mL PCR tubes
		• Should include pipette one each to handle volume ranges, 2 – 20 µL and 20 - 200µL along with appropriate & compatible tips.
		• Supplied pipettes should have spring loaded tip cone technology for perfect fit of the

		tips to ensure volume accuracy even if used by different users
		• Should supply IsoTherm system to place 1.5 mL tubes and PCR cooler to hold 0.2 mL PCR tubes in order to prevent PCR reagents from temperature influence
		• Must provide compact electrophoresis unit along with power
		• Should supply UV-transilluminator for viewing agarose gel and a camera to capture the gel profile
		• Should supply reagents for 50 PCR reactions
5	**Gradient Thermal Cycler**	• Maximum block ramp rate :4°C/sec
		• Maximum sample ramp rate :3°C/sec
		• Temperature accuracy :±0.25°C (35 to 99.9°C)
		• Temperature range for protocol run :0°C to 100.0°C
		• Temperature non-uniformity :<0.5°C
		• Dimensions Height: 21 cm (8.27 in) Width: 24.0 cm (9.45 in) Depth: 46 cm (18.11 in) • Weight 8.5 kg (18.3 lb)
		• PCR volume range • Supported: 10 - 100 µL
		• Settable: 1 - 100 µL
		• Instrument memory USB, on-board
		• Display interface: 8" color TFT LCD
		• Power :100-240 V, 50-60 Hz Max: 600 W
		• VeriFlex™ blocks • 3 VeriFlex™ zones with better than gradient feature
		• Supported 10°C (5°C zone-to-zone)
		• Settable :20°C (10°C zone-to-zone)
		• Simulation mode availability to replicate other PCR brand thermal and ramping conditions.
		• Ambient humidity 15% - 80% Relative Humidity, non-condensing (acceptable range) with Preloaded Protocols
6	**UV-VIS Double**	• Photometric System Double beam optics

	Beam Spectrophotometer	• Spectral Band pass width < 1.0nm
		• Wavelength Range 190nm to 1100nm
		• Wavelength Accuracy < ± 0.3nm
		• Wavelength Reproducibility < ± 0.1nm
		• Wavelength Setting 0.1nm
		• Wavelength Scanning Speed Max.3000nm/min
		• Photometric Range -0.5 to 4.0ABS
		• Photometric Accuracy ± 0.004ABS (at 1.0ABS)
		• Photometric Reproducibility ± 0.002ABS
		• Baseline Flatness < ± 0.001ABS (200nm to 1100nm)
		• Noise Level < 0.001A
		• Stability ±0.002 A/hr
		• Light Source Tungsten-halogen lamp and/or deuterium lamp
		• Lamp Change Wavelength 340nm to 410nm (default 370nm) include auto position system
		• Monochrome Modified czemy-tumer type with 1200 lines/mm blazed grating
		• Detector Silicone photodiode
		• Power requirement AC 220V, 50/60Hz
7	**UV Vis Spectrophotometer Single Beam**	• Optics:-Complete mirror optics with, 1200 grooves/mm, Grating Czerny turner mount
		• Wavelength Range – 200 to 1000nm
		• Readout – electronic digital counter 0.1nm increments
		• Accuracy - +/-1nm
		• Repeatability – 0.5nm
		• Bandwidth – 2nm (constant throughout the spectral range)
		• Photometric Range : 0.2 to 2.000 Abs. 0-1999 concentration unit 0 - 100% T
		• Accuracy : +-0.005 Abs at 1 Abs
		• Repeatability : +-0.002 Abs at 1 Abs
		• Stray Light:- Less than 0.1% T at 220nm and 370nm
		• Source:- Tungsten-Halogen lamp/ Deuterium lamp,

		• Detector:-Wide range, Solid state silicon Photodiode
		• Filters :-Built – in filter wheel with four filters
		• Sample holder :- Manual 4-positioning sample changer for 10mm cuvettes cells
		• Power :-230V = 10%, 50Hz, 200VA
		• Accessories :- Two Matched 10mm path length Quartz cuvettes
8	**pH Meter**	• Benchtop meter with pH/mV module and stand
		• Includes pH module, electrode stand, universal power adapter, literature CD, printed quick start guide, computer interface cable and meter test certificate
		• Range (pH) -2.000 to 20.000pH
		• Resolution (pH) 0.1, 0.01, 0.001pH
		• Accuracy (pH) ±0.002pH
		• Range (mV) ±2000.0mV
		• Range (Relative mV) ±2000.0mV
		• Range (ORP) ±2000.0mV
		• Resolution (mV) 0.1mV
		• Accuracy (mV) ±0.2 mV or ±0.05% of reading whichever is greater
		• Calibration pH with calibration editing option, relative mV (RmV), ORP and temperature
		• Calibration Points (pH) 1 to 6
		• Calibration Points 1 point relative mV (RmV) mode, 1 point ORP mode
		• Isopotential Point 7.000pH (adjustable)
		• Range (Temperature) -5.0° to 105.0° C, 22.0° to 221.0° F
		• Resolution (Temperature) 0.1°C, 0.1°F
		• Accuracy (Temperature) ±0.1°C
		• Temperature Selection- Manual or automatic with ATC temperature probe
		• Temperature Probe Calibration- 1 point temperature offset calibration
		• Channels- 4 - customizable with modules
		• Display Type - Color graphic LCD with user-customizable options
		• Backlight Option

		• Keypad- Numeric with menu-specific function keys and dual purpose scroll/shortcut keys
		• Measurement Modes- pH, mV, relative mV (RmV) or ORP with temperature
		• Stability- Selectable fast, medium, slow or Smart Stability setting; Selectable off or Automatic Smart averaging setting
		• Transfer single, range or all data points to printer or computer
		• Automatic data logging with Auto-Read, Timed and Single Shot
9	**Binocular Microscope**	• Ergonomically designed rugged stand for longtime comfortable usage.
		• Carrying handle should be built-into the stand.
		• Microscope should be with infinity optics with anti-fungus treatment. • Built-in Transmitted light illumination with 6V 30W halogen lamp with easy lamp changing module and should have provision to replace the same with white light long lasting LED illumination by the user.
		• External main power supply with electronic main control from 110V to 240V.
		• Back tilted Quadruple revolving nosepiece with precision click stops confirming paracentric field of view for all objectives.
		• ABBE Condenser with numerical aperture 1.25 with built-in aperture diaphragm.
		• Slide Stage should have ball bearing specimen holder and should have right handed coaxial X and Y movement.
		• The travelling range of the stage should be 75 x 30mm with vernier marking.
		• The stage focus movement range should be 15mm or more with coaxial coarse and fine focus knobs on either side of the stand.
		• The minimum step size of the fine focus should be 2 micron or better.
		• Focus stop mechanism to protect slide damage should be available.
		• Inclined Binocular tube with 30deg swiveling eyepiece tube and adjustable viewing height of atleast 40mm (Siedentopf tube, viewing heights 385 to 425mm).
		• Interpupillary distance should be variable between 50 mm to 75mm or better.
		• Binocular tube should be fully made of metallic and should not have any plastic covers.
		• Paired Eyepieces with 10x magnification, field of view 18mm and should be suitable for spectacle wearers.
		• Both eyepieces should be with front focusable eye lenses with +5 dioptre correction.

		• High contrast Fully Plan Achromatic objectives, 4x/0.10, 10x/0.25, 40x/0.65 and 100x/1.25 oil. 40x and 100x front optics are spring loaded.
		• All the objectives should be of parafocal corrected for easy specimen focusing in various magnifications.
		• Microscope should be upgradeable for Dark field, Phase contrast and incident light LED fluorescence techniques
		• Microscope should include daylight and green filters, immersion oil and dust cover.
10	**Trinocular Research Microscope**	• Epi-fluorescence with LED Illuminator and Transmitted Light, Bright field, Dark field and Phase contrast studies with Universal Condenser and dedicated Digital Camera with Imaging Software.
		• High stability stand with rust proof and acid proof painting.
		• High quality optics with latest Infinity Colour Corrected System (IC2S) for high brightness, rich contrast and superb colour correction. All optics coated with anti-reflection / anti-fungal treatment.
		• Quintuple revolving reverse looking nosepiece should accommodate at least 5 objectives with precision click stops, with ribbed grip for easy rotation.
		• Modular Illumination of minimum 12V/35W Halogen illumination with “pre-centered” lamp mount for easy lamp changing (should be capable of LED illuminator)
		• Built-in “variable” field diaphragm with full Koehler-illumination setting and filter clamping device to mount filters on the field diaphragm.
		• Special white balance filter to provide white light for visual observation available as an option.
		• Abbe Condenser with aspherical lens, N.A. 0.9/1.25, with focussing and centering provisions.
		• Mechanical stage , hard coat anodized surface for scratch free movement, with right handed co-axial low positioned X-Y scanning control knobs with scanning range 75x30 mm, vernier graduation, with right handed spring loaded specimen holder.
		• 30° inclined ICS optics Trinocular tube, 360° rotatable, suitable for eyepieces upto field of view 20mm/22mm. I.P.D. range 55-75mm and eyepiece tubes can be swivelled either way for comfortable viewing angle of the operator.
		• 100% perfect “Koehler Illumination” setting is possible due to focussable & centering condenser and variable field diaphragm

		• Eyepieces with 10x magnification, field of view min 20mm suitable for spectacle wearers with front soft rubber cup. Focusable eyepieces are with ± 5 diopter adjustment.
		• High contrast Plan-achromatic ICS objectives "A-Plan", 10x/0.25, 20x/0.45, 40x/0.65 and 100x/1.25 oil. 40x and 100x front optics are spring loaded for BF, DF, Phase and Fluorscence application.
		• LED illumination for Fluorescence with 4-position reflector turret and easy exchange of fluorescence filters by Push & Click method. Fluorescence filters for FITC and DAPI with appropriate LED modules.
		• Dedicated micro-imaging CCD camera with min 5 Mega Pixel resolution for brightfield, darkfield, phase and fluorescence imaging with appropriate adoptor and PC/Laptop.
		• Digital Microscopy Camera including Software driver, FireWire interface, interface cable. Number of Pixels should be minimum 2452 (H) x 2056 (V) = 5.0 Mega pixel color. Pixel size not less than 3.45 µm x 3.45 µm. Chip size not less than 2/3". Frame rate should be minimum 9 fps at maximum resolution.
		• Camera software should be useful with following features
		• Graphical user interface can be switched between bright or dark design to adapt to ambient brightness. User interface offers stepless scaling and zooming for optimal adjustment to the screen size. Interactive measurement of length, contour-based
		• measurement data (area, box perimeter, gray values), angle. Management, visualization and printing of data and images.
11	**Stereo zoom microscope**	• Optical system should be universal infinity corrected.
		• Zoom ratio should be better with magnification range of 6 X to 150 X or better.
		• Should possess of coarse and fine focusing unit.
		• Should have plan apochromat 1x objective and optical resolution of 850 to 100 lines.
		• Stage should include frosted filters.
		• Base should transmit with dark field (5.5V to 6.5V) and bright field (25V to 35V) intensity.
		• Observation tube should consist of widefield trinocular head with computer and photograph unit.
12	**Hot Air Oven**	• Glass window in – built into the door
		• Forced convection design ensures a high level of control accuracy and uniformity.

		• Automatic cut off of heater & blower when door opened.
		• Digital PID temperature controller with timer, alarms and auto tuning.
		• Non contact type door switch.
		• Aero dynamic internal design for achieving horizontal air circulation.
		• Solid and plain bottom without electrical.
		• Seamless round cornered edge of internal chamber ensures easy cleaning & prevents any leakage.
		• Supplied with stainless steel wire mesh shelves. Shelf height adjustable in 25mm steps.
		• Temp range : $+50^0$C to 200^0C
		• Control Accuracy : +/-0.2^0C
		• CE certified
		• Capacity : 180 Lit
		• Shelves : 3
13	**Bacteriological Incubator**	• Digital PID temperature controller with timer, Alarm & auto tuning.
		• Controller: Digital PID Control
		• Over temperature safety protection.
		• Internal Circulating fan for better control
		• Internal chamber of SS, Outer MS- Epoxy Coated
		• Round cornered chamber
		• Transparent tempered safety inner glass door
		• Shelf height adjustable in 25mm increments
		• Seamless round cornered edge of internal chamber ensures easy cleaning & prevents any leakage.
		• Temp range: Ambient + 5^oC to 70^oC
		• Accuracy: ±0.2°C
		• Capacity : 90 lit
14	**Ice Flaking Machine**	• Capacity – 30kg/24hrs.
		• CFC free refrigeration.
		• Stainless steel construction.

		• Continuous Ice Flakes output.
		• Fully automatic microprocessor control.
		• Noiseless operation.
		• Overload protection.
		• Low water level indication.
15	**Analytical Balance**	• India Factory verification
		• Draft shield – Manual
		• Leveling – Manual
		• Colored Touchscreen Display
		• Adjustment With External Weights
		• Weighing capacity - 220 g
		• Repeatability - 0.1 mg
		• Readability - 0.1 mg
		• Standard laboratory applications – Weighing, Density, Percentage, Check Weighing, Peak Hold, Counting, Unstable Conditions, Animal Weighing
		• Weighing units - g, ct, mom, kg, lb, oz, ozt, tlh, tls, tlt, GN, dwt, mg, parts | lb, tlc, Kt, tol, bat, MS, N
		• Glass parts of the draft shield are coated to reduce electrostatic influences, In-use cover, Dust cover for balances with draft shield
		• Direct transfer to Windows applications
		• Programmable interval for data output
		• Data transfer protocols SBI - table format - text format
		• Mini USB Interface
		• Typical stabilization time 2s
16	**Centrifuge (Refrigirated)**	• Maximum Speed of 30,130 x g /17500 rpm, with a brushless motor
		• Temperature range should be from -11°C to 40°C, should be able to maintain 4°C at maximum Speed.
		• It should be possible to use aerosol tight rotor.
		• Instrument should be able to accommodate 48 number of 1.5/2ml tubes.
		• Instrument should have an in-built condensate drain to prevent water accumulation.

		• It should be possible to perform a fast pre-cooling of the instrument using a dedicated Fast Temp function.
		• It should be possible to program fast cooling with preset date and time.
		• It should be possible to store 50 programs with 5 quick access program keys.
		• Speed setting should be possible in both rpm and rcf.
		• Should possess a separate short spin key for brief spin.
		• It should be possible to program compressor shut off after 8 hrs of non usage of the centrifuge.
		• Should have the flexibility to accommodate rotors for different formats of tubes starting from 0.2ml PCR tubes up to spin column tubes.
		• Instrument should have a dedicated rotor for 5 ml tubes to accommodate 5ml conical tubes.
		• 5ml conical tubes should also be supplied.
		• Instrument should have dedicated rotors for 15/50ml Conical tubes and Micro titer plates.
		• Instrument should have automatic rotor recognition facility to automatically recognize and set maximum speeds upon rotor change.
		• Rotor lids should have a QuickLock-system for secure lid closing and opening.
		• It should be possible to operate the centrifuge at set rpm, for short spin protocols.
17	**Refrigerated Incubator Shaker**	• Temperature range: +5 deg to 60 Deg.
		• Volume : up to 80 L.
		• Temperature accuracy: +/- 0.1 @ 38 deg.
		• Uniformity: +/- 0.1 @ 38 deg.
		• Motion type: Orbital or Reciprocating type (selectable).
		• Frequency: 10 – 300 rpm.
		• Timer: 10 sec – 999 Hr 59 min 59 Sec.
		• Microprocessor based PID control/ Auto tuning / Calibration.
		• Over temperature limiter / Door opening alarm.
		• Digital LED display for temperature (0.1 Deg Resolution) Speed, and shaking motion.
		• Brush less DC motor.

		• High velocity fan for rapid thermal recovery and uniformity.
		• Safety features: 1. Self protecting cut off indication. 2. System should have logical safety feature. 3. Time setting function for automated run/off. 4. Door opening alarm.
		• Electrical requirements: 230 V, 50/60 Hz.
		• Accessories: 1. Platform for incubator shaker. 2. Spring wire Rack 3. Rubber mat and sticky pad 4. With calmps for 1000ml, 500ml, 250 ml conical flask.
18	**Rotary Shaker**	• The unit should have variable speed from 20RPM to 300 RPM, Digital speed display, shaking aplitude should be 40mm.
		• Should have universal platform to accommodate interchangeable clamps, automatic restart at preset.
		• Platform size should be 24”x24”.
		• Clamps should be quoted with the equipment.
19	**Multi wavelength scan ELISA reader**	• A spectral scanning unit for UV-visible- Near IR wavelength range, able to measure cuvette, 96 & 384 microwell plate format and for low volume sample plate.
		• A monochromator based wavelength selection using Xenon Flash lamp as light source for better performance.
		• Instrument is able to provide the wavelength range from 200nm to 1000nm with 1 nm steps.
		• Spectral scanning speed: 10 sec from 200 to 1000 nm with 1 nm steps per sample.
		• Wavelength accuracy: 2 nm
		• Wavelength repeatability: 0.2 nm
		• Bandwidth: < 2.5 nm
		• Read-out range: Up to 4 Abs
		• Stray Light: 0.05% @ 230nm
		• The instrument should have inbuilt incubation and linear shaking options for bio assays etc.

		• Incubation temperature: from ambient +2 ^{0}C to +45 ^{0}C.
		• Measurement speed should be 6 sec. for 96 well and 10 sec. for 384 well plate.
		• System should able to run in stand-alone mode using 4.5 inch color display and keypad.
		• System should able to run with computer & software controlled mode.
		• The instrument should have a memory of 99 inbuilt protocols in stand-alone mode.
		• The instrument should have 2 USB ports, one for the easy data transfer and another to connect printer directly to the unit.
		• System should have Power Save function for reduced energy consumption when the instrument is 'on' but not in use.
		• Instrument should have upgradation option for measuring accessory plate used for 16 low volume samples of 2µl-10µl , in case of DNA/RNA estimation.
		• Multiple Software language versions.
		• Data Analysis Software should be supplied with the instrument and has unlimited user system license.
		• Software should have option for area selection. i. e different protocols at different area of the same plate.
		• Database based software to run backups of all data, restore back up data (in case of hardware failure of original computer).
		• Spectral scanning of all 96 samples or 384 samples should be able to view in single graph plot.
		• Single software program should allow any number of measurement steps within the program.
		• Software feature should include , calibration curve fit , parallel line analysis , user defined equations etc.
20	**Walk In Chamber**	• The unit should be microprocessor based auto tuning PID Controller provided for precise control of temperature and humidity.
		• Auto switch over to standby sensor in case of controlling sensor failure.
		• Internal volume more than 10000 Liters
		• No of shelves 32
		• Internal Dimension – 200x200x250cm
		• Internal Body Material – SS 304 Grade

		• External Body Material – Powder coated CRCA steel
		• Insulation should be minimum 80 mm, CFC free polyurethane foam
		• Illumination should be florescent lights
		• Control should be microprocessor based and large 4" LCD display, with audio visual alarm, door open alarm, temp 20C to 60C, +/- 1^0C
		• Humidity should be 40% to 95%, +/-3% RH
21	**Rocking shaker**	• Rocking shaker is used for staining and destaining gels, hybridization procedures and blotting techniques.
		• All the moving parts are fitted with bearings for quiet, trouble free and smooth operation.
		• Speed – 10-50RPM
		• Time – 99 hrs 99 mins
		• Maximum load – 10kgs
		• Power – AC 230V, 50Hz
22	**Water purification system**	• Tap to ultra pure water system – UV/UF minimum 3 LPH.
		• Three stage pretreatment system with 10, 5 and 1 micron spun filters with activated carbon prefilter 5 micron.
		• Should produce pure and ultra pure water from tap water for analytical applications.
		• Should be able to dispense Type I water from tap and Type II water from tank.
		• It should be single stage system to produce bacteria free ultrapure water.
		• Should have RO, DI, UV and Ultra filter in single unit.
		• It should have a integrated 6L polyethylene food grade, opaque conical bottom tank with sterile vent filter to prevent contamination by microorganisms in the environment.
		• It should have recirculation facility to maintain consistent peak water purity.
		• It should have cartridge change indicator.
		• The production rate of the unit should be 3 L/Hr and should have provision for upgradation to higher volumes.
		• The dispense rate should be 1 L/min.
		• Output water quality should be:
		• Flow rate – 3 Ltrs./Hr. @ 250C

		• Dispensing rate – 1.0 L/min.
		• Type 1 water quality – 18.2 MΩ – cm @ 250C
		• Type 2 water quality – 10 – 15 MΩ – cm @ 250C
		• TOC – 1-5 ppb
		• Bacteria - < 1 CFU/ml
		• Endotoxin - < 0.005 EU/ml.
		• pH – Effectively neutral.
23	**Culture racks for tissue culture**	• Executive: For producing Circadian rhythms tissue culture, biotechnology & allied works, with latest Electronic Ballast to produce excellent simulated natural light.
		• Size of Racks: Height of rack 152 cm (5'). Width 127cm (4'.2")
		• Shelve dimension: 122 × 45 cm (50"×18")
		• Shelf to shelf distance: 35 cm (15")
		• Shelf Color: Square M.S. pipe white shade powder coating finish with anti-corrosive and humidity resistant.
		• Shelf Material: 3mm Hylem sheet.
		• Shelves: illuminated shelves in one rack are: 04nos.
		• Total no. of shelves (including top) in one rack: 05 nos.
		• Fluorescent Tube lights: Four 40W tube lights (Philips) in each shelf of each rack, with 2 nos. of electronic ballast chokes; one is for operating two tubes. Total no. of tube lights in one rack: 16 nos. with electronic ballasts = 8 nos.
		• One mains switch for each castor rack.
		• One separate switch is provided for every 2 tubes.
		• One fuse for one rack.
		• Four castor wheels in a rack for easy movability.
		• Timer for each rack.
		• Side holder rods, on each shelf prevent the bottles etc. from falling from the three sides of a shelf, i.e. On the left, back & right.
		• Front side is used for keeping or removing the bottles etc.
24	**Air curtain (4 feet)**	• Should be operating on single phase.
		• Should be universal models.

		• Size should be available in 4 feet.
		• Material construction should be M.S. CRCA / S.S 304.
25	**Air curtain (6 feet)**	• Should be operating on single phase.
		• Should be universal models.
		• Size should be available in 6 feet.
		• Material construction should be M.S. CRCA / S.S 304.
26	**BOD Incubator**	• The construction should be double walled with PUF insulation provided with door having locking arrangement and inner glass door.
		• Temperature range : 5.0 ℃ to 60.0 ℃.
		• Temperature resolution: 0.1 ℃ Temperature accuracy ±0.2° C.
		• Temperature uniformity: ±1℃.
		• Temperature Control : Microprocessor based PID Control. With Auto Tune CE Marked.
		• Temperature sensor accuracy : ±0.25 ℃.
		• Temperature Display : Digital LED 3½ digit.
		• Air circulation : Flange motor with impeller / blower.
		• Heating : 'U' Shaped Nichrome Wire heater in SS Sheathing.
		• Cooling: CFC Free Copeland Make compressor utilizing R 134A eco friendly refrigerant, with condenser, motor, relay complete unit Copeland Make.
		• Chamber illumination: Fluorescent light with door switch.
		• Feet : Castor wheels.
		• Trays : SS wire mesh heavy duty.
		• Electrical: 230V / 15A / 50 Hz.
		• Volume more than 300 Liters.
27	**Orbital Shaking Incubator**	• Temperature range: +5 deg to 60 Deg
		• Volume : min 80 LTS
		• Temperature accuracy: +/- 0.1 @ 38 deg
		• Uniformity: +/- 0.1 @ 38 deg
		• Motion type: Orbital or Reciprocating type (selectable)
		• Frequency: 10 – 300 rpm
		• Timer: 10 sec – 999 Hr 59 min 59 Sec

		• Microprocessor based PID control/ Auto tuning / Calibration
		• Over temperature limiter / Door opening alarm
		• Digital LED display for temperature (0.1 Deg Resolution) Speed, and shaking motion.
		• Adjustable fan speeds.
		• Brush less DC motor
		• High velocity fan for rapid thermal recovery and uniformity.
		• Safety features: 1. Self protecting cut off indication 2. System should have logical safety feature 3. Time setting function for automated run/off 4. Door opening alarm
		• Electrical requirements: 230 V, 50/60 Hz.
		• Accessories: 1. Platform for incubator shaker 2. Spring wire Rack 3. Rubber mat and sticky pad 4. With calmps for 1000ml, 500ml, 250 ml conical flask.
28	**Leaf Area Meter**	• Non-destructive leaf area measurement in the field
		• Displays and stores individual leaf area, accumulated area, leaf length, average width, maximum width
		• Data storage for up to 1,00,000 individual leaf measurements
		• Lightweight for portability
		• Precise measurement of perforated and irregular margin leaves
		• Easily combined with a belt conveyer system for lab use
		• Simple Windows based software for file transfer and real-time data collection
29	**Chlorophyll Content Meter**	• Should measures chlorophyll content of plants to reduce the risk of yield-limiting deficiencies or costly overfertilizing.
		• Should quantify subtle changes or trends in plant health long before they’re visible to the human eye.
		• Non-invasive measurement; simply clamp the meter over leafy tissue, and receive an indexed chlorophyll content reading in less than 5 seconds.

30	**-80^0 C Deep Freeze Along with CO_2 module**	• Upright ultra-low freezer should be of 400 Liters capacity.
		• System should have operating temperature from-50°C up to -86°C with 1°C increment .
		• System must be fully functional in operating temperature range (ambient Temperature) from 10°C upto 32°C.
		• Fully programmable microprocessor controlled with membrane keypad and eye level control panel.
		• Construction should be of Polyurethane foam (130mm thick) insulation.
		• Inner door should have silicone seal to prevent temperature loss and Outer door should have safe silicone triple point seal.
		• Freezer should have 5 Compartment with five inner doors.
		• Freezers should have heated air vent and front panel air filter.
		• Should have security keyed locks on the outer doors and lids keep out unauthorized users.
		• Audible and visible alarms for temperature, power failure, system failure, battery low etc. and it also have remote alarm port for connection to an auto dialer.
		• Freezer must use CFC-FREE, HCFC-FREE nonflammable refrigerants, and refrigeration system must be energy efficient and hermetically sealed two stage cascade refrigeration system.
		• Compressor should be capable to run any voltage between 190 – 270V.
		• Freezer must have ISO 9001 standard quality test requirements and IEC 61010 Electrical safety CE & UL certified.
		• Freezer should have efficient power consumption in the range of 10 to 11 kWh/day.
		• Freezer should have electric supply of 230v/50hz, 10 amps.
		• Freezer should be supplied with 5KVA voltage stabilizer.
		• Module for attachment of CO2 cylinder to minus 80 degree celceus freeze to keep it cool during power failure along with regulator
31	**Media Dispenser**	• Complete Stainless Steel Body
		• Internal Tank : Complete Stainless Steel (Hot & Cold Water Tank)
		• Switches : On / Off Switch
		• Tap: 2 Tap
		• Lock : Child Lock

		• Extra Cabinet: Hidden Bottle Storage Cabinet
32	**Homogeniser for grinding, mixing, disruption small amounts of sample**	• Application for Size Reduction, Mixing, Homogenization cell disruption.
		• System must be used for pulverization and homogenization.
		• Safe wet grinding without loss of material with screw – top grinding jars.
		• Material feed size: up to 8mm.
		• Typical mean grinding time should be within 2 minutes.
		• Dry grinding should be possible
		• Wet grinding must be possible with required suitable jar.
		• Cryogenic grinding attachments should be provided for heat sensitive samples.
		• Self centering clamping device must be included.
		• No. of grinding station: 2.
		• Accessories: 1. Grinding jar of 50ml, (35 and 25 ml as optional) screw top design: 2 Nos. each 2. Grinding ball, Stainless Steel 25 Ø mm : 2 No 3. Grinding ball, Stainless Steel 15 Ø mm : 2 No 4. Grinding ball, Stainless Steel 20 Ø mm : 2 No 5. Cryo Kit (Should include: 2 insulated containers:1& 4 litres, 2 pair of grinding jar tongs,1 pair of safety glasses):1 set..
33	**Microprocessor controlled floor standing ultracentrifuge with accessories**	• Maximum Speed: 80,000 rpm or more.
		• Speed Control Accuracy: 10 rpm Maximum RCF: 600,000 g (Approx.)
		• Maximum Capacity: 1.5 litre
		• Tube volume range: 1.5 ml – 250 ml
		• Set Temperature: 0 to 4^0C
		• Ambient Temperature: 10 to 35^0C
		• Cooling System: CFC/ HCFC free
		• Programmability: 20 or more with step run facility
		• Power: 210-240 VAC, 50 Hz, 30 A.
		• Machine should have advanced features like eye-balancing of samples, delayed start, dual display of „Run‟ & „Set‟ parameters, data entry through both key pad & touch pad, RPM/ RCF mode of operation,

		• Fiberlite Fixed Angle Rotors (24 x 1.5ml) RPM 50,000 ,RCF 280000 ,K factor 33 ,Tube Angle 45 Also quote other rotars for 5-50 ml tube with tubes
34	**Green House**	• Size: 50 ft x 20 ft x 11 ft : 8ft (L x W x H height at the center: on sides)
		• Roof : Hut shape/Dome with Buffer room – 5ft x 6ft x 8ft, Sketch drawing and design should be attached.
		• Civil Works : CC foundation, Brick wall 2 feet below and 2 feet above ground level, duly plastered.
		• Base PCC 3" thick 18" wide , 13" wide 4" high first base line , then 9"wide second base line, Frame base block height 3"x 9"x 9" CC block at equal distance.
		• Floor: Out Side of green house made of crushed bricks with graded stone (Rodi) which is further flushed with 4:3:1 (Rodi:sand:cement) & Inner side floor is natural.
		• Single central path way is required inside. Infra structure : GI (47 mm x 47mm ± 2mm) ISI standard IS 1239 class B Super Structure: GI (47 mm x 47mm ± 2mm) ISI standard IS 1239 class B anti-corrosive, humidity resistant square pipe.
		• Pipe to pipe distance 3"2" for maximum wind load conditions with Anodised Aluminium strips duly treated with necessary fastening accessories and bolts.
		• Glazing / Cladding : High quality UV stabilized 50 % Polycarbonate sheet (Luxan) 6mm thick.
		• The polycarbonate sheet should be fixed with the aluminium strips. Doors: The door with flush door opening (Door size : 6"3" x 3") of Anodised Aluminum section with Polycarbonate sheet 6 mm thick as cladding material with lock system.
		• Shading: 75% UV stabilized Agro shading net, Green color shading net above the polycarbonate roof with suitable 7 metal roof arrangement for fixing shade net at the height of minimum one fit above polycarbonate roof with moving arrangement.
		• Cooling System Should have closing and opening type windows to escape hot air on the top centre of house.
		• Evaporative Cooling System (ECS) : Fan & Pad system with Cellulose Pads 100 mm thick.
		• Pad Size : 20" x 5". Along with water softner and filtration unit to prolong the life of the pad.
		• On opposite wall heavy duty Slow Speed Axial Flow Fans 48" Single phase (with GE/CG motor) with aluminium louvered covering, The internal & external surface area of the Fan and pad are covered with filter screen of 40 x 40 mesh Nylon mesh covering

		cooling pads.
		• Cement underground water storage tank of 10000 liter capacity with metal door opening with lock and key arrangement, 1 HP Submersible Texmo / Crompton greaves pump (ISI make), GI Tray, Filter, water Distribution system and other accessories.
		• Lighting System Lighting System: Four tube lights on two walls inside and four tubelights on four corner of greenhouse on outerside required.
		• Humidity System Humidification: Through DAN (Israel) micro misting system with Leakage Prevention Device (LPD) with capacity to maintain RH :- upto 90%-95%, ± 4% in side the whole Green House, provide micro filter unit, return gutter, control valve assembly, fitted with 1 H.P. Texmo/ Crompton greaves submersible pump set.
		• Control Panel for Green House
		• Microclimatic Temperature Controller Specifications:
		• Real time microprocessor based user programmable PID Controller.
		• 4 digit LED display for displaying measured values and another 4-digit LED display for displaying Set point lock within the setting panel to protect setting changes.
		• Level lock to ensure that the parameter can be read but cannot be changed. Sensor failure indication.
		• Display resolution 0.1.
		• Accuracy 0.1 ^{0}C.
		• Wide selectable temperature range, ranges from 0 to 100 C. 2.
		• Microclimatic
		• Humidity Controller Specification
		• Real Time microprocessor based.On / Off control for Humidifying / Dehumidifying.
		• Display Accuracy – indicating value 0.2% 1 digit.
		• Electrical Wiring Electrical Device: High quality ISI approved fittings with copper multi strand twisted FR Grade with proper M.C.B. with appropriate electrical points of 5 Amp & 15 Amps
		• Plumbing 8 Water Connection: Water connection with one tap in Green House with elbow operated tap, distributed through corrosion free pre coated GI pipe of appropriate diameter (3/4" or ½") Stainless Wash Basin (1 No.), Drainage Points should also be

		provided. AMC of two years should be included in prize beyond warranty period and also mention the warranty period
35	**Net House**	• Size: 50‟ x 20‟ x 11‟ : 8‟ (L x W x H height at the center: on sides)
		• Roof : Hut shape with Buffer room – 5‟ x 6‟ x 8‟ Civil Works : CC foundation, Brick wall 2 feet below and 2 feet above ground level to duly plastered.
		• Base PCC 3”thick 18” wide , 13” wide 4” high first base line , then 9”wide second base line, Frame base block height 3‟x 9”x 9” CC block at equal distance.
		• Floor: Out Side of green house made of crushed bricks with graded stone (Rodi) which is further flushed with 4:3:1 (Rodi:sand:cement) & Inner side floor is natural.
		• Central pathway is required inside. Infra structure : GI (47 mm x 47mm ± 2mm) ISI standard IS 1239 class B Super Structure: GI (47 mm x 47mm ± 2mm) ISI standard IS 1239 class B anti-corrosive, humidity resistant square pipe.
		• Pipe to pipe distance 3‟2” for maximum wind load conditions with Anodised Aluminium strips &PCH , duly treated with necessary fastening accessories and bolts, along with Silicon (translucent) treatment for additional holding and thermal safety.
		• Shading: 75 % UV stabilized Agro shading net, Green color shading net.
		• Cement underground water storage tank of 10000 liter capacity with metal door opening with lock and key arrangement, 1 HP Submersible Texmo / Crompton greaves pump (ISI make), GI Tray, Filter, water Distribution system and other accessories.
		• Lighting System Lighting System: Four tube lights on two walls inside and four tubelights on four corner of nethouse on outerside required.
		• Plumbing Water Connection: Water connection with one tap in net House with elbow operated tap, distributed through corrosion free pre coated GI pipe of appropriate diameter (3/4” or ½”) Stainless Wash Basin (1 No.), Drainage Points should also be provided.
		• AMC of two years should be included in prize beyond warranty period and also mention the warranty period.
36	**Poly House**	• Poly House Specification (Fan & Pad system) Size: 50‟ x 20‟ x 11‟ : 10‟ (L x W x H height at the center: on sides) with opening for release of hot air at centre top with openable window system.
		• Model : Hut shape/Dome with Buffer room – 5‟ x 6‟ x 8‟
		• Civil Works : CC foundation (1:3:6), Brick wall 2 feet below and 2 feet above ground level. Base PCC 3”thick 18” 10 wide , then 13” wide 4” high first base line , then

		9”wide second base line, Frame base block height 3‟x 9”x 9” CC block at equal distance.
		• Floor: Out Side of green house Made of crushed bricks with graded stone (Rodi) which is further flushed with 4:3:1 (Rodi:sand:cement) & Inner side floor is natual.
		• Path way is 24inimize inside centrally. Super Structure: GI (60 mm, 48 mm ± 2mm round pipes) ISI standard IS 1239 class B anti-corrosive, humidity resistant square pipe.
		• Pipe Anodised ,Aluminium strips , duly treated with necessary fastening accessories and bolts, along with Silicon (translucent) treatment for additional holding and thermal safety.
		• Glazing / Cladding : High quality UV stabilized Poly film 200 micron, Multiwalled.
		• The poly film will be fixed to Alluminium profile with zikzak spring.
		• Doors: flush door opening (Door size : 6‟3” x 3‟) of Anodised Aluminum section with Polycarbonate sheet 6mm thick as cladding material with lock and pinion system.
		• Cooling System Evaporative Cooling System (ECS) : Fan & Pad system with Cellulose Pads 100 mm thick.
		• Pad Size : 20‟ x 5‟.
		• Along with water softner and filtration unit to prolong the life of the pad.
		• On opposite wall heavy duty Slow Speed Axial Flow Fans 48” Single phase (with GE/CG motor) with aluminium louvered covering, The internal & external surface area of the Fan and pad are covered with filter screen of 40 x 40 mesh Nylon mesh covering cooling pads.
		• Cement underground water storage tank of 10000 liter capacity with metal door opening with lock and key arrangement, 1 HP Submersible Texmo / Crompton greaves pump (ISI make), GI Tray, Filter, water Distribution system and other accessories.
		• Lighting System Lighting System: Four tube lights on two walls inside and four tube lights on four corner of greenhouse on outerside required.
		• Humidity System Humidification: Through DAN (Israel) micro misting system with Leakage Prevention Device (LPD) with capacity to maintain RH :- upto 90%-95%, ± 4% in side the whole Green House, provide micro filter unit, return gutter, control valve assembly, pressure gauge‟ fitted with 1 H.P. Texmo/ Crompton greaves submersible pump set.

		• Control Panel for Green House 1. Microclimatic Temperature Controller Specifications: Real time microprocessor based user programmable PID Controller.
		• 4 digit LED display for displaying measured values and another 4-digit LED display for displaying Set point lock within the setting panel to protect setting 11 changes. • Level lock to ensure that the parameter can be read but cannot be changed. Sensor failure indication.
		• Display resolution 0.1 .Accuracy 0.1 C. Wide selectable temperature range, ranges from 0 to 100^0C.
		• Microclimatic Humidity Controller Specification:Real Time microprocessor based.On / Off control for Humidifying / Dehumidifying. Display Accuracy – indicating value 0.2% 1 digit.
		• Electrical Wiring Electrical Device: High quality ISI approved fittings with copper multi strand twisted FR Grade with proper M.C.B. with appropriate electrical points of 5 Amp & 15 Amps (Anchor make) Plumbing Water Connection: Water connection with one tap in Poly House with elbow operated tap, distributed through corrosion free pre coated GI pipe of appropriate diameter (3/4" or ½") Stainless Wash Basin (1 No.), Drainage Points should also be provided. AMC of two years should be included in prize beyond warranty period and also mention the warranty period
37	**Laboratory Nitrogen Container**	• Capacity: 1.5 lit
		• Configuration Vertical Inner Vessel Material: Stainless steel 15 Insulation: Vacuum + Multi layer super insulation. Durable, tamper-proof lid design
		• Narrow-mouth Low Level alarm system
		• ACCESSARIES: Canisters of various sizes Transfer Devices
38	**Laboratory Nitrogen Container**	• Capacity: 10 lit
		• Configuration Vertical Inner Vessel Material: Stainless steel 15 Insulation: Vacuum + Multi layer super insulation. Durable, tamper-proof lid design
		• Narrow-mouth Low Level alarm system
		• ACCESSARIES: Canisters of various sizes Transfer
39	**Laboratory Nitrogen Container**	• Capacity: 20 lit
		• Configuration Vertical Inner Vessel Material: Stainless steel 15 Insulation: Vacuum + Multi layer super insulation. Durable, tamper-proof lid design
		• Narrow-mouth Low Level alarm system

		• ACCESSARIES: Canisters of various sizes Transfer
40	**Laminar Air Flow with sterilizer**	• Filters: Aluminum framed High Efficiency Particulate Air (HEPA) filter, with a minimum efficiency of 99.99% at 0.3 micron.
		• Pre filter: Washable type Pleated pre-filter FRP Body frame PU coated
		• Construction should be of GI Powder coater or SS with SS working top
		• Air flow: 90 FPM (0.45 m/s) +/- 10 FPM (0.05 m/s) average velocity measured 6 in (152.4 mm) from the diffuser screen, uniforsmity +/- 20% of average or better
		• Noise Level: < 65 DB measured at 1 mtr from filter face
		• Work Area – 4’ x 2’
		• Voltage: 230V, 50Hz
		• Power Consumption: 300 Watts
		• Fluorescent Lights: 2 x 40 Watts
		• Ultra Violet Lights: 18 Watts
		• Power socket: 5 A
		• **Should be with glass bed Sterilizer**
		• Material of construction should SS 304, at least 1 mm thick
		• Crucible size should be 150 x 50 mm
		• Crucible should be 16 gauge brass tube
		• Main body should be mirror finished
		• Controller should be electronic
41	**2 D Electrophoresis System with Power Pack**	• Isoelectric Focusing (IEF) Unit, with built-in 12,000 Volt / 1.5mA power supply and Peltier thermostate cooling plate for excellent heat transfer and electrode contact.
		• The instrument should be programmable and have RS 232C/USB interface for PC control inclusive of cable.
		• The working temperature of the instrument should be 18 – 25°C (+/- 1°C).
		• Flexible first-dimension IEF can be run Six strips up to 24 cm IPG, If 7 cm strips are used 12 strips can be accommodated with the help of another pair of electrodes.
		• Monitoring of individual strips should be available.
		• Reusable Sample cup capacity should be upto240uls.
		• Electrodes lock into place on strips ensures good contact during run.

		• Entire protocol can be seen on screen easy to read and edit.
		• Stores multiple protocols each with multiple steps-flexible programming for precise results.
		• Instrument should be controlled through LAN remote control and data acquisition possible.
		• Dimensions not more than 38 x 19 x 27 cm (w x h x d)
		• The unit will run one or two gels and has the capability of expanding to four gels with the addition of accessory divider plates.
		• The unit includes a dual gel caster.
		• The unit is having a round contour which allows easy handling, lifting and introducing samples.
		• Gels can be cast leak-free in the dual gel caster without using tape or agarose.
		• The unit has a 16 cm separation distance.
		• The unit should come with the glass plates, spacers 1.5mm & 15 wells comb.
		• The gel plates are submerged in the lower buffer chamber so both surfaces of each gel are identically cooled (or heated). The buffer can be temperature-controlled via a glass tube heat exchanger.
		• The unit has a safety lid designed to CE, CSA and UL specifications.
		• When doing 2-D electrophoresis, the gels accept 11 cm or 13 cm Immobiline DryStrips that were run in the 1st dimension.
		• Power Supply – The unit is capable of delivering up to 300 volts, 400 mA and 90 watts.
		• The unit is able to operate in either constant voltage or current modes.
		• The unit has an automatic crossover feature to switch between constant current and voltage mode.
		• The unit has a small footprint (33.5x12.5x28cm) and large handle which makes it easy to transport.
		• The unit has four sets of safety-recessed high voltage output terminals
		• The unit is certified to meet CE, UL and CSA safety standards.
		• The unit features a large, easy–to-read LCD display.
42	**Western**	• Electro-blotting system which can transfer protein as well as Nucleic acid from 10x10

	Blotting System	cm gel.
		• Electro-blotting system which can accommodate at least 4 gels cassettes simultaneously.
		• System must come with asymmetric color –coded cassettes so that they cannot be inserted in wrong direction in any case.
		• Fibre pads should come with the system so that they can compress the gel against the nitrocellulose membrane for uniform transfer.
		• System should be having plate-electrodes 12.8cm apart so allows the rapid transfer of gels.
		• System can be connected to external chiller for cooling by snap-lock connectors which should be provided with the system.
		• System external dimension should not be more than 20 x22.5x 18.5 cm (Wx DxH).
43	**Real Time PCR System**	• An automated system for both real-time PCR and post-PCR (end-point) analysis using in-built Peltier based PCR machine.
		• System should support applications including absolute quantitation, simultaneous analysis data for relative quantitation, multiplex-PCR, allelic discrimination (SNP), dissociation curve analysis, HRM as well as pathogen detection and plus/minus assay using internal positive control.
		• The normalization of reaction due to non-PCR related fluctuations such as pipetting variations should be possible by using ROX™ or any calibrated dye. Selection or de-selection of passive reference during the run should be optional.
		• The hardware must provide Peltier thermal cycling system with a temperature range of 4^{o}C-100 ^{o}C.
		• System should support reaction volume 10-30 µL and 21 universal thermal cycling conditions to eliminate optimization of PCR conditions for running the templates from different sources simultaneously.
		• The system should be compatible with tubes and wells.
		• System should be able to set six different temperature profiles or exact gradient temperature during same run.
		• Also it should be able to run standard 96 well plate. It should be possible to alter the plate setup after run completes.

		• The data collection and instrument control software should provide multicomponenting algorithm for deconvolution of multiple dyes, enabling addition of new dyes without any hardware change.
		• Dedicated licensed full version software for primer and probe design must be included in the supply.
		• The quoted system must have full license for PCR process. A copy of the license must be attached to the offer.
		• The system should be able to perform high resolution melting (HRM) application.
		• The system should have a capability to perform fast(less than 40 minutes) and standard reactions on same block without hardware change.
		• The system should have all modern facilities like touch screen, USB port, stand alone operation, e mail alerts etc.
		• The system should be supplied with separate Lap top/computer with color printer.
44	**Vacuum Oven**	• Volume capacity: Approx. 65L / 200L
		• Temperature Range: Ambient + 5 – 250ºC
		• Controller: Digital P.I.D. auto – tuning/Calibration
		• RS-232 Interface Temperature control
		• Standard Accessories: Software and Cable 26
		• Vacuum range: 0 to 0.1 Mpa, analog guage
		• Shelves: Anodized aluminium plate
		• Digital LED display (1 deg C resolution)with touch sensitive keypads 3 different temperature values memorable without auto tuning Over temperature limiter / door opening alarm
		• Separately equipped vacuum and vent ports Block type heaters.
		• Electric requirement:230V AC, 50/60H
		• Should be provided with all installation software.
45	**Gene gun**	• It should be a helium operated gene gun
		• Max Current should be 10mA peak
		• Should have voltage Input of 9V alkaline battery
		• Gas pressure should be 600 psi helium

		• Safety relief pressure should be 700 +/- 35 psi
		• Regulator adjustment should be 800 psi max
		• Discharges should be 12 per cylinder, should be super epoxy or polycarbonate material Acetal cylinder.
		• The unit should be complete
46	**Seed Germinator**	• Temp range 10^0C to 60^0C,
		• humidity range 40% to 95% RH,
		• Should have precise monitoring of temperature and humidity conditions, with long life SS tubular heaters, microprocessor controlled,"
		• LCD display, auto tuning of controller, self diagnosis of errors, PUF insulation, low water level alarm, high temp. safety cut off. Time delay, overload cutoff, adjustable trays.
		• Internal Volume 260 Liters
		• Internal body SS 304 grade, outer MS powder coated
		• Should be supplied with voltage stabilizer
47	**Capillary Gel Electrophoresis System**	• On Chip capillary electrophoresis system capable of essentially size analysis and quantification of DNA and RNA
		• Automated from microchip preprocessing to data analysis.
		• System capable of analyzing 96 samples in less than 60 minutes.
		• Minimum Application volume : less than 10µl
		• Minimum Detection limit :
		• DNA analysis : 0.1ng/µL,
		• RNA analysis : 5 ng/µL (total RNA), 25 ng/µL
		• Sizing Accuracy: ± 5 bp (25 bp to 1000 bp), ±15%(1000 bp and above)
		• Sample Volume : Sample working volume of 0.150 µL
		• Data Analysis: Capable of automated data analysis, including statistical analysis, including statistical analysis such as %, CV, Mean & Deviation etc., and digital data can be saved in/ exported to a database or shared, formatted result tables/ graphs exportable to reports.
		• Software support for RNA quality analysis.

		• System has user independent data interpretation.
		• System uses internal standards to calculate results.
		• Additional Specifications: Complete assessment of RNA quality for better gene expression data
		• Exact sizing and quantitation of DNA fragments
		• Extreme accuracy with resolution down to 5 bp and sensitivity of 0.1ng/µl
		• Flexible with 96 and 384 well compatibility
		• Comprehensive and quantitative analysis with LabChip GX software analyze 96 samples in less than an hour.
48	**Liquid Handling System**	• System should be suitable for applications like making serial dilutions; plate reformatting from 96 well to 384 well & vice versa; plate replication in 24 well, 96 well or 384 well formats; concentration normalization;
		• Hit-picking; reagent transfer from reservoirs; low volume assay set-up (like PCR, Real Time PCR and sequencing set-up); pooling of samples from plates to tubes, media change for cell culture; compound testing; magnetic bead set up; cell assays and immunoassays; cell seeding; cell aliquoting; apoptosis tests; cyto-toxicity tests; cell viability tests and soft agar test.
		• Should have features such as pipetting pattern recognition for fast and easy programming.
		• Should have Contamination free Air cushion pipetting Technology with disposable tips.
		• Should have pipetting range from 1 µl to 1,000 µl.
		• Should be an open system for Labwares of various venders.
		• Should have pipetting tools with single- and eight-channel heads.
		• Should be able to pipette, multi dispense and carry out serial dilutions.
		• Should be capable of handling liquids with different physical properties like density, viscosity and vapor pressure.
		• Free jet dispensing, while dispensing tips are not allowed to dip in to liquid, to minimize cross-contamination.
		• Typical pipetting precision should be < 2% CV at 1 µl.
		• Should be compatible with 0.2 ml PCR to 50 ml blue-cap tubes; 6 to 96 and 384 well plates.

		• Should be able to use filter and non-filter tips, should be able to discard tips as per the need.
		• Should have a separate container for tip disposal.
		• Should be possible to integrate the same in common laminar flow
		• Should have optical infrared detector for contact-free detection of labwares, tips, and liquid levels.
		• Should have easy to use software with pre-loaded labware files.
		• Should be capable of validating the program and check for required labware, reagent levels and their positions before commencing the work.
		• Should have 4-position deck and all routine pipetting capability.
		• The system should provide an option to control automated pipetting by either the PC or the control panel.
49	**Nanophotometer**	• Quantification of sample volumes from 'Microlitres to Millilitres'.
		• Optics must have the combination of xenon flash lamp with holographic aberration-corrected concave grating and receiver as CMOS photodiode.
		• Operating principle must be with two beams: Absorption single-beam spectrophotometer with the reference beam.
		• Instrument should operate moment switched on with no warming up time.
		• Should be compact & stand-alone system to handle sample volume ranging from 1.5 µL to 4 mL.
		• UV/Vis wavelength range from 200 nm to 830 nm, with spectral scanning feature.
		• At least there should be 100 installations of BioSpectrometers.
		• Low volume measuring surface must be of quartz and must be hydrophobic.
		• System should also allow using conventional quartz/glass/plastic cuvettes in addition to low volume measurement.
		• Must allow rapid and reliable quantification of Nucleic acids and proteins, OD600, dye methods (to calculate the FOI (both nucleic acid & protein).
		• Should allow acquire data at user-defined wavelengths from 200 nm to 830 nm and at user preferred pathlength.
		• Detection range for dsDNA: 2.5 ng/µL – 1500 ng/µL (with defined pathlength of 1 mm).

		• Concentration via standard series must have curve fit evaluations viz., Regressions (linear, cubical, quadratic), and Interpolations (linear & Spline) with curve sections in detail with view directly on the instrument display.
		• Should allow transfer of measured data to PC by connecting the device directly to PC without any additional software in addition to transfer the data via USB stick.
		• Must have evaluation methods with factor, standard or standard series.
		• Must have Multi – wavelength, Dual-wavelength applications with subtraction and division analysis.
		• Pre-programmed methods for a quick start.
		• Direct operation on the device, with no requirement for PC. • Measuring results (>1,000) can be saved directly on the device.
		• >100 method programs in memory.
		• Spectral band width: < 4 nm
		• Photometric measuring range: 0 A to 3.0 A at 260 nm
		• Random error: ≤ 0.002 if A = 0, ≤ 0.005 (0.5 %) if A = 1
50	**Microplate Washer**	• Should have capability to wash 96 well micro plates.
		• Should have a option for interchangeable wash heads option 1 x 8 or 1 x 12 way wash heads.
		• Should have programmable washing time, volume and soaking time.
		• Should use non-pressurized bottles to minimize the risk of spillage and also choice for user to substitute bottles of different sizes.
		• Should provide two 2 liter wash bottles & one 4 liter waste bottle.
		• Should provide aerosol cover to prevent aerosols of infectious diseases from spreading.
		• Should have residual volume less than 1.5 µl.
		• Dispensing volume should be 50 – 400 µl for 96 well.
		• Should have a USB port for easy data transfer.
		• Should have large color screen for easy set-up of wash protocols.
		• Should have the liquid level sensors in both the wash and waste bottles to guarantee safe performance.
		• Should have plate sensor to recognize if a plate is present or not.

		• After using the instrument, the automatic rinse feature can be set to operate in a specified time sequence to ensure that the liquid channels do not get clogged.
51	**Tissue Lyser**	• Should be useful for mixing, disrupting small amounts of biological samples, for Molecular biology analysis.
		• Should be able to pulverize two samples from 0.2 to 20 ml at the same time.
		• For cell disruption should have a capacity to process 20 Samples at a time. • Should be able to process hard, semi hard, soft, elastic, fibrous material.
		• Feed size – up to 8 mm, sample volume 2 x 20 ml
		• Mean grinding time – 2 to 3 mins
		• Should be able to do dry grinding, wet grinding and cryogenic grinding
		• Digital pre-selection of vibrant frequency, digital time 0.2 min to 99 mins
52	**Semi Dry Transfer Unit with Built In Power Supply**	• System should include In-built Power supply which should automatically monitors the transfer status and stopping the transfer before the stack overheated.
		• Semi Dry transfer Unit should support as many as two layers of gels.
		• System must have power setting of 30 V, 500 mA, 15 W.
		• System must have a capacity for 14 X 16 cm transfer area which can handle up to 4 mini gels by stacking it.
		• Unit must use minimum quantity of buffer to transfer proteins and nucleic acids in less than an hour.
		• System must have molded base w/platinum coated Titanium anode and high voltage leads.
		• Safety circuit breaker should be included.
		• Electrode should be vented for preventing bubble formation during transfer.
53	**Vacuum Concentrator**	• System should be a Centrifugal Vacuum Concentrator with integrated vacuum pump for biological applications
		• System and pump should be highly resistant for organic solvents like Acetonitrile, DMSO, chloroform etc
		• System should have three operational modes for Aqueous, Alcohol and Highly Volatile solvents
		• System should possess four temperature selections (room temperature, 30 °C, 45° C, and 60 °C) to allow safe and efficient concentration of biological samples

		• System should support Centrifugation and Desiccator function
		• Run time: 1 min to 9:59 hrs in increments of 1 minute or infinite
		• Centrifuge should have a fixed rotational Speed of 1,400 rpm
		• System should have imbalance detection
		• System should support multiple lab ware format s (0.2 ml. 0.5ml, 1.5ml, 2 ml, 15ml conical tubes, 50 ml conical tubes, 96 well PCR plates, MTP and Deep well plates) with different rotors
		• System should be able to concentrate samples upto a maximum capacity of 300 mL
		• Rotors and adapters must be autoclavable
		• Capacity of built-in pump: 1.7 m3/h
		• Max. Vacuum: < 20 hPa (< 20 mbar)
		• System should have an emission condenser with volume approximately 275 mL to purify outlet air.
		• Should be optionally supplied with a suitable cold trap
54	**Multiwell Plate Shaker**	• Orbit Diameter – 4 mm
		• Permissible Shaking Weight – 4 Microplates
		• Motor Rating Output – 13 W
		• Motor Rating Output – 57 W
		• Speed Range – 100 to 1100 RPM with timer
		• Timer Display – 99 Hrs 59 Mins
55	**Laboratory Fermenter/Bioreactor -5 Ltr Capacity**	• Complete With 5.7 inch TFT Touch Screen/Graphic display Control Panel
		• pH probe with cable, Temp. Sensors, heating element, 3 No. Peristaltic Pumps, DAS/SCADA software and accessories as given under
		• With 5.7 inch colored TFT control Panel, SS Flange with ports for(pH,DO,sampling and Nozzles for Acid base, Antifoam,addition +1 spare port),
		• pH probe with transmitter and cable,
		• PMDC motor with magnetic coupling, Temp. Sensor, Heater, Sparger,
		• Rushton turbine type impellers-2 no., Baffle-4no., Rotameter (0-5 LPM),
		• Aantifoam sensor, Peristltic Pumps-3 No., Inlet/outlet Filters- 2 No, air pump, Software, accessories etc.

		• **M.O.C. of Vessel:**-Borosilicate glass with Round Bottom and SS316 Top flange, Table top **Autoclavable type.**
		• **Top Flange/ Plate:-** Made of SS 316 and having sensor ports for pH/DO/Antifoam/ Temperature alongwith Nozzles for Acid/ Base/ Antifoam/ Air/ Sample Harvesting etc. and port for Inoculation and Exhaust Condenser. The top plate is having Lifting Handles for easy handling of Fermenter vessel.
		• **Condenser:-** Shell in Tube Type SS 316 Exhaust Condesner fitted on the top of the flange with 0.22 micron PTFE filter for out gas and air filtration. Water inlet and out let for circulation of cold water to maintain the reaction volume or cool down the vapors going out with exhaust gases.
		• **Baffles:-** Four numbers Baffles provided for breaking the vortex for proper mixing. Baffles are removable Type.
		• **Controls and instrumentation** The system is Microcontroller based with Advanced Technology having Password Protection and having Large 5.7" Coloured TFT Display with display and controls for pH/ Temperature and RPM . Larger Display having Glance Screen to Display all the Parameter Values on a Single Screen.
		• **A. Agitation** Drive: Top Driven having Magnetically coupled drive with Highly Temperature stable magnets (Removing the need of Seal, thus preventing the contamination through Direct coupling) Impellers:- Rushton turbine type impellers, 4 blades two impellers, removable type and made of SS316. Speed Control: Variable speed control within 20 to 1200 RPM for microbial fermentation and 20 to 500 RPM for Cell culture, control accuracy of }1 RPM. Motor: PMDC Type having 0 to 1500 RPM and 4 Kg.cm Torque.
		• **B. Temperature control** Temperature Control Type: PID control having controlling Range from 4 to 70°C and controlling accuracy of }0.1°C and Measurement Range from 0 to 100°C. Temperature Sensor: Pt 100 RTD Heating and cooling for Temperature Control:- Inbuilt heating rod of 200 watt in SS 316 housing for efficient temperature increase. Cooling SS coil provided for the circulation of chilled/cold water in side the vessel for lowering the temperature below ambient.

		• **C. pH measurement and control** pH Sensor: Gel filled type Measuring Range:- 0 to 14 Control Accuracy: - } 0.1 pH pH control: Automatic control with Two Numbers Peristaltic Pumps for Addition of Acid/ Base The pumps can also be run in Manual mode. The pH controlling system is complete with pH Probe, Transmiiter and pH cable alongwith Dosing Bottles. The system is having Auto pH Calibration with 2 point or 3 points calibration i.e. either using 2 Buffers or 3 buffers and provided with Uncalibration option.
		• **D. Aeration** With Oil/ moisture free Air pump and controlled with Glass Metered Needle Valve **Rotamter 0 to 5LPM** variable and fitted with 0.22R Inlet filter for feeding Sterile Air/ Gas. The filter is PTFE, Hydrophobic and Autoclavable Type. Sparger Type:- Ring type air sparger with fine pin holes provided towards bottom of the vessel for uniform distribution of Air/ Gas. Inlet/Exhaust Filters: - 0.22 micron absolute Hydrophobic PTFE/Autoclavable filter of PTFE, 0.22 micron Hydrophobic, 50 mm dia, autoclavable 20 times
		• **E. Foam/ level controller** SS316L Conduction probes for automatic Level Foam control. Time Proportionate Control. Provided with one number peristaltic pump with antifoam sensor and cable.
		• **F. Feed controller** One number peristaltic pump provided to automatically feed the feed/ substrate Automatically. The pump can be made ON/OFF with Timer.
		• **Accessories:** System would be supplied with sufficient no. O ring, silicon tubes with 6 set of 250ml Borosilicate glass feed bottles with disposable disk PTFE filters of 25mm dia, SS clamps etc **Power Supply:**-230V + 10% 50HZ, AC.
		• Chiller-Circulator:- System would be supplied Chiller with circulation facility for temperature control within 5°C to below ambient. The size of storage tank:-5 liter, MOC:-SS304 for contact parts and MS Powder Coated for non contact parts**.**
		• $D.O_2$ Electrode: System would be supplied Galvanic Type Online DO Probe with Glass Housing and sterilizable at 121.5oC and 15psi and complete with DO monitor and DO lead having Cascade control to maintain the DO. Range: 0 to 200%.

		• **Autoclave vertical laboratory type** System would be supplied Complete SS units with Basket & Foot Lifting arrangements. Suitable for Sterilization of 5 Ltr. Capacity Fermenter Vessel
		Other special features in fermenter • (i) Magnetically coupled Drive without any need for Mechanical Seal. Thus removing the chances of contamination in case of leakage through mechanical seal. Moreover it also removes the expenses of removal of Mechanical seal. The magnet used is highly Thermal stable thus there is no impact on magnetism due to repeated Autoclaving and thus does not require any replacement.
		• (ii) Password Protection: - The Controller is having Password Protection to stop the unauthorized usage of the Fermenter or stopping unauthorized persons from changing the controlling parameters.
		• (iii) Microprocessor based large and multi colored TFT Display (Better and advanced than LCD Display)
		• (iv) Microcontroller system having very Small and single Transmitter card for measurement of parameters.
		• (v) Auto restart in case of Power Failure.
		• (vi) Audio/ Visual Alarms for Deviation in Parameters within Prescribed Limits.
		• (vii) Sensor/ Probes alarms in case of Non connection or malfunctioning of the sensor.
		• viii) The vessel can be used for both for Microbial Fermentation as well as cell culture applications.
		• (ix) Shell in Tube Type Condenser made in SS316 provided on the Top plate with Exhaust for removal of gases and In-out nozzles provided on condenser jacket to cool down the vapours so as to avoid dehydration of the culture. Condenser having 0.22 micron filter to avoid outside contamination entering the vessel
		• (x) Data Acquisition: System will have USB/RS232 Communication Port to transfer and save the data in the PC with DAS/SCADA software.
		• (xi) One spare port is also given on Top plate.
		• (xii) System is manufactured as per ASTM standard and ISO 9001:2008 and CE certifications.
56	**Muffle Furnace**	• Construction: Outer Body made of Stainless Steel. Inner Body made of ceramic Muffle Kumar make.
		• Insulation: Special type ceramic Insulation between bodies for Insulation.

		• Coil: Kanthal A1 swaden make coil for long lasting.
		• Temp Range: 400 C to max 1150C.
		• Accuracy: +/- 3 deg.
		• Temp Controlled by: PID Dual display to view set & current temp.
		• Safety: Special type thermocouple fuses to protect overheating.
		• Sensor: 'K' type calibrated sensor.
		• Size in inches : 10 x 5 x 5
		• Rating : 2.5 K.W
57	**Mini Vertical Gel Electrophoresis Unit along with Power supplies**	• Vertical systems for PAGE gels
		• The system should be made of Acrylic material.
		• Combs & Spacers should be made of Teflon.
		• The size of gel tray should be midi : 8x7 cm
		• mini 7 well comb along with variable compatible spacers.
		• system compatible with all type of precast gels.
		• Rapid Gel casting & loading should be available.
		• Platinum electrodes : red and black (1 each).
		• Minimum buffer requirement.
		• An external caster should come with the system for casting the gels outside the Tank.
		• Power supplies for low voltage and low current application.
		• Output DC Voltage : 50 to 250V variable
		• Output current : Maximum 100 mA variable
		• Body : MS with powder coated body.
		• Input voltage : 230V, 50Hz, A.C. Supply
58	**Maxi Vertical Gel Electrophoresis Unit along with Power supplies**	• Vertical systems for PAGE gels
		• The system should be made of Acrylic material.
		• Combs & Spacers should be made of Teflon.
		• The size of gel tray should be maxi : 16x20 cm
		• Maxi 20 well comb along with variable compatible spacers.
		• system compatible with all type of precast gels.

		• Rapid Gel casting & loading should be available.
		• Platinum electrodes : red and black (1 each).
		• Minimum buffer requirement.
		• An external caster should come with the system for casting the gels outside the Tank.
		• Power supplies for low voltage and low current application.
		• Output DC Voltage : 50 to 250V variable
		• Output current : Maximum 100 mA variable
		• Body : MS with powder coated body.
		• Input voltage : 230V, 50Hz, A.C. Supply
59	**Mini Horizontal Gel Electrophoresis Unit with power supplies**	• Horizontal:- Mini System
		• The construction material used should be acrylic in nature.
		• UV transparent Trays.
		• Comb Thickness should be 1.5, For Mini 8 well comb
		• Gel Trays for Mini 10x7 & 5x7 cm.
		• An external caster for casting the gel outside the tank.
		• Connecting Cord : red and black (1 each).
		• No. of Platinum electrodes : red and black (1 each).
		• Compatible power supply and connecting cords should be included for low voltage and low current application.
		• Output DC Voltage : 50 to 250V variable
		• Output current : Maximum 100 mA variable
		• Body : MS with powder coated body
		• Input voltage : 230V, 50Hz, A.C. Supply
60	**Maxi Horizontal Gel Electrophoresis Unit with power supplies**	• Horizontal:- Mini System
		• The construction material used should be acrylic in nature.
		• UV transparent Trays.
		• Comb Thickness should be 1.5, For Maxi 26 well comb should come with the system.
		• Gel Trays for Maxi 20x20cm.
		• An external caster for casting the gel outside the tank.

		• Connecting Cord : red and black (1 each).
		• No. of Platinum electrodes : red and black (1 each).
		• Compatible power supply and connecting cords should be included for low voltage and low current application.
		• Output DC Voltage : 50 to 250V variable
		• Output current : Maximum 100 mA variable
		• Body : MS with powder coated body
		• Input voltage : 230V, 50Hz, A.C. Supply
61	**Fume Hood**	• Fume Hood Made of M.S. CRCA Epoxy powder coated structure. The work surface is fitted with wash basin with good quality tap. A gas cocks is also fitted for gas supply.
		• A sliding slash made of toughened glass move vertically up and down with concealed counter balanced weight.
		• Chamber is fitted with 20W fluorescent light.
		• Supplied with cord and plug to work on 220Volts, 50 Hz A.C. Complete with exhaust system.
		• Dimensions of work area (in mm) : 120 W x 750 H x 750 D mm
		• Noise level at 1 Mtrs from Fume Hood : 67 dba (When Ambient Sound level is not greater than 55 dba)
		• Air velocity on front opening with shutter full open : 0.5 } 0.1 m/s
		• With shutter open up to recommended level of 200 mm: 1.4 } 0.2 m/s
		• Air flow capacity of Blower : CFM (Max), 50 mm WG (500 PA) Static pressure
		• Power Supply: 230 v AC, 1 Ph, 50 Hz, with earthling
		• Construction of Work area : P.P. Standard
		• Front Shutter : Aluminum framed Toughened Glass 5 mm thick with Counter
		• Side Leg : M.S. CRCA Painting-Polyurathene / Epoxy / Stoving Enamel
		• Table Top : Telephonic Black Granite
		• Water Tap : Water tap provided at left side of the unit
		• Gas Cock : Gas / Air cock provided at left side of the unit
		• Sink : PP Sink Provided
		• Blower: Casing/Impeller – M.S. Fabricated With FRP Coating from Inside –1 Hp -1200

		rpm
		• Alarm Indication : Exhaust blower trip alarm indication on from panel of the unit.
		• Electrical : Three pin socket with switch -16 amp-2 nos. on fuming hood leg, tube light switch etc.
62	**Gel Rocker With Timer**	• Gel Rocker can be used for many applications like gel staining, culture aeration, bathing, blotting membranes etc.
		• A metal platform with non-slip rubber mat moves in a gentle 'See Saw' motion.
		• The movement is controlled precisely with a DC motor.
		• Cushion and rubber feet prevent unit from 'slipping'. Specification
		• Motor : D.C.
		• Maximum RPM : 60
		• Speed controller : Analogue
		• Timer : Digital
		• Time range : 1-99mins/Cont.
		• Platform Size : 25 x 25 cm
		• Input Voltage : 230V, 50Hz, A.C. Supply
63	**Thermo-mixer**	• Thermal Device with unique mixing performance with excellent temperature control to guarantee complete, dependable and reproducible test results
		• It should have heating, mixing and cooling in all common vessel and plate formats from 5 µL to 50 mL
		• It should have excellent mixing performance due to unique 2DMix-Control technology
		• It should have anti-spill technology prevents lid wetting and cross-contamination
		• It should have Reliable prevention of condensate formation with the Eppendorf ThermoTop (condens.protect®)
		• It should have excellent temperature management and maximum temperature accuracy
		• Should be provided with block of 24x 0.5 ml, 24x 1.5 ml, 24x 2 ml, 96 well PCR plates, 8 x 5 ml, 8 x 15 ml, 4x 50 ml, MTP & DWP
		• It should have simple and intuitive operation due to predefined program keys and clearly arranged menu guides
		• Max. speed 3,000 rpm 1

		• Mixing and vortexing radius 1.5 mm
		• Mixing frequency 300–3,000 rpm 1
		• Mixing orbit 3 mm
		• Temperature range Min: 15 °C below RT, max: 100 °C
		• Temperature accuracy Max. ±0.5 °C at 20 – 45 °C
		• Temperature settings 1 °C / 100 °C
		• Timer 15 sec to 99:30 h, continuous
		• Heating rate Max. 7 °C/min (when using SmartBlock plates) 1
		• Cooling rate Max. 2.5 °C/min between 100 °C and RT
		• Interfaces USB interface
64	**Dry Bath**	• The equipment to provide heating & cooling thru peltier technology
		• Heating and active cooling in all common vessel and plate formats from 5 µL to 50 mL
		• The operation should be easy and intuitive.
		• Predefined temperature keys should be provide to quick access to four-five important experimental temperatures. (4 °C, 16 °C, 37 °C, 56 °C and 95 °C)
		• Program memory should be 15 or more
		• Equipment to have wide range of smart blocks to work with different types of tube and
		• Temperature control from -10 °C to 110 °C *1
		• Should be provided lid with thermal lid technology to avoid condensate formation
		• Timer 15 s to 99:30 h, continuous
		• Heating rate Max. 8 °C/min or more)
		• Cooling rate Max. 4.0 °C/min or more
		• Should have USB interface
		• Power supply 220 – 240 V, 50 – 60 Hz
		• Max. Power consumption 200
		• Should be provided with block of 24x 0.5 ml, 24x 1.5 ml, 24x 2 ml, 96 well PCR plates, 8 x 5 ml, 8 x 15 ml, 4x 50 ml, MTP & DWP
65	**UV**	• UV Transilluminator with 21 x 26 cm of imaging area

	transilluminator	• Should have Superbright technology so as to have publication quality gel image with no UV tube background noise
		• Should have 6 x 15 Watts of 312 nm yielding intensity of 10,000 $\mu W/cm^2$
		• System work with extended range of dyes, viz., ethidium bromide, Gel Red, Gel Green, Lumitein, SYBR Green, SYBR Safe, SYPRO Ruby, etc.
		• Adjustable dual intensity selector (100 – 70%)
		• Ondulex reflector for higher UV output
66	**Mixmate**	• A compact and amazingly versatile mixer, specially designed for mixing small volumes (5 µL – 2 mL) in numerous plate and tube formats.
		• The fast and precisely controlled mixing movements (2DMix-Control) enable efficient and homogeneous mixing of samples in all vessel formats.
		• It accommodates micro test tubes, PCR plates, PCR strips, deepwell plates, and MTPs.
		• The integrated touch vortex function, with minimal hand/arm vibration transfer
		• Mixing and vortexing radius 1.5 mm
		• Mixing frequency 300 – 3,000 rpm
		• Mixing orbit 3 mm
		• Touch vortex frequency 3,500 rpm
		• Sample capacity max. 96 x 0.2 mL, 24 x 0.5 mL, 24 x 1.5 mL, 24 x 2.0 mL, 1 x DWP or 1 x PCR plate
		• Timer 15 s–99.3 h, continuous
		• Noise level < 50 dB(A)
		• Should be European CE and IVD certified
67	**Gel dryer**	• Should convenient and reliable units for preserving fragile electrophoresis gels for storage.
		• Should accommodate all various gel sizes made on electrophoresis instruments.
		• Gels (1.5 mm) take only 30 mins to dry and the unit shuts off automatically after lapse of set time.
		• Should have unique audio and visual alarm to indicate end of run.
		• Clear silicon sheet permits easy viewing while gels dry on powerful heaters (400 W in Junior Model and 800 W in Senior Model).

		• The temperature(upto120° C) and time(upto 4hrs) can be electronically controlled by knobs provided.
		• The gel dryer will work most efficiently if connected to a vacuum pump delivering more than 22 PSI (560 mm Hg).
		• Gel dryer should provided with a Vacuum gauge and tubing connectors.
		• Temperature Range : 5 Deg. C. Above ambient to 120°C. (Ambient at 25°C).
		• Temperature controller: Digital.
		• Temperature Sensitivity: +/- 1°C.
		• Temperature sensor: PID
		• Timer : Digital
		• Timer Range: 1-999mins.
		• Body: FRP
		• Platform Dimension:25cm x 35cm Junior
		• Input Voltage: 230V,50 Hz,15 amps(max). A.C. Supply
68	**Mini Plate Centrifuge**	• Mini Plate centrifuge should be compact and economical
		• Should be with two position rotor.
		• It can quickly spin down droplets and condensation and is for use before and after thermal cycling to improve PCR yield.
		• It accepts skirted , non skirted and standard PCR plates making , and it is suitable for molecular laboratory.
		• Capacity: 2 PCR Plates
		• Rotor Speed: 2500 RPM
		• G Force: 500 x g
		• Dimensions: 20(w) x 23(D) x 19.3(H) cm
		• Weight: 3 Kg
		• Power: 230V, 50-60Hz
69	**Fluorescent microscope**	• Standard complete microscope set with Binocular head, integrated 6V 20W halogen light illuminator, Anti-Fungal coated Plan Achromatic Objectives 4x,10x,40x (spring) & 100x (oil, spring), paired wide field eyepieces 10x,
		• Manufactured under license from Olympus Corporation, Japan.

		• Infinity Plan Optics for excellent image flatness
		• Binocular head for IPD adjustment, Anti-fungus treatment for tropical durability
		• Highpoint paired eyepieces, Abbe condenser with high performance aspheric lenses for bright & uniform illumination throughout the field of view,
		• Window in arm for convenient carrying & Ergonomic design for user convenience,
		• SMPS power supply for flicker free lllumination
		• Rackless specimen stage for user safety and comfort, specimen stage focus-lock prevents any accidental damage to objectives
		• Reflected led fluorescence light
		• Attachment with 480nm blue excitation for immunofluorescence tests.
		• High efficiency 480nm Blue LED illuminator, 2 position filter slider with excitation band pass filter 480nm and long pass emission filter 510nm complete.
70	**Hybridization oven**	• The Hybridization oven is designed to use for molecular biology labs to prehybridize or hybridize the membranes used in blotting techniques.
		• Modern designs combine a hybridization station, active mixing capability, accurate temperature control, into one compact bench top unit.
		• Interior Material : SS 304
		• Exterior Material : MS coated powder coated
		• Temperature range : (5 0C above Ambient) to 90 0C
		• Observation : Viewing Glass Window is provided
		• Temperature control : By Digital Display with microprocessor based PID Controller of accuracy ± 0.10 C by using PT – 100 as Sensor
		• A carrier to hold bottles (6 nos. of 60 mm dia x 200 mm length) can be easily placed or removed from the rotor mechanism
		• One bottle can be taken out without removing the carrier. • The carrier rotates with the Bottles parallel to the door at variable speed of 2 – 15 RPM.
		• Supplied with bottles, removable rocking platform SS tray is also supplied.
		• Electrically operated on 230 V AC
71	**Electroporator**	• Electroporator Model enables the simple and rapid introduction of foreign DNA into bacteria, yeast and other microorganisms.

		• The device has been specially optimised for targeted transformation experiments, thus ensuring highest possible efficiency level.
		• Also instrument safety has been particular points of focus in the design of the unit.
		• Faster sample handling – simple one button operation: just set the voltage or choose a preset parameter and insert a cuvette.
		• Intuitive use – the status information on the colored display minimizes errors
		• Fast and freely programmable – two program buttons allow storage and recall of most commonly used parameters, default setting : P1 1,700 V and P2 2,5000 V
		• Safe electronics and integrated electroporation chamber eliminate voltage leaks and misuse. • Compact, space saving design for easy storage and transport.
		• Easy, GLP-complaint documentation via USB port- Data from your experiments can be exported for documentation and analysis
		• Input voltage : 100V-240V ± 10%, 50 Hz-60Hz
		• Power input : 20W
		• Time constant : 5 ms nominal
		• Output waveform : Decaying exponential waveform with RC time constant of 5 ms
		• Charging time : <10 s
		• Interface : USB 2.0
72	**CO_2 Incubator**	• Should have at least 170 L of internal capacity.
		• Temperature management of at least 4ºC above ambient to 50ºC.
		• Temperature control and stability should be $\pm$ 0.1ºC.
		• CO_2 gas range should be at least 0.2 – 20%
		• CO_2 recovery rate of at least 0.7% per minute, up to 90% set-point.
		• Should have a large backlit display with on screen help menus, control of temperature and alarms
		• Should have separate single inner glass door for monitoring of samples without disturbing conditions of the chamber and options for 4-split inner doors OR 8-split inner doors to reduce loss of gas and reduce temperature changes due to door opening.
		• Should come with an inline pressure regulator to ensure less gas consumption and prevent overshooting of pressure which shortens life span of incubator.

		• The Inner chamber should be formed from single stainless steel sheet with deep-drawn and seamless design with no corners, welds or joints for higher capacity and ease of cleaning.
		• Should have six-sided direct heating elements to ensure even distribution of heat throughout the entire incubator chamber.
		• Should come with a removable humidity tray for easy cleaning and refilling of distilled water.
		• Should be "fan less" design to reduce chance of contamination, reduce noise level, minimum air turbulence and bigger usable capacity.
		• Should have infra-red CO_2 sensor with "autozero" function to ensure accuracy of sensor automatically and can withstand at least 120ºC during high temperature disinfection.
		• The incubator should come with standard 4 perforated stainless steel shelves and upgradable to 8 shelves.
		• Should have optional high-temperature disinfection of at least 120 ºC for 4 hours. Entire HTD cycle [including the time for warming up and cooling down to incubation temperature (37^oC)] should not take more than 9 hours.
		• The footprint should not exceed 4690 cm^2 for saving bench space.
		• Should have option to stack two incubators with stacking kit.
		• Should have optional building management system relays.
		• Should have optional incubator software command which allows tracking key operational information such as time, temperature, CO_2 concentration and humidity.
		• Should be supplied with CO_2 backup cylinder.
73	**Cell Counter**	• For Cell Counting, Viability, & Cryopreservation
		• Capacity: One 2-chamber disposable slide
		• Cell Size: 4-60 µm (detection), 7-60 µm (viability)
		• Concentration: 1x10^4-1x10^7 cells⁄mL
		• Detection Method: Brightfield
		• Display Interface: Capacitive touch screen
		• Field: 2.15 mm x 1.62 mm (3.48 mm2)
		• Instrument Memory: USB Stick
		• Should have USB drive for storing and transferring data to your computer

		• Should have Disposable slide holder
		• Should be with a free box of 50 disposable slides
		• Should be with built-in dilution calculator
		• Should be accurate fast and convenient
74	**Precision Tower 7810 Workstation**	• **Processor:** Intel® Xeon® Processor E5-2697 v3 (14C,2.6GHz, Turbo, HT, 35M, 145W)
		• **Operating System:** Windows 7 Professional 64-bit English (Includes Windows 8.1 Pro license**)**
		• **Non-Microsoft Application Software**: Applications Windows 7
		• **Video Card:** Dual NVIDIA® Quadro® K5200 8GB (2 DP, 2 DL-DVI-I) (4 DP to SL-DVI adapter)
		• **Chassis Options :** Precision T7810 825W Chassis
		• **Memory:**32G 2133MHz DDR4 (4x8GB) RDIMM ECC
		• **HDD/Storage Controller:** Integrated Intel AHCI chipset SATA controller (6 x 6.0Gb/s) - SW RAID 0/1/5/10
		• **Internal Hard Drive Configuration:** C1 SATA 3.5 Inch, 1-2 Hard Drives
		• **CD ROM/DVD ROM :** 8x Slimline DVD-ROM Drive
		• **Keyboard:** US English (QWERTY) KB212-B QuietKey USB Keyboard Black
		• **Mouse:** Dell MS111 USB Optical Mouse
		• **Multi-Select Monitor : Two,** Dell 20 Monitor - P2014H
		• **OS Recovery**: Windows 8.1 English OS Recovery – DVD
		• **Dell backup recovery:** Dell Backup and Recovery Basic
		• **Quick Reference Guide:** Precision Workstation Tower 7810
		• **Power Cords:** US 125V Power Cord
		• **Chassis intrusion switch:** Chassis Intrusion Switch
		• **Packaging:** Dell Precision Packaging
		• **Regulatory Label:** Tower 7810 Regulatory Label DAO
		• **Processor Branding:** Intel® Xeon® Label
		• **TPM Security:** TPM

		• **Hardware support service:** 5 Year ProSupport with 5 Year NBD Limited. Onsite Service After Remote Diagnosis
		• **Complete Care:** 5 Year Accidental Damage Service
		• **Installation Services :** Client Installation
		• **Documentation/Disks:** Safety/Environment and Regulatory Guide
75	**Desktop computers**	• **Processor:** 4th Generation Intel® Core™ i7-4790 processor (8M Cache, up to 4.0 GHz)
		• **Operating System:** Windows 8.1 (64Bit) English
		• **Memory:** 16GB Dual Channel DDR3 1600MHz (8GBx2)
		• **Hard Drive:** 1TB 7200 rpm Hard Drive
		• **Video Card:** Intel® HD Graphics
		• **Optical Drive:** Tray load DVD Drive (Reads and Writes to DVD/CD) • **Wireless:** DW 1705 802.11bgn + Bluetooth 4.0, 2.4 GHz 1x1
		• **Chassis:** MT, Black w/8:1 media card reader
		• **Keyboard:** Wired Keyboard,
		• **Mouse:** USB 3-Button Optical Mouse
		• **Cable:** US Power Cord
		• **Documentation:** English Documentation
		• **Color Bezels:** Black Bezel
76	**Schrödinger small molecule drug discovery suite software**	• **Modules:** Canvas, CombiGlide, ConfGen, Core Hopping, CovDock, Desmond, Epik, Field-Based QSAR, Glide, Induced Fit, Jaguar, KNIME Extensions, LigPrep, MacroModel, Maestro, Maestro Elements, Phase,Prime, PrimeX, Protein Preparation Wizard, QikProp, QM-Polarized Ligand Docking, QSite, SiteMap, Shape Screening
		• With 5 year license
77	**Inverter**	• Output Power: 5.5 KVA
		• Voltage: 96 V
		• Technology: IGBT based PWM
		• WaveForm: Pure Sine Wave
		• Recharge Time: 6 Hr(s)
		• Should be supplied with tubular batteries compatible to give 5.5 KVA output along

		with 36 months warranty
78	**Voltage stabilizer**	• 5 KVA
		• Low and High Voltage Cut-off Protection
		• Primary Switching Technology
		• In Rush Current Capability
		• Mains Turn-on Delay
		• Compatible with laboratory equipments
79	**Voltage stabilizer**	• 2 KVA
		• Low and High Voltage Cut-off Protection
		• Primary Switching Technology
		• In Rush Current Capability
		• Mains Turn-on Delay
		• Compatible with laboratory equipments
80	**Diesel Generator**	• Prime Rating at rated rpm (as per ISO8528)- **30 KVA**
		• Frequency - 50 Hz
		• Power factor – 0.8 lagging
		• Voltage - 230 (1Ø) & 415 (3Ø)
		• Governing class (As per ISO 8528 Part-V) – G2
		• Noise level- <75 dba
		• Fuel Consumption- At 100 % Load- 7.8 Ltrs/hr - At 75 % Load- 7.8 Ltrs/hr - At 50 % Load- 4.5 Ltrs/hr
		• Fuel Tank Capacity – 65 Ltrs.
		• Electrical Battery starting voltage - 12Volts-DC
		• Engine- Low emission, high efficiency engines, Compact, Robust and Rugged Design, 500 hours lube-oil change period
		• Engine- Rated output (Prime Continuous rating as per ISO 8528-1)- 30.9 KW, 42 HP
		• No. of cylinder - 3
		• Cubic capacity 2- 3.12 Ltrs
		• Rated Speed- 1500 RPM
		• Aspiration- TC

		• Lube Oil change period- 500 Hrs.
		• Lube oil Sump Capacity- 8 Ltrs.
		• Coolant Capacity- 14.5 Ltrs.
		• Canopy- Ease of Access and Serviceability, Aesthetically designed, weather and sound resistant enclosure, Insulation conforms to UL94-HF1 class for flammability
		• Controller - Microprocessor based fully configured, Graphical bigger LCD display, Best in class monitoring and diagnostic, Integrable with AMF
		• Alternator- Best In Class Efficiency, Special Windings to Reduce Harmonics, Vacuum Pressure Impregnation and epoxy gel coating on winding
		• Alternator Insulation Class - Class H
		• Alternator Efficiency (at 100% load) 0.8 pf**- 89.0%
		• Max Voltage Dip at Full Load 0.8 pf Lag- $\leq$ 16 %
		• Max Time to build up rated voltage at Rated RPM- < 5 sec provided engine reach the rated speed
		• Monitoring Features- Lube oil Pressure, Engine Temperature, RPM, lube oil Temperature*, Run Hours, No. of starts, Fuel Level, Auto / Manual Stop, Battery charge condition, AC Phase Voltage, Current, kVA, KW, KVAr, KWH, Power Factor
		• The generator set should be installed at provided location along necessary electrical fittings.
81	**Non-refrigerated microcentrifuge (minispin)**	• Instrument should be capable to accommodate 12 or more x 1.5/2ml tubes
		• The maximum speed should be 12000 x g or(12000 rpm) or more
		• Rotor and rotor lids should be made of aluminum for better transition of temperature and should be autoclavable (121°C for 20 mins)
		• The lid should automatically open at the end of the run
		• Rotor and lid should be chemically resistant
		• Instrument should have an air flow which minimizes sample heating
		• Should have very minimal acceleration and deceleration times
		• Noise levels should be < 50dB
		• Instrument should be European CE Certified or UL marked with IVD
82	**Digital Liquid Nitrogen Generator**	• Autotransfer Station-(6-8 LPD) (220 VAC/50Hz)
		• Digital Liquifier
		• Air Compressor/Dryer

		• Control Cable (Liquifier-to-Compressor)
		• Air Line (Air Compressor-to-Liquifier)
		• 20 L Dewar and Transfer Tube
		• 20 L Dewar Scale with Digital Readout Interface
		• Installation Guide, Power Cords
		• Daily Production Capability ~ 6-8 L per day, Generation using a special Kleemenko cycle based refrigeration system and the Joule Thomson Expansion process.
		• Dimensions and Weight of Generator with Storage Dewar -Autotransfer Station and 20L storage dewar: 14.5" wide x 14.5" deep x 33" high (37 cm wide x 37 cm deep x 94 cm high), 130 pounds (59 kilograms)
		• Dimensions and Weight of Air Compressor Unit 17.5" wide x 17.5" deep x 15" high (45 cm wide x 45 cm deep x 38 cm high), 60 pounds (27 kilograms) Air compressor must be located within 12 feet (3 meters) of the generator. Longer air lines up to 30ft are possible.
		• Auto Transfer Facility It has an Auto-transfer Station to transfer liquid nitrogen to an external storage Dewar of 20-30L capacity
		• Gaseous Nitrogen Does not need separate gaseous nitrogen cylinder. It uses gaseous nitrogen from air, directly removes Oxygen in separation unit.
		• CFC control It is free of ozone depleting CFCs 8. Energy Saving Cycle It has automatic energy saving cycles and controls
		• Electrical requirements Electrical requirements are 220 VAC/50Hz - Single Phase
		• Operating Conditions Temperature: 16 oC to 28 oC, Humidity: < 1% oxygen) with negligible water content immediately after dispensing 13. Safety safer to be installed in laboratory
		• Noise level < 55 dBA at 1 meter
		• Microbial contamination analysis Tests were performed following the reference standard ISO 11737-1: 2006
		• Extra 12-pack of filters
		• Inclusive of packing and CIF charges
83	**HPTLC Image Documentation System**	• UV Blocking Filters in Front of Light Sources: Imported UV blocking filter are used to block unwanted illumination & only true UV will be incident on the object to be observed.

		• Uniform illumination to observe the plates under same condition.
		• Flicker less Ignition: State of art electronic circuitry, which uses electronic ballast > 50 KHz to ensure flicker less illumination.
		• Complete dark room: Complete dark room to ensure maximum contrast to observe even faintest spot.
		• Light Sources: Imported Light source are used from reputed manufactures like Phillips, Osram, Radium, to ensure complete reliability of the light sources
		• Lamp Source Flicker less illumination > 50khz.
		• Illumination Individual switches control the ON & OFF of Top & Bottom Lamps sources Top & Bottom sources can be made on Simultaneously. Top illumination • Visible Light 2 No. (1 from each side).
		• UV 254nm 1 No. (1 from each side).With Separate Filter on either side
		• UV 365 nm 2 No. (1 from each side).With Separate Filter on either side
		• Bottom Illumination TRANS ILLUMINATOR – 4X8 W Visible Light Sources are in built.
		• Optional Provision for 2 No. 8 W UV 312 or 365 nm light sources from bottom with imported UV filter can be fitted at an extra cost so that the same unit can be used for different application as GEL Documentation etc.
		• Lamp Filters Imported filters are fixed in front & UV light sources on either side to ensure proper incident wavelength & to cut off unwanted harmonics.
		• Camera Filters (optional) UV blocking filter is provided with unit. Optional Red, yellow and blue filters of 60nm diameter can be provided to put in front of camera lens. This gives an additional facility for enhancing images if required under different color filters.
		• Camera Cannon High Resolution Power shot Camera USB Connectivity.
		• Electrical Mains voltage 230VAC 50Hz + / -10%
		• Humidity / Temperature 80% Rh / 30 deg. centigrade.
84	**HPTLC Sample Applicator**	• Plate Size: - 200mm X 200 mm.
		• Numbers of syringes - 100µl. Optional 500µl.
		• Any type of plates TLC/HPTLC can be used. Handmade glass plate (up to 5mm thickness) to pre-coated Aluminium plates.
		• Automatic syringe height adjustments for different types of plates.

		• N2 spray gas with 1-1.5 lit/min gas consumption.
		• Easy software selection of Delivery speed of the sample.
		• Band Length 1mm-190 mm.
		• Fixed operating methods No. 25, with default factory settings are provided these methods can be overwritten as per customer's requirements.
		• CPU of machine automatically CALCULATES the No of Bands that can be applied with given Plate size, Start distance, Space & Band length.
		• Facility to Superimpose Selected tracks.
		• In Built Diagnostics Modular design.
		• Pneumatic module with gas pressure indicator
		• Easy & affordable spares. • Last executed method is stored in volatile memory and it can be open& executed
		• In Personal Computer operating mode is controlled by Personal Computer through software & Display shows " PC Control"
		• In Manual Mode or Machine Mode method is executed by opening any one method out of 25 in-built methods stored in machine memory.
		• Graphical alpha numeric displays the current status of the machine.
85	**Vertical Fermentor**	• Total capacity 200 litres, working capacity upto 70 per cent of total capacity.
		• Triple walled with water circulation in between two outer walls.
		• Sturdy construction with inner chamber made of 12 to 14 gauge steel.
		• Process contact parts in stainless steel grade SS304, Provided with SS304 jacket for steam and water circulation.
		• Lid is made of Stainless Steel and is tightened by nut-bolts and is provided with best quality joint less neoprene gasket to avoid any risk and trouble free operation.
		• With digital temperature and pH indicator. Fitted with water level indicator to indicate the water level inside the boiler.
		• With pressure gauge, steam release cock, safety valves, spring loaded safety valves etc.
		• Provided with Inoculation port and drain valve for emptying the chamber.
		• Provided with ISI mark heating elements, which are easily replaceable and heats the water to desired temperature (1210C) and pressure 5 to 22 Psi.
		• The boiler and outer shell is provided with air insulation.
		• Provided with stirrer along with heavy duty motor.

		• Ports and fittings for the following- Air inlet to sparger, Air exhaust (vent), etc.
		• Aeration system with autoclavable (PTFE membrane disc type) air filter capsules for air inlet and exhaust, rating 0.01 microns.
		• Control panel console provided with electrical switchgear and panel accessories Electricals – 230 V AC single phase - 02 No.
		• Accessories: Provided with refrigerating type water cooler, water recirculation pump for cold water circulation through jacket for temperature control during cooling stage. – 01 No.
		• Supplied with air compressor suitable for fermentor size – 01 No. Electricals – 230 V AC single phase
86	**Spilt Air Conditioner – 1.0 Ton**	• Capacity – 1.0 Ton
		• Star ratting – 5 star
		• Compressor – 100% copper and Rotary type
		• Technology – Inverter
		• Refrigerant – R410A
		• Should be ecofriendly
87	**Spilt Air Conditioner – 2.0 Ton**	• Capacity – 2.0 Ton
		• Star ratting – 5 star
		• Compressor – 100% copper and Rotary type
		• Technology – Inverter
		• Refrigerant – R410A
		• Should be ecofriendly
88	**Cassette Air Conditioner – 1.5 Ton**	• Capacity – 1.5 Ton
		• Star ratting – 5 star
		• Compressor – 100% copper and Rotary type
		• Technology – Inverter
		• Refrigerant – R410A/R22
		• Should be ecofriendly
89	**Cassette Air Conditioner – 2.0 Ton**	• Capacity – 2.0 Ton
		• Star ratting – 3/5 star
		• Compressor – 100% copper and Rotary type

		• Technology – Inverter
		• Refrigerant – R410A/R22
		• Should be ecofriendly
90	**Handycam with Built-in Projector**	• Size : Approx.61.5 mm x 66.0 mm x 121.0 mm dimension with 380 g weight including supplied battery. Handycam with rechargeable Battery Pack
		• Balanced Optical Steady Shot™ with 5-axis Intelligent Active mode with 1 / 5.8 type (3.1 mm) back-illuminated Sensor.
		• Effective Pixels for Video must be approx. 2.29 Megapixels (16:9)[11]. image processor.
		• Lens type : 26.8 mm^2 wide-angle G Lens (auto cover) with 30x optical zoom and clear image zoom 60x[12].
		• Screen type : LCD 7.5 cm (3.0 type) Clear Photo LCD display (460 800 dots) Wide (16:9).
		• Image Stabilization Type : Balanced Optical Steady Shot™ w/ Intelligent Active mode (5-axis)
		• Storage media: Internal Flash Memory, XAVC S HD: Micro SDHC Memory Card (4 GB or over, Class 10 or Higher)/Micro SDXC Memory Card (Class 10 or Higher), AVCHD, Still: Memory Stick Micro™ (Mark 2), Micro SD/SDHC/SDXC Memory Card (Class 4 or Higher)
		• Batery type : LITHIUM with AccuPower Meter System
		• Wireless functions : Wi-Fi Compatible, IEEE 802.11b/g/n (2.4 GHz band) and NFC forum • Type 3 Tag compatible
		• Projector : Up to 25 lumen, Resolution Output 640 x 360 Projected Image Size 10 type - 100 type
		• Time Lapse Capture : Shooting Interval (1/2/5/10/30/60 s), Shot Number(1–999), Capture Image Size (HD: S (2.1 M, 1920 x 1080)), AE Mode (AE Lock/AE Tracking)
		• Microphone : Built-in Zoom Micropjhone
91	**Camera**	• 18-55 mm Zoom Lens.
		• Approx. 142.6(H) x 104.2(W) x 82.8 mm(D) diamension.
		• Weight 596 g (Body Only) / 675 g (With battery and media).
		• 2.7-type TFT LCD screen.
		• Lenses : A-mount lenses, operation with Minolta/Konica Minolta lenses. • APS-C type (23.5 x 15.6mm) sensor.

		• Total pixel approx.24.8 MP and effective pixel 24.2 MP.
		• Image sensor aspect ratio 3:2.
		• The device required anti-dust coating on image sensor and image sensor shift mechanism. • 4x digital zoom.
		• Storage media : Memory Stick
		• TTL Phase-detection AF.
		• Battery : Rechargeable Battery Pack
92	**Optimiser Versatile Storage System**	• D-2 Drive Type
		• Made of CRCA steel and powder coated with epoxy polyester powder Body with adjustable shelves.
		• Bodies movable on channels mechanically through a drive wheel an sprocket-chain mechanism.
		• Provision of manual locking of individual units should be available.
		• Centralised locking arrangement. Insert type label holders providing for indexing and easy identification of the contents of the unit and shelves.
		• 1980mm (H), 915 mm + 915 mm (W), 457 mm Single Static (D), Twin Mobile 915 mm (D)[TD2], Single last Locking stiffener on single last Unit., Channel C/C 1194 mm.
93	**Desert Air Cooler 67 lit water tank**	• Desert Air Cooler flaunts a beautifully done body made of high-grade plastic material.
		• Shock-proof body takes care of your safety and its rust-resistant property keeps the unit safe from corrosion.
		• Exterior of this air cooler comes in a light blue tone which is sober enough to match any sort of home or office interior.
		• Hood-like upper portion incorporates a spirally designed fan.
		• Each fan blade measures 18 inches.
		• Electronic Regulator placed on right-side top corner lets you adjust the fan speed in any one of the 3 levels.
		• The cooler is placed on a trolley with castor wheels. Now you can single-handedly move the cooler anywhere you want.
		• This unit comes in a compact dimension of 75 x 66 x 120 cm (D X B x H) and weighs very light.

		• Water Tank Capacity: A 67-liter water tank is placed at bottom of the cooler.
		• Submersible Pump takes the water out of this tank and spreads the water to all four sides for faster and better cooling.
		• Cooling and Airflow Capacity: A robust Nema 1/5 HP 220 volts A.C. motor that runs at a speed of 1400/1100 rpm.
		• Air Delivery capacity of this cooler is 5000 cubic feet.
		• Automatic Oscillation of the fan scatters cool air all over the room for a uniform cooling effect.
		• Non-Clog Water Distribution System maintains steady water supply to cooling pads. By injecting more and more atmospheric air, this cooler keeps indoor fresh and well-ventilated.
94	**DUCT Vent Air Cooler**	• This air cooler is made with reliable and highly safe electrical components and hence, there is nothing that you need to worry about.
		• It has compact design and the exterior is blue in color making this a stylish choice for offices and living rooms.
		• It is made from metal and thus is durable and sturdy.
		• It also features wheels that make it easy to take it from one place to the others.
		• The capacity of the water tank that this air cooler is equipped with is 100 liters meaning it can go on for long durations without you having to refill it.
		• Cooling and Airflow Capacity: This is a powerful performer with air throw distance of 4000 CFT.
		• It is equipped with an efficient fan that has blades measuring 18 inches ensuring efficient cooling.
		• The maximum speed that the fan can attain is 1400 RPM and that is also quite decent even for large rooms.
		• There are four speed settings that you can use to control the speed of the fan and hence, the cooling.
		• The net power consumption of this model is 220 Watts
		• warranty of 2 years
95	**Desert Air Cooler**	• The body of the cooler is fabricated from metal which makes it robust and sturdy.
		• This cooler displays a sleek demeanor and an elegant white shade.

	45 lit water tank	• The swank design of this cooling apparatus permits it to occupy minimum space at home or in the office, wherever it is installed. Its slick contour harmonizes with the sublime interior décor.
		• It blends with modern or traditional interior design.
		• Water Tank capacity: The Air Cooler is equipped with a 45 liter water tank capacity.
		• This is a good amount of water capacity to cater for a medium sized office for a considerable number of hours. It requires to be filled up once a day and it can function for 24 hours at a stretch on 45 liters of water.
		• It is designed to serve all night long with its enormous water capacity.
		• There is no need to wake up in the odd hours of the night to fill up this cooling device.
		• Cooling and Airflow Capacity: This Desert Air Cooler is endowed with blower control and is furnished with manual slide switches that permit 4 different cooler settings.
		• It is endowed with honeycomb cooling filter.
		• The Desert Air Cooler is preferred indoors because of its low sound performance. Its simple design facilitates the ease of maintenance.
		• It is comprised of highly reliable and dependable electrical component parts.
		• warranty period of 2 years.
96	**Mini tractor 21 hp**	• **Engine –** Engine gross power (HP) – 21 hp
		• **Transmission** Steering – hand steering/power steering
		• Brake - oil type
		• Hydraulics- Position control, Automatic draft control
97	**Mini cultivator for mini tractor**	• 3 point link -3p
		• Ploughing depth- Av. 700 mm
		• Blade type – L Blade
		• Total blades- 16
98	**Mini tractor hydraulic trolley**	• 7x4x1.5
		• 2mt capacity
		• suitable for all mini tractor (21 hp)
99	**Open well Submersible pump with**	• hp - 5 hp and 7 hp
		• Application – submersible
		• CED coated cast iron components for rust free & longer life.

	Required accessories cost for complete fitting of motor on well having depth of 50 feet	• Fuel/power –electric • accessories cost for complete fitting of motor on well having depth of 50 feet
100	**Laser printers**	• Functions: Black-and-white printing, black-and-white copying, black-and-white and colour scanning • Black & White, A4: Up to 14 ppm • LaserJet multifunction printer
101	**Inkjet colour printer**	• Print, scan, copy and fax • Print from smart phones and tablet PCs • Compact footprint • High-yield ink bottles • 2.7 colour LCD screen • Direct printing via memory card slot, USB port and Pict Bridge

Sr.	Name of the instrument	Specification of the instrument
102	**Auto Titrator**	With 'Advanced Microprocessor based system' with easy interchangeable burette assemblies (1/5/10/25 ml.),Auto Recognition thru advance sensor technology. Imported Burette assembly with NIST / NPL Traceable validation certificate, Auto Recognition with advance sensor technology & Burette validation factor for dispensing correction. Provision for Alphanumeric entries of Sample Name, Titrant Name, Identification No. & Date for report printout for complete authentication. With 50 Method Storage Capacity with two tier Password Protection (i.e. Admin & User Password). 10 dedicated methods with pre-studied parameters for routine titrations and Potentiometric titrations. With optional provision to convert it to perform KF titration by simply changing Burette assembly, Serial port for balance and PC and parallel port for printer. It should have four standardized modes of Titrations such as : a. Incremental b. Equilibrium c. Cutoff by pH d. pH Stat

		It should have a provision to calculate results by considering First, Last, Largest, All and / or Selectable end points with display and printout. It should have User selectable Decimal selection for Results i.e. 0.0001, 0.001, 0.01 or 0.1.It should have a provision for Differential Electrode Amplifier unit for Potentiometric and Voltametric Titrations. It should have Report Formats such as : a. Parameters and Result b. Data table c. Graphics – 1. mV / µl 2. 1st Derivative Graph 3. 2nd Derivative Graph 4. µL / Time. d. Program Parameters for 50 programs (includes 10 default programs for routine titrations) e. Condensed result print out includes time, Sample ID. f. Statistical Data for 10 repeat runs with S.D, R.S.D & C.V. g. Auto Evaluation for multi EP samples. Specifications: mV Range : +/- 3200 mV, Accuracy : +/- 0.1mV,Burette Resolution: 1/ 10000 for 10 ml, End point Detection: Potentiometric & Voltametric.
103	Microprocessor Controlled pH/mV/Temp. METER	**pH** pH Range : -2.000 to 19.999 Resolution : 0.1 / 0.01 / 0.001 (user selectable) Rel. Accuracy : ± 0.002pH Slope : 80 to 120% (using 3 point calibration facility) pH Sensor : Combination pH Electrode Calibration : Automatic, with auto buffer recognition facility. **mV** mV Range : 0 to ±1999.9 Resolution : ± 0.1mV Rel. Accuracy : ± 0.2mV **Temperture** Range : 0 to 150°C Resolution : 0.1°C Rel. Accuracy : ± 0.2°C Sensor : RTD PT100

		Temp. Comp. : Automatic / Manual Advanced microcontroller based user friendly design, 3 point calibration with auto buffer recognition facility, Compliance with USP & DIN standards, Simultaneous measurement of pH, mV and temp., Alpha-numeric splash waterproof polyester keypad with soft keys, Facility for electrode diagnosis, Backlit LCD display, Non-volatile memory of at least 30pH & 30mV readings with temperature, Password protection for calibration data & stored data will be preferred, to enter sample name & identification number for authentication, Audible beep indication during valid key operation, One BNC & one ATC – PT100 as input & one parallel port for printer & one RS232C port for PC connectivity.
104	Atomic Absorption Spectrophotometer with Integrated Flame & Graphite Furnace and Hydride Vapour Generator	Fully Automated Integrated Flame and Graphite PC controlled true double beam Atomic Absorption Spectrophotometer system with deuterium background correction. **Optics:** Fully sealed and vibration free optical system. **Monochromator:** Czerny Turner type with Holographic gratings of 1800 lines/mm with minimum focal length of 300mm or better.**Wavelength Range:** Should cover minimum range of 187nm-910nm. **Slit/Bandwidth:** Adjustable slit from 0.1nm to 2nm & should be software selectable. **Background Correction:** Deuterium Arc/Self Reversal.**Lamp Support:** Motorized 8 lamp turret with a capacity of mounting 8 lamps at a time. **Burner:** 10cm Air Acetylene and 5cm Nitrous Oxide burner should be offered. Burner should be capable of moving in horizontal and vertical direction and it should be controlled through software. **Safety System:** Safety interlocks for Burner Identification, Flame Sensor, Gas leak Sensor, Low Pressure Gas Sensor, Drain Trap Sensor, Power Loss Protection. **Special safety features for Graphite:** Argon Gas Pressure Sensor, Water Flow Sensor, Oven Temperature Sensor, and Broken Graphite Tube Protection.**Gas Control:** Instrument should have fully automatic gas control system to maintain gas flows and should adjust the gas flow during interchange between Air Acetylene and Nitrous Oxide. **Sensitivity:** High sensitivity absorbance of minimum 0.9 Abs for standard 5ppm Cu or better. **Coded Hollow Cathode Lamps:** Single element and coded hollow cathode lamps should be offered. Lamp for the specified elements should be offered Lead, Cadmium, Zinc, Arsenic, Copper, Tin, Mercury and Nickel. **Graphite Furnace:** Pyrolytically coated and transversely heated upto 3000^{o}C. Safety features: 1. Argon Gas pressure sensor,2. Water Flo Sensor,3. Over Temperature Sensor 4. Broken Graphite Table protection. **Hydride Vapour Generator:** Continuous flow Hydride analysis system should be offered with 4 channels Peristaltic Pump and should be chemically resistant. **Auto Sampler:** Auto sampler for graphite and Flame system. It should have auto dilution facility. **Software:** Latest software which must control main system, Auto sampler, Graphite and Hydride System should be offered. **Water Chiller:** Recalculating Water Chiller for Graphite system must be offered.

		Accessories: Acetylene Regulator, Nitrous Oxide Regulator Heated, Nitrous Oxide Burner Head, Acetylene Gas with Cylinder ,Nitrous Gas with Cylinder, Argon Gas Cylinder with regulator, Air Compressor, Vent and Hood Assembly with 10ft. ducting, PC and Printer with loaded and tested software branded DELL/HP, Standard solutions for Hollow Cathode Lamps mentioned above, Suitable Online conditioner which includes built in surge separation and isolation transformer to be quoted for the main system
105	ATOMIC ABSORPTION SPECTROMETER WITH INTEGRATED GRAPHITE FURNACE	Intend to purchase fully PC controlled Atomic Absorption Spectrometer which should have integrated Graphite Furnace with Auto sampler facility with following specification : Monochromator : The system should be based on Abbration corrected Czerny–Turner Grating with 1800 Lines/mm and optimized for both UV and Visible energy. Slit width should be automatic from 0.1 to 2.0 nm selectable through PC. Detector: Photo multiplier tube Detector. Wave Length Range : 190-900 nm.facility to adjust the burner horizontally and vertically. Reciprocal linear Dispersion should be <1.6nm/mm and absorb. better 0.8 Abs for 5ppm Copper. have six lamp holder with automatic Turret controlled with software with auto alignment. Hollow cathode Lamps Single Element. Air Acetylene Burner Head and N_2O burner head separately. Interchangeable Full titanium nebulizer for organic and acidic purpose and burner head for 50mm and 100mm, Facility to switch from flame to Graphite within few Seconds with out removing the air acetylene or N20 Burner. All the method parameters related with lamp selection, calibration, control of flow gases should be thru' windows based software. The instrument should have programmable and computer controlled gas controls both for Air Acetylene,/Nitrous Oxide . The system should have all safety features required for the system. The AAS unit will be operated with windows Software for controlling analyzer, setting-up the method parameters, analyzing the samples, performing calibrations, etc. The verification kit STD for Cu to check performance periodically to be included in the offer. **HOLLOW CATHODE LAMPS** .**ACCESSORIES** : Hydride Generator (for elements - As,Se,Hg,Bb,Bi,Sb,Sn,Te), Automatic and computer controlled. Sample should be injected through the peristaltic pump,3 channel peristaltic pump with heated quartz cell. Acetylene Regulator, Nitrous Oxide Regulator Heated, Nitrous Oxide Burner Head, Acetylene Gas with Cylinder, Nitrous Gas with Cylinder, Air Compressor, Argon Gas Cylinder with regulator, Vent and Hood Assembly with 10ft. ducting. PC and Printer, Standard solutions for Hollow Cathode Lamps mentioned above. **OPTIONAL ITEM : GRAPHITE FURNACE WITH AUTOSAMPLER :** Atomic Absorption spectrometer should be supplied with Integrated Built-in Flame and Graphite Furnace. It should be automatically aligned in optical path by using the software.
106	**Karl Fischer Titrator**	We intend to procure KF TITRATOR with following specifications & features; Advanced

		microprocessor based standalone system with easy interchangeable imported burette assemblies (5 or 10 ml.) & imported Valve with Auto Burette Recognition via advance sensor technology. Provision of minimum 50 method storage & minimum 10 result storage with statistics. It should have minimum four standardized modes of operation such as : Neutralization, Concentration, Percentage, PPM. With Serial port for balance, PC and parallel port for printer. Automatic monitoring of atmospheric moisture leaks with online as well as offline Correction Facility. In-built –Standardization procedures for Water / Sodium Tartrate compliant to USP 23/921 & IS/ASTM methods. User selectable polarizing current range, useful when various grades of solvents are to be used for different samples. Password provision for method protection. KF Titrator should have following specifications: • mV Amplification Range - ± 3000 mV or Better • Accuracy - ± 1 mV or better • Polarised Current Range - 1 µA to 80 µA or better • Burette Resolution - 1/10000 for 10 ml. i.e. 0.001ml or Better • Measuring Range - 10 µg to 500 mg. (i.e. 20ppm – 100%) • End Point cut-off criteria - Delay or Drift.
107	FTIR SPECTROMETER	Interferometer :Michelson (or suitable) interferometer with dynamic aligned, sealed and desiccated optical System with protective BaF2 coated KBr windows, Beam Splitter :Completely sealed Ge coated KBr,Wavelength Range :7800 – 350 cm-1 ,Spectral Resolution : Variable 0.5 cm-1 to 16 cm-1,Source : High intensity, Long life source covering entire MIR range,SNR : 35,000:1 (Peak to Peak)1 minute,Laser : Temperature controlled solid-state Near-IR diode laser, Wavenumber Accuracy : 0.05 cm-1 at 2000 cm-1, Wavelength Precision : Better than 0.01 cm-1 at 2000 cm-1, Detector : Temperature-stabilised room temperature DTGS detector, Performance Verification :Inbuilt motorised NIST-traceable 1.5 MIL polystyrene film with 5 years certification. Automated performance verification as per ASTM E1421, Humidity and Vapor Protection **:** Tightly sealed and desiccated optical bench with Magnesium-alloy construction, PC Connectivity :USB, Software : The Software should have below features: Atmospheric Vapour Compensation ,Spectral Comparison ,Multiple spectra Handling,Reporting - Customized templates, Notebook, Customizable toolbar and menu options,Spectral History,Automatic accessory detection and performance verification,Peak analysis tools: peak area, peak height ,Live display of data collection, and spectral data preview,User logins and password protection, FTIR Libraries : 50,000 FTIR spectra should be supply , Accessories :Instrument Should have Automatic accessory detection,Single Bounce Monolithic Diamond ATR to meet MIR range (up to 400 cm-1) for Liquid, Solid, Powder & film samples,Transmission module for transmission measurement should be included,

		General:Branded Desktop PC, Inject Printer & Branded UPS, Warranty :Modulator (10-year), laser(10-year), source(2-year)
108	High throughput Micro Volume UV VIS Spectrophotometer	Higher throughput, full-spectrum microvolume measurements UV-Visible Spectrophotometer for analysis biological sample like Nucleic acid and Proteins. The instrument should have Optical Density measurements (600 nm)Sample position illuminator, Multi-sample loading and Multi-sample measurement with pedestals technology. Wavelength range : 250-700 nm or better,Light Source :Xenon flash Lamp ,Detector Type :2048-element linear silicon CCD or better,Minimum sample Vol.:µl ,Number of samples :Analyzes from one to eight samples at a time,Simply measure directly from tubes or 96-well plates,Sample retention system automatically optimizes pathlength to accommodate low and high concentrations ,Wavelength Accuracy :1nm ,Wavelength Resolution : 3 nm (FWHM at Hg 546 nm),Minimum Detection Limit : 2.5 ng/µl (dsDNA) or better,Concentration Range :Measures nucleic acid concentration and purity (2.5 – 3,700 ng/µL for dsDNA),Measurement Time : 20 seconds (for 8 samples),Absorbance Range:0.05-75Abs. (10 mm equivalent absorbance) or better,Absorbance Precision :0.003 Abs. or better,Path lengths :1 mm and 0.2 mm with auto selection,Consumables :No need of any consumables like cuvettes, capillaries or reagents,Pre-configured applications :Nucleic Acid , Protein A280, Micro Array ,Proteins & Labels , BCA, Bradford, Lowry, Pierce 660, UV/Vis, Cell Cultures ,Software : Pre-configured methods for colorimetric protein analysis, Custom method capability, Flexible options for exporting data and producing customized reports ,PC and Software :With Professional versions of Windows 7 (32 bit or 64 bit) and compatible operating software,
109	**Portable X-Ray Fluorescence Spectrometer**	The x-ray fluorescence spectrometer should be of Energy Dispersive type. It should be of latest model and should be compact, portable (shoulder slung or briefcase type) as well as capable to be carried out in a vehicle for onsite soil testing with GPS features. It should be capable of analyzing elements from Na (11) to U (92) simultaneously in soil and plant samples.The portable ED-XRF Spectrometer should be equipped with: X-ray Rh-tube of 10W upto 50kV, with a combination of filter changer.Integrated sample spinner for better analysis from a larger area of the given sample.A CCD camera enables the positioning when observing smaller sample areas. Vacuum to increase sensitivity in the element range Na-Cl when analyzing solid samples. Vacuum system to be provided .Optional Helium gas purging to be provided.SDD detector with peltier cooling having a preferred resolution of < 150 eV (Mn Kα) at an input count rate of up to 200,000 cps or better.Pre calibration package for soil and plant samples to be provided.Unknown quantification software to be provided.Integrated computer with touch screen and as well as with external notebook/laptop with licensed Windows software and operational software to control the instrument.GPS adapter with Bluetooth, Wi-

		Fi, LAN & USB.Car Charger with carrying case.Consumables should include Safety windows (protective film), Sample cups and supporting film for the analysis of powder material for 1000 samples. Battery pack-1 nos.12 V DC car charging cable. Portable sample preparation system should consist of portable mini mill pulverizer preferably with zirconium oxide milling ball (5 pieces or more) for grinding the soil samples.
110	Double Beam UV VIS Spectrophotometer	Optical Design / Geometry :PC- Controlled True Double beam Spectrophotometer with Separate reference and sample compartments for operation convenience, the system should incorporate Czerny-Turner Monochromator and performance calibration to be performed using Hg lamp,Wavelength Range :190–1100 nm,Spectral Bandwidth:Variable: 1 nm, 2nm,Light Source:Xenon lamp with 3 years warranty, expected life of 7 years,Detector:Silicon Photodiodes,Wavelength Accuracy :±0.8 nm or better for full range,Wavelength Repeatability:≤0.1 nm ,Resolution :>1.8 (peak-to-valley ratio; toluene in hexane),Scan Modes :Absorbance, % Transmittance, % Reflectance, Kubelka-Munk, log (1/R), log (Abs), Abs*Factor, Intensity,Scanning Speed :<1 to 6000 nm/min;Baseline Flatness :±0.0010 A or better,Photometric Display Range :-0.3 to 4.0 A,Stray Light :KCl, 198 nm: ≤1% T,NaI, 220 nm: ≤0.05% T,NaNO2,340 nm: ≤0.05% T,Photometric Accuracy : 0.5 A: ±0.004 A,1A: ±0.006 A,2A: ±0.010 A,Drift (Stability): <0.0005 A/hr 500 nm, 1.0 nm SBW, 1 hour warm-up,Noise level: 0A: ≤0.00015 A,1A: ≤0.00050 A,2A: ≤0.00080 A:Performance Verification & Calibration :It should be with Mercury Lamp,Sample Compartment :Variable path length rectangular cell holder to be included.Sample compartment should aaccommodates a wide array of accessories,Software :Instrument control software including: wavelength scanning, single and multiple fixed wavelength, wavelength ratios, quantitative analysis and for running customized method scripts. Pre-programmed bio applications for routine nucleic acid andprotein concentrations, colorimetric assays,labelling efficiency and DNA melting with temperature ramping. Preprogramed OD600 method for cell culture measurements,PC & Printer, Suitable UPS :Branded PC & Printer to be quoted, Warranty :12 months from the date of Installation, Accessories :Two pairs of square Quartz cuvette (10 mm path length), Installation Proof :The bidding vendor need to submit at least 10 P.Os preferably 5 each in last 2 years for Nanophotometer.
111	**SIMULTANEOUS ICP OES SPECTROMETER**	The ICP spectrometer which should be truly simultaneous for elemental including silicon & heavy metals analysis in, soil, plant, drinking water, waste water, ground water & fertilizer samples within 60 seconds in ppb to % range. Please providing supporting application notes of the quoted model. It should be with Paschen Runge Polychromator based optical system with the use of CCD Detectors only to cover a wavelength of 177 to 770nm or wider. Please quote optionally for additional detector as normally used in the system. System with single or

		double monochromator is not preferred. The Polychromator optics should be gas sealed or gas purged with argon gas. The purge rate for the optics should not exceed more than 0.5 liters /min for the entire wavelength range during the analysis mode even for the wavelength below 200nm.Please arrange for argon gas bank to ensure continuous supply for at least one year to do analysis of 500 samples/month. All the gas flow to the torch should be with volume flow controller based and should be varied via computer control. The system should be provided with computer controlled features like sprint valve or equivalent for fast sample uptake, sample rinse and sample drain. The ICP plasma with suitable view to meet the above applications and specified measuring range. System with the use of air compressor or recurring cones or nitrogen gas is not preferred. The ICP plasma should be with a RF Generator of 27.12 MHz with a RF output of 1600 W or higher. For water cooled system, also quote with additional noiseless water recirculation as a standby unit. Sample introduction kit for HF samples for elements including silicon Detailed hydride generator with separate liquid and gaseous phase like CETAC's HGX-200 or better to measure elements like Hg, As, Cd & Sb to sub ppm level. Please do not offer T-type tube hydride kit.The ICP Software should be incorporated with:(User Friendly Features, Ability to recall wavelength spectrum to measure previously unknown elements, Full spectrum re-processing for any sample measured,User and Data Management compliant to 21 CFR Part 11 for controlled accessibility, internal audit and electronic signatures) Consumables for two years operation which include torch, tubing, filter mat etc. The ICP should be also quoted with indigenous items viz(Computer: iCore 5, 64 bit, 1 TB Hard disk drive, 4 GB RAM, DVD writer , 21" TFT monitor, mouse, Latest licensed Windows. Laser jet printer,8 KVA UPS with 30 minutes back up, Fume exhaust system with 10 feet duct, Argon gas (99.996% purity) filled cylinder (3nos), Gas regulator with stainless steel diaphragm-2nos, Manual gas manifold for two cylinders for the plasma operation NIST traceable multi-element standards for 21 elements including Hg, As, Cd & Pb at 1000ppm-100ml.ICP Tuning Standards-100ml. The supplier should provide Supplier should furnish certificate about the origin of manufacture, origin of assembly & origin of shipment of the main instrument, this is mandatory. Main Instrument of Chinese origin not preferred. Certificate for the availability of spares for 10 years from the date of installation.
112	**Grains and Oilseed Analyzer**	Near infrared Transmittance analyser for straight determination of Protein(%), Gluten(%), Sedimentation(ml), Moisture(%)and Oil (%) in whole grain form without grinding of samples; With Built-in-> Multigrain cell and In-built -Test Weight/hectolitre (kg/hl) weight of samples.Chemometrics Software should be part of configuration for development of calibration (i.e. New Samples in future at customer site).Instrument should be rugged,

		Protection- Dust and Humidity, Vibration tolerant with automatic data recording system.The optical system should contain scanning, grating mono-chromator 570 - 1100 nm. Total Analysis time approx. 45 to 90sec for a sample(i.e. Depending upon no of Sub-Samples).Life time warranty on Grating Mono-chromator.The instrument to be supported by a flexible software package providing routine analysis with all essential accessories. **Software spec: Integrated, Stand-alone operations, fail-safe,**Optical path length: Automatically adjusted, Range 6 -30 mm,Verification of wavelength: Automatic during start up. Interfaces : RS 232, USB and Ethernet,User Interface: Glass, COS(Central Operation Slider), multi-language GUI,System should be able to handle Partial Least-Square Regressions and Multi-Linear Regression calibrations.Screen: TFT 640 x 480 pixel, Colour,Type of sample: Whole grain and with the Optional Sample Transport Module to measure samples with lower quantities.Optional Flour Module for measurement of Flour(Powdery Samples).Sample quantity must be more than 200grams to ensure good representation samples.All Calibration should provide accurate and repeatable analytical results and are 100 % transferable between the instruments.Sample configuration : Stand-alone or Network (Datapoints:**1000,**OpticalBandwidth:**4 nm,** Detector: **Silicon,** Scanning Monochromator, Measurement technique **Transmittance, Sample presentation,**Flow through sample system(**Automatic**),Number of sub samples should be **5 to 20** for better analysis, **Communications (**Printer ,modem, externalPC,LAN, Keyboard, Barcode, USB port, Remote I/O , Self-test,Calibration transferability : Yes Data Storage : USB memory stick for results and scans,Result presentation: Locally on screen and printer as well as on local or central computer. Outlier detector : Yes) Cleaning: Should have auto cleaning system. Machine should be independent of variations due to sample temperature for accuracy. Remote support: Machine should be able to be taken control remotely for calibration surveillance and software. As mentioned in specification under networking software.Web Interface features (Access rights (depend upon user),Measurement history(Central reporting- results of last 4000 measurement's),Down load of spectral data(eg. For calibration, adjustment and development), Calibration management (bias and skews adjustment), System diagnostic – also for remote error analysis (e.g. lamp hour, error lock),User management(e.g. create user, delete user and user rights), Username / password protected (access to Spectra Alyzer).
113	MICRO VOLUMAE SPECTROPHOTOMETER Standalonebuilt-in touchscreen instrument control Low volume UV-VIS Spectrophotometer	Wavelength Range :190-850 nm or better with ±1 nm accuracy,Operating System :Android based 7.0" touch system with 32GB flash memory and in built Speaker. The Built in control module should be movable and tiltable for operating convenience.Spectral Bandwidth :<1.8 nm (FWHM @Hg 254 nm),Minimum Sample Size :1 µL,Path length :0.030 to 1.0 mm auto-ranging, Light Source :Xenon flash lamp,Detector Type :2048-element CMOS linear image sensor

	with following specifications:	Detection Limit :2 ng/µLdsDNA 0.06 (0.03) mg/mL BSA (IgG),Maximum Concentration : 27,500 ng/µLdsDNA,820 (400) mg/mL BSA (IgG),Photometric Range :0–550 A,Photometric Accuracy :3% at 0.97 A, 302 nm,Measurement and Data Processing Time :Less than 10 sec,Measurement Repeatability :0.002 A (1.0 mm path) or 1%CV, whichever is greater,SD of 10 individual measurements at 0.97 A, System Software : Must have embedded sensor and digital image analysis capability to monitor for bubbles and broken sample columns.Must support Blank, Auto-Blank, Measure and Auto-Measure options.Must deliver A260, A280, and purity ratio information A260/A280 and A260/A230 information for nucleic acid measurements.Must deliver A260, A280, and purity ratio information A260/A280information for protein measurements.Must be able to report background corrected absorbance measurements at260nm and 280nm.Must have technology that can identify contaminants in the sample and report corrected concentration, Pre-Programmed Methods :ssDNA, dsDNA, RNA, oligoDNA, igoRNA, microarray fluorescentlylabeled nucleic acid), Protein (A280), Protein A205, Protein colorimetric (Bradford, BCA, Lowry and Pierce™ 660), Proteins& Labels (labeled proteins), OD600, Kinetics, Custom Methods. Connectivity :PC & Local Control via USB port, Ethernet, Bluetooth and Wi-Fi3 Warranty :Two years, Installation Proof :The bidding vendor need to submit atleast 10 P.Os preferreably 5 each in last 2 years for Nanophotometer (Necessary Preconditioning Kit & Performance verification kit should be provided with Instrument.)
114	**ATOMIC ABSORPTION SPECTROMETER**	We intend to purchase fully PC controlled Double beam Atomic Absorption Spectrometer which should have Flame with integrated graphite system having the following specifications. Monochromator: Czerny-tuner Monochromator with a diffraction grating of 1800 lines/mm using a Photo multiplier tube Detector. Wavelength Range: 187-910 nm.Focal length should be 300 nm. Software selectable variable Spectral bandwidth up to 2nm. Deuterium Arc / Self reversal up to 2.5 Absorbance. Automatic 8 lamp turret to hold 8 different lamp. Coded Hollow cathode Lamps Single Element. Air Acetylene Burner Head (100 mm) and N_2O burner head (50 mm) separately quoted in main system. The instrument should have programmable and computer controlled gas controls both for Air Acetylene/Nitrous Oxide. All the method parameters related with lamp selection, lamp current and heating, calibration, control of flow gases should be through windows based software. The system should have all safety features required for the system which includes Burner identification, Flame Sensor, Gas Leak Sensor, Low Gas Pressure Sensor, and Drain Trap Sensor & Power Loss Protection. The AAS unit will be operated with windows Software for controlling analyzer, setting-up the method parameters, analyzing the samples, performing calibrations, etc. Hydride Generator (Optional) (for elements - As, Se, Hg, Bb, Bi, Sb, Sn, Te) using flow mode with heated quartz cell

		controllable through Computer. **ACCESSORIES TO BE QUOTED IN MAIN SYSTEM** Acetylene Regulator, Nitrous Oxide Regulator Heated, Nitrous Oxide Burner Head, Acetylene Gas with Cylinder , Nitrous Gas with Cylinder, Argon Gas Cylinder with regulator, Air Compressor, Vent and Hood Assembly with 10ft. ducting, PC and Printer, Standard solutions for Hollow Cathode Lamps mentioned above. SPECIFICATIONS **OPERATIONAL** **Modes of Operation:** Incremental Cut off by pH, Equilibrium **pH Stat titration. Dispensing System : Imported syringe** is used as burette of the sizes 1, 5,10 or 25 ml [user selectable] Electrode :a] Combination Electrode with BNC connector for Potentiometric Titration [such as – Acid base, Non-aqueous, Redox, Complexometric & Argentometric]. b] Combination Electrode with TNC connector for Karl Fischer / Voltametric Titration **[as an optional facility]**c] Differential Electrode system comprising of sensing [Indicator] Electrode with BNC connector and reference with 4 mm Banana connector. Sensor : Temperature sensor [PT 100] for Automatic/ Manual Temperature Compensation and readout in pH titration measurement with 5 pin shell connector.Key Board: Soft touch membranes, Splash Proof, Alphanumeric.Display : Back lighted 40 characters 2 lines LCD.Print Format : Selection of various formats:Data Table, Result, Graphics, Program Parameters, Condensed Reports & Statistics Reports with SD & RSD, Person Name & Signature on Printout.Stirring System: Microprocessor based variable speed, high torque vortex stirrer with digital indication. Magnetic Stirrer is also available (optional).Heating Accessory :Availability of optional insitu accessory to perform titration from 5 ° C to 80 ° C.Titration Head : Manual stand with swivel arm for Electrode Dispensing Tip & Stirrer.**Balance Interface : Sartorious or its equivalent.**PC Compatibility : PC Software **[as an optional].** SPECIFICATIONS **TECHNICAL** End Point Detection: a] Potentiometric b] Voltametric / Amperometric c] Thermometric d] Photometric,**Amplification Range :± 3200 mV.**Accuracy :± 0.1 mV [± 0.0016 pH],**Burette Resolution :± 1/1000 for 1 ml, 1/5000 for 5 ml, 1/10000 for 10ml.**Burette Filling Time : Less than 20 sec.,Maximum End Points : 9,Amplifier Input Impedance : 10^{12} OHMS. Memory :50 Programs. Method Storage:- Standard 10 programs which are not editable / deletable. These 10 programmes consists of pre-studied parameters suitable for carrying out common titration's like standardization of HCL , H_2SO_4 , $HClO_4$, $ZnSO_4$, $AgNO_3$ EDTA $Na_2S_2O_4$ etc. Last 10 run results could be viewed or printed with statistics for repeat run analysis. Morality Storage : 20 different molarities. Calibration : Automatic zero offset of electrode. Two-point calibration for user entered buffer values.Result Calculation : Molarity,

		% Volume, % Assay, PPM, MG/L, G/L, MG/G, MOL/KG, ML/G, Factor,TAN/TBN. Result Calculation Selection (0.01, 0.001, 0.0001) Titration Curves : S curve i.e. ml / mV, 1st derivative curve, 2nd derivative and µL / Time (Chemical Kinetics).Environmental Operating Conditions : a] Operation : Indoor, b] Temperature : Ambient to 45 ° C. c] Relative Humidity : 5 to 90% Non-condensing. Power Supply : 230 Volts AC ± 10%. Dimensions W x H x L [In mm] **375 435 285**

Sr.	Item	Specification
115	2D Electrophoresis setup	**First dimension Iso Electric focusing** • System should nclude Individual Lane Control for running different samples, pH Gradients and focussing protocols in a single run. • System should have touch screen User Interface for easy easily creating and editing protocols and setting up the program rapidly. • System should include dedicated site for online data interpretation for Graphing data, Comparing lanes and generating reports. • System should include USBPort to export data for storage and analysis. Should come with opaque lid • System should include run mode flexibility- to run IPG strips gel Side Up, Gel Side Down and with cup loading configuration. • System should have voltage 0–10,000 V, 1 V increments(50-10000V) • Current range should be 0–100 µA per lane, 1 µA intervals • Power range of 0–1 W per lane. • Should come with all required accessories. • System should have peltier based cooling platform. • Temperature range should be 10–25ºC ±1.0ºC @ max ambient 23ºC 18–25ºC ±1.0ºC @ max ambient 31ºC. • Focusing trays should be made of polycarbonate for contaminant free process. • System should accommodate IPG strip length 7, 11, 13, 17, 18, and 24 cm. • System should have display QVGA resolution (320 x 240) touch screen or mouse control • System should have ramping Step, linear, gradual, and hold voltage ramping for each

		focusing step. Hold mode as a final step to prevent diffusion when IEF is complete. • System should have 2GB capacity for storing protocols. • Data collection should be in .dat format • System should have following regulatory compliances: • Safety EN 61010-1:2001, IEC 61010-1:2001 Use NRTL to test for compliance to UL61010-1:2004 and CAN/CSA C22.2 No. 61010-1-04 • EMC EN61326 (1997 w/A1:98) Class A FCC Code of Federal Regulations, Title 47, Part 15, Subpart B, Class A • Other approvals RoHS/WEEE Research Materials to determine level of EFUP **2nd Dimension System:-** **Mini size electrophoresis system** • Number of Gels 1-4 • Ready Gel precast gels • Hand cast gels Cast using the spacer plates • Glass plate size (W x L) Short plate 10.1 x 7.3 cm Spacer plate 10.1 x 8.2 cm • Gel size (W x L) Handcast: 8.3 x 7.3 cm • Precast: 8.6 x 6.8 cm • Typical upper buffer volume 160 ml for 2 gels (1 core) • Typical lower buffer volume 550 ml for 2 gels (1 core) • Typical run times for SDS-PAGE 45 min (at 200 V constant) **PowerPac Basic** • Volts : 10-300 V • Current : 0- 400mA • Power : 75 W • Type of out put : Constant current, Voltage • Timer : 1-99 hrs • Volt hour control : 99000 v-Hr • Programmable • No of out put : 4
116	**Gel Documentation System**	System should have Image resolution >4 mega pixels for resolving closely spaced bands on a gel or blot.Imaging system should have Automatic capabilities with Application driven, user selected or recalled by a protocol.Should have 100 % repeatability via recallable protocols.System should have pre-calibrated focus for any zoom settings & sample height.Should have appropriate flat fielding correction automatically & consistently applied to image data for every application.Versatile system to support wide range of applications like-

		Fluorescent dye like Sybr green, Sybr safe, Western blotting, 1-D, Dot Blotting, Nucleic acid detection ,Quantitationetc. Should capable to run stain free gels and blots.Should have true 12bit CCD camera. System can take max. Sample size 28 X 36 cm.System should have precalibrated & optimized dynamic image flat fielding .It should universal dark hood& upgradeable to chemilumnescence.Should have motorized zoom lens- f/1.2, 12-75mm with umerical feedback value to reduce the experimental variation -Capable of Optimizing, saving, and quickly recalling the imaging acquisition settings.Safe DNA Imaging without UV exposure- using the Blue Conversion screen to prevent damage from UV and preserve samples for downstream protein production.Reproducibly position or center the sample on the image platen by using gel alignment templates. Should come with 1 D analysis software with following features.Single mouse click from image capture to results and reports, very fast and efficient. Should have comprehensive automated quantitative analysis of proteins & DNA samples in seconds. Intuitive and well organized (efficient) selection of workflows based on applications.3D viewer.Absolute and Relative quantitation.Should calculate precisely continuous focus curves that are consistently and automatically applied for every zoom position and sample height. No user intervention for focusing. All calculations are done at setup, once and for all image captures.System should come with single software for acquisition and analysis. Minimum 10 users acquisition and analysis software to be provided along with the system.
117	Gene gun	PDS-1000/He Biolistic Particle Delivery System which uses high pressure helium pulse and a partial vacuum to propel coated microparticles towards the target cells in an bombardment chamber for simultaneous transformation of thousands of cells simultaneously. Experimental Conditions: In vitro, Ex vivo, in vivo (in plants).Sample Locations: Evacuated Chamber.Target area: Large (40 cm2).Target membrane structure: Fragile to robust.Pressure Range: 450 – 2200 PSI.Targets: Plants: Small Intact plants, cultures, explantsMicrobes: yeast and bacteria, orgenelles: chloroplasts, Mitochondria.Animals: Cell and organ cultures.7 sizes of micro particles.System should includes helium pressure regulator, solenoid, spacer rod, micro carrier launch assembly, target self, 5 micro carrier holders. Should supply helium tank, grade 4.5 or better, pressurized to 2600 PSI and vaccume source. System should come with 500 optimization kit which provides consumables for 500 bombardments. 0.25gm of each of 0.6u,1.0u,1.6u gold carriers, 100 each of nine different repturers discs ranging from 450 PSI to 2200 psi, 500 micro carriers and 500 stopping screens.
118	**PCR specifications**	• Should have a maximum ramp rate Should have a sample capacity of 96x0.2ml tubes, 0.2ml tube strips or 1x96-well plate with Peltier heating and cooling. Should have gradient capability • Should have the feature of dynamic ramping (identical hold times) for all the 8 rows of

		a gradient. • Should have a temperature differential range of 1-25degC. • Should have intuitive 5.7" (14.5 cm) touch screen interface which can displays graphics in high resolution for easy programming. • The touch screen should be responsive for both gloved and ungloved fingers. • Should be capable of running reaction volumes from 1-100ul. • of 4 degC/second with an average ramp rate of 2.5degC. • Should have a temperature range of 4-100 deg C • Should have a gradient range of 30-100 deg C • Should have a temperature accuracy and uniformity of ± 0.5 deg C • Should have a memory of >500 programs with further expansion through a USB Flash drive for transfer of files. • Should have block and calculated temperature control modes. • The software should have exportable Run logs and system error logs • Should have quick boot up time of not more than 1 min. • Should be quiet in operation. • System should have built in library of standard protocols for long PCR, fast PCR, reverse transcription PCR etc. • Should have the feature of "instant incubation" to keep samples at constant temp. for ligation and restriction digests. • Should have power save mode. • Should be compatible with all kind of plastic consumables and reagents specially reusable sealing Mats.
119	**Mini DNA Gel Electrophoresis System.**	Agarose Gel Electrophoresis system with 7x7CM UV transparent Gel trays. System should also accommodate 7X10CM Gel trays. Gel trays should have Fluorescent rulers. System should come with Casting gates to cast the gels in the system. System should come with Color coded labeled electrodes and labeled base for correct positioning of the lid on the base. System should come with easy to remove electrode for easy cleaning. 8 well and 15 well comb,Other sizes of combs can be quote.System should run up to 30 samples. with minimum two combs per gel Buffer volume: approx 270 mL.
120	**Midi Gel Electrophoresis System.**	UV Transparent Gel tray size 15 X 10 cm , Should come with UV Transparent gel tray with an integrated fluorescent ruler & safety lid. Should be having universal gel caster to fit different size of gel tray System should come with 15 well and 20 well combs. Combs to fit virtually every need-multichannel pipette compatible combs, fixed height combs, adjustable height

		combs, and preparative combs. System should accommodate other gel tray size like 15 x 7 cm, System should run up to 60 samples. with minimum two combs per gel. Buffer volume: approx 650 mL. System should come with Color coded labeled electrodes and labeled base for correct positioning of the lid on the base. System should come with easy to remove electrode for easy cleaning
121	**Maxi Gel Electrophoresis System .**	UV Transparent Gel tray size 15 X 25cm , Should come with UV Transparent gel tray with an integrated fluorescent ruler& safety lid. Should be having universal gel caster to fit different size of gel tray like 15x10cm,15x15cm,15x20cm,15x25cm.System should come with 15 well and 20 well combs. Combs to fit virtually every need-multichannel pipette compatible combs, fixed height combs, adjustable height combs, and preparative combs. It could accommodate other gel tray size like 15 x 10 cm, 15 x 15 cm and 15 x 20 cm. System should run up to 120 samples, with 1 to 4 combs per gel. Buffer volume: approx 1 L and provided with port for buffer recirculation. System should come with Color coded labeled electrodes and labeled base for correct positioning of the lid on the base. System should come with easy to remove electrode for easy cleaning.
122	**Power Supply for DNA and Protein Electrophoresis systems**	• Volts : 10-300 V • Current : 4- 400mA • Power : 75 W • Type of output : Constant current, constant Voltage with automatic cross over. • Timer: 1-999 min. • No of output : 4 sets in parallel. • Safety features like No load detection, sudden load change detection, overload/short circuit detection, over voltage protection. • Operating conditions: 0 – 40degree C; 0 to 95% humidity. • Display: 3 digit LED • System should be stackable.
123	**Low Pressure Protein Purification System**	Low-pressure chromatography system for biomolecule purification, cold room compatibility (Temp range: 4 – 40^{o}C) 1) **Peristaltic Pump:** 0.05 – 40 ml/min, max pressure: 30 psi (2 bar), Max Pump head speed:25 rpm, counter pressure : 30 psi max. 2) **Gradient former :** Solenoid-activated proportioning valve, Mixer volume – 750 uL 3) **Detection performance (UV) :** Single channel, 280/254 nm, auto zero, Range – 0.001 – 2 AUFS, Path Length: 2mm

		4) **Conductivity :** Range : 0.5 – 500 mS/cm FS, flow cell volume – 8 microL 5) **Sample loading:** Manual fill loop, automatic loading through buffer select valve. 6) **Valve compatibility:** Multiple buffer select valve, diverter valve, splitter valve.5 port valve should be include. 7) **Automatic Valve Sensing:** Valves are automatically sensed when plugged into the system therefore, no manual entry of system configuration is required. 8) **Method storage:** Should store up to 50 methods, each having up to 50 pumps steps (buffer selection, flow rate and step duration), 50 fraction collection parameters, and 3 alarm steps (with or without programmable method hold). 9) **Variable Programming Modes:** Program the method in progress and edit future steps. 10) **Single-Point Control:** All system components and functions are controlled from the controller, including the fraction collector and chart recorder. 11) **Software:** Should capture data, multitasking, rescaling of chromatogram both during and after run, "zooming in" function, and prints data from any computer running Windows XP version. Automatically record run events, method information, run notes 12) **Programmable Methods Cycling**: Program a method to repeat up to 999 times. 13) **Fraction Collection:** Collection of fraction mode should be Time, Drop Time windows, Volume windows (≥ 20 windows) Peak detection, Time or volume windows plus peak Peak detection threshold, including slope detection algorithm for collection double peaks above a set threshold. Drop arm movement in x, y motion over each collection vessel, column, row or serpentine pattern option should be available for microplates or titer tubes. Provision for a dispenser arm that can manually adjustable to tube height of approx. 150 mm. System should have optional ice bath/micro plate rack to collect the sensitive sample/protein and also able to collect fractions on eppendorf tube/microplates etc. Can be programming used as independent fraction collector also. 14) **Safety Certification:** The system should certified to meet the I.E.C. 1010 safety standard for safety of laboratory equipment. (I.E.C. 1010 is an internationally accepted electrical safety standard for laboratory equipment) 15) **System should be provided with compatible PC.**
124	Real Time PCR	• Real time PCR with block of 96 x 0.2 ml tubes or plate to Run typical 0.2ml tubes, strips, and plates. .

		• The base thermal cycler should be able to be used for standard PCR • Gradient capacity in Real-time with 8 different gradient temperature. • Detection of minimum 5 different fluorescent reporters in the same tube. • Should be upgradable to 384 well platform. • Should be capable of Detecting Cy5, FAM/Sybr Green, VIC/JOE, TAMRA/Cy3, Texas Red, Quasar705 • Maximum Ramping speed : 5 ^{O}C per sec • Peltier Cooling & Heating for uniform temp control • Should have one channel dedicated for FRET experiments • Excitation –Emission range: 450- 730nm • No internal reference dye should be required. True 5 Color Multiplexing with use of 5 different flourophores without the need of addition of any internal reference dye, • LED excitation source with Photodiode detector • Dynamic range of 10 orders. • Open system capable of running various chemistries so that Different chemistries using TaqMan, Molecular Beacon, SYBR green etc all can be performed. • Temperature range 0– 100 ^{O}C with accuracy of ±0.2 ^{O}C and uniformity of ±0.4 ^{O}C within 10 sec of arrival at 90 ^{O}C • Minimum sample vol : 10µl • Should detect ≤ 10 fmol of fluorescein • Should have multiple scan modes with a FAST scan option for reading all wells in 3 seconds • Automatic allelic discrimination by end point fluorescence or threshold cycle. • Gene expression analysis by relative quantity (ΔCt) or normalized expression (ΔΔCt). • End point analysis for upto 5 fluorophores • Should have mode for Melt curve analysis • Comparison of up to 5000 Ct values from different data files should be possible • Software should have express load feature which allows entry of data after experiment. • Should be licensed for Research & IVD applications. • System should be compliant with the MIQE Guidelines • Software should be compatible with all computer operating systems including Microsoft windows, Mac and Linux. Software should be capable to import and analyze data from any real time PCR platform
125	**Semi dry Western**	FAST blotting system to blot four mini gel simultaneously,Should have inbuilt Power

	Blotting System with in built power pack.	supply.User Interface: 18 button keypad, 128 x 64 pixel monochrome display, Programmable methods: Up to 25 user-defined,Preprogrammed methods: Standard SD, 1.5 mm gels, High MW, Low MW, MixedMW, Audible alarm: Yes, Should be open system to accommodate consumables from other suppliers also. Pre-programmed rapid protocol simplifies the transfer process. Digital display showing transfer progress and condition.25 user defined protocols,Integrated power supply System should run Two independent protocol simultaneously to maximize throughput Fast Transfer (in as little as 3 minutes) ,High Throughput (up to 4 mini gels or 2 midi gels per run) High Transfer Efficiency (transfer high and low MW proteins),Convenient assembly (no additional reagents to prepare),Flexible system (can perform traditional semi-dry),11 optimized pre-loaded transfer protocols ,Save and recall up to 25 user defined transfer protocols.
126	Sonicator	1)Microprocessor based, programmable ultrasonic processor. Features include pulse mode and a digital display of both wattage and joulesfor standard cell disruption, DNA/RNA shearing, homogenization and many other applications. System should come with Generator, Converter, 1/8”(3mm) diameter probe with processing volume 500 ul to 15 ml and amplitude intensity level 180 (high), Power cable, Converter cable, Wrench set 2) **Programmable operation:** Set time and amplitude for hands free operation **3) Pulse mode:** Prevent heat buildup in temperature sensitive samples **4) Digital amplitude / intensity control:** Output intensity can be set from 20-100% **5)Elapsed time indicator:** Displays duration of sonication **6)Display of wattage and joules:** Real-time energy monitoring **7)Overload protection:** Prevents damage to circuitry if a fault occurs **8)RoHS compliant:** Uses lead free components Power Rating: 125 watts Frequency: 20 kHz Programmable Timer :10 memories plus sequencing Programmable Timer: 10 hours Adjustable Pulse On/Off: 1 second to 1 minute System should come with Sound enclosure with converter holder and support stand.
127	**<u>SDS PAGE gel Electrophoresis systems</u>** **Mini size Electrophoresis system (8.3 X 7.3 cm)**	• Versatility: Supports both Precast and handcast gel runs. • Cell runs 1 to 4 gels within 45 min • Easy setup with glass plates having permanently bonded spacers guarantee • Perfect alignment and leak free casting • Casting frames with simple cam closure provide precision alignment on any flat surface, sho requirement of any clamps to hold the gels while casting.

		• Upgradable to western blotting. • Should supply with 1.0 mm five integrated spacer plates and 5 thin plates. • Should supply with 5 combs of 1.0 mm • Sample loading guide to prevent skipped or repeated loading lanes Side by side casting stand to cast 2 gels simultaneously **Power Supply :** • Volts : 10-300 V • Current : 0- 400mA • Power : 75 W • Type of out put : Constant current, Voltage • Timer : 1-99 hrs • Programmable • No of out put : 4 • Safety features like No load detection, sudden load change detection, overload/short circuit detection, over voltage detection. • Operating temperature: 0 – 40degree C • Display: 3 digit LED
128	**Wet Transfer blotting systems (Mini Blotting System)**	• System should support wet transfer • Should include 2 gel holder cassette,4 fiber pads, modular electrode assembly, ice free cooling unit, • Gel Size 10x7.5 cm • System should not require buffer more than 450ml • 2gel per blot • Transfer time should be around < 1 hr • Electrode should be 4 cm apart for strong electrical field and efficient protein transfer • System should have color coded cassettes and electrode for proper orientation of gel • Blue cooling unit to absorb the heat generated during rapid transfer. **Power Supply** • Volts : 10-300 V • Current : 0- 400mA • Power : 75 W • Type of out put : Constant current, Voltage • Timer : 1-99 hrs • Programmable

		• No of out put : 4 • Safety features like No load detection, sudden load change detection, overload/short circuit detection, over voltage detection. • Operating temperature: 0 – 40degree C • Display: 3 digit LED
129	Table Top Refrigerated Centrifuge	• Refrigerated General Purpose Table Top Centrifuge • Max Speed >15,000 rpm & Max RCF 25,800 x g • Max Capacity: 4 x 1000ml in swing out & 6 x 250ml in fixed angle rotor. • Temp Control : -10 to +40 deg C • The Centrifuge should have a feature to install and remove rotor without tool in less than 5 seconds with just a push of a button for quick and easy change of rotors for different applications • The centrifuge must be able to display both air/chamber temperature as well as temperature in the sample. • Dual Timer mode- At Start and at Speed • The centrifuge must have an option for automatic lid opening at the end of the run. • The centrifuge must have capability of password protection for the programs. • The centrifuge must have capability of password protection for lid opening. • The centrifuge must be able to display set parameters together with actual values, and parameters must be readable at a distance of at least 5 meters. • The centrifuge must have a minimum of 5 “direct recall” program keys, and capability for up to 99 programs. • The centrifuge must be CE, CSA and UL certified for safety containment. • **<u>ROTORS REQUIRED</u>** 1. Swing Out rotor 4 x 1000ml , 4200 rpm or more, - Adapter for 40 tubes of 50ml conical - Adapter for 96 tubes of 15ml conical 2. Fixed Angle Rotor, 48 x 2ml, 15,200rpm or more 3. Fixed Angle rotor , 6 x 250ml, 11,000 rpm or more, RCF 18,000 x g or more 4. Max Prep Rotor Fixed Angle, 8x50ml, 14500 rpm or more, RCF 24,400 xg or more
130	**ELISA Plate washer**	• System should have co-axial wash heads • Priming Consumption should be 15 to 20mL • Residual Volume should be <5µL per well • Dispensing Precision should be 5% • Wash Heads should be 8- and 12-way

		• Operating Pressure (self-limited) should be 0.5 bar • System should be provided with Wash bottle capacity 2l and waste bottle capacity of 2l • Also with one additional wash bottle capacity of 2l • It should have wash programs from 1-4 washes • It should have wash time of 120 s, 3 x 350 µl with 12-way wash head 165 s, 3 x 350 µl with 8-way wash head • It should have soak time from 0-10 min • The system should be supplied with 4 standard program cards and a programmable card • The system should be provided with 3 years Warrants and 5 years CMC.
131	**Monochromator based ELISA Reader cum Spectrophotometer**	• System has freely selectable wavelengths from 200 - 1000 nm for the demands of various assays. • System is capable of reading both microplate and cuvette for any throughput requirements. • System has monochromatic based detection system. • System is capable of very fast plate measurements and a full spectrum of a sample in less than 10 seconds. • System must be capable of extensive self diagnostics. • System has power save function for reduced energy consumption. • System supports endpoint, kinetic and spectral scanning assays. • System reads 96- and 384-well microplates with and without lids, and all major cuvette types. • System has a broad wavelength range with the UV area, pathlength correction as well as fast spectral scanning for any photometric research application, including DNA, RNA and protein analysis • Both the microplate chamber and cuvette holder is equipped with temperature control up to atleast 45Â°C to enable temperature sensitive applications such as enzyme kinetics or cellular assays. • Shaking speed and amplitude is variable, along with user selectable modes of shaking. • System has Ready-made sessions for measuring DNA and RNA concentrations and easy-to-use formulae for ratiometric or background correction measurements cuvettes in the internal software. • Any measurement data can be saved on a USB memory stick for transfer to a computer for further processing. • System has features power save functionality that is automatically activated when the instrument is on but not in use.

		• System has robotic upgradeability. • System will be provided with required computer. • System has software which has user friendly graphical interface and can provide time data collection modes at specific time points within stipulated period. • System supports simultaneous measurement of multiple wavelength and data integration of data during user specified duration. • System has capability for plotting individual well intensities. • Wavelength range: 200 -1000 nm • Read-out range: 0-4 Abs Linearity :0-3 Abs, ±2.0% at 450nm • Accuracy :±1% or ±0.005 Abs (0-2 Abs) , ±2% (2-3 Abs) • Precision : SD<0.005 Abs or CV < 1% (0-2 Abs) • System to be provided with Nanodrop plate to load 15-20 samples of volume 2□l to 10□□l
132	**Water Jacketed CO_2 Incubator**	1. Range 5degC above ambient to 55^oC 2. Temperature Uniformity ±0.2^oC 3. Interior Volume : Minimum 184 liters or more 4. CO_2 : TC sensor 0-20%. Control, Range Better than ±0.1%. 5. TC sensor warranty 5 years. 6. Readability and Setability 0.1% 7. Humidity : Ambient to 95% @ 37 ^oC (98.6F) 8. Design – triple wall construction water jacket. Heated door with sealed door. Should have humidity Pan of 3Lit 9. All control and measurement probes and sensors should be located inside the culture chamber to provide true and accurate values and foster faster parameter recovery times. Probes and sensors should not be remotely located outside the chamber. 10. The incubator should include a standard USB port with software for data downloading and reporting in Windows Excel format. 11. Interior : Shiny, stainless steel, 100% coved corners for easy cleaning, reduced chance of harboring contamination in the corners. 12. System should be supplied with validatable 100% HEPA filtration, which should ensures that Class 100 air quality is achieved within five minutes of the door closing. 13. The unit should be provided with high quality microbiological filters on all gas inlets, outlets and sample ports, to eliminate the potential of contamination entering the chamber from these points. 14. The incubator should feature on-board graphics capability, via touch screen controller, enabling users to obtain historical performance by parameter or specified time periods to

		allow greater understanding of culture growth dynamics and usage patterns, enhancing research results. 15. The interface should log and displays all user interactions with the incubator (eg. door openings, parameter changes) facilitating the identification of important changes in the culture environment.
133	**LN2 container**	LN2 capacity: 184 L Neck Diameter: not more than 21.5cm Static Holding time: 185 Days Static Evaporation should not be more than 0.99 (Liters/Day) Number of Square racks : 6 **Maximum System Capacity -** Total Vial Capacity 2mL : 6000 vials System Should have inbuilt Ultrasonic Low level alarm System, no external sensor should be put inside the vessel. Low level alarm module should have dry contact for central monitoring system Accessories to be provided – Wheel cart trolley
134	**Washer without dryer**	Outer casing should be SS 305 AISI Washer should be under counter type. Machine should have: a) Electric door lock with hinged drop down type. b) Back-lit metal touch LCD display c) 2 nos.of door dispenser for powder & neutralising agent d) Buzzer, acoustic signals at end of programme e) Circulation pump, Qmax in l/min: should not be less than 500 l/min with auto speed adjustment. f) *Built-in dual spray arm.* g) No of programmes should be at least 7 &adjustable 2 nos. h) Water connections: Atleast 2 with waterproof system i) Washer dimensions should be atleast 835 mm in height, 600 mm in width, 600 mm in depth, i.e, under counter type. j) Washer with built-in heater but heater elements should be outside wash chamber k) Wash cabinet should be seamless OR without joints l) Unit should be equipped with in-door salt container m) Multi component filter system n) Rear docking system for trolley connection enhancing maximum usage space. o) Washer should have 1 basic loading trolley & can accommodate easily removable

		injection trolleys & supports Washer should be capable of washing variety of glassware load on a single washing level such as pipettes & other 14 to 30 narrow necked glassware on single level of washing, HPLC vials, test tube with other 12-30 narrow necked glassware on a single level OR beakers & 12-15 narrow necked glassware on a single washing level. Washer should be capable of 2 level washing system with add on trolley in future. Washer power requirement: 230 VAC
135	**Microprocessor controlled floor-standing ultracentrifuge with accessories**	• Maximum Speed: 80,000 rpm or more. • Speed Control Accuracy: ± 10 rpm • Maximum RCF: 602,000 g (Approx.) • Maximum Capacity: 1.5 litre • Set Temperature: 0 to 40° C • Ambient Temperature: 10 to 35° C • Cooling System: CFC/ HCFC free • Acceleration/ Deceleration Profile: 10 or more • Programmability: 20 or more with step run facility • Power: 210-240 VAC, 50 Hz, 30 A. • Machine should have features like eye-balancing of samples, • User lock-out, delayed start/ stop, dual display of 'Run' & 'Set' parameters, data entry through key pad & touch pad, RPM/ RCF mode, Run Scheduling etc. **Instrument warranty for 1 year and drive warranty for 10 years.** **Rotor Warranty – 15 years** **Quote for the following rotors** Fixed Angle rotor 1. 8 x (35-40) ml (50,000 rpm or more) 2. 6 x (10-13.5) ml (60,000 RPM or more). **Accessories:** Reusable Polycarbonate tubes 50pcs for each rotor.
136	Double Glass Door Pharmacy Refrigerators	• System's microprocessor should be able to manage set point and actual conditions to provide the highest level of security for the stored product • During power failure digital display should dim to conserve backup battery • System should have a distinct power failure icon which should get illuminated when main power is interrupted • Adjustable temperature control, range +1°C to +8°C, factory pre-set to +4°C. • 300-330L with 8 adjustable stainless steel drawers.

		• Large digital display, resolution to within 0.1°C • Glass doors with double pane construction and should eliminate condensation on inner side; spring-loaded closures should be available for 90 deg stay open feature. • System should have hermetically sealed refrigeration compressor, air-cooled condenser and automatic condensate removal. • System should offer an efficient, high-capacity air circulation system to optimize top-to-bottom temperature uniformity, accelerate temperature recovery following door openings. • System should have CFC-free refrigerants. • Should have High-density, CFC-free urethane foam insulation. • Should have Positive, forced-air circulation to maintain temperature uniformity at all shelf levels and should help in quick recovery after door opening. • Should have Heavy duty, industrial-grade, hermetically sealed compressors • Should have features of Automatic condensate removal so that no drain lines are required • Alarm silence, ringback and automatic reset functions • Battery backup for control panel during power failure • Should have Advanced defrost sensor for managing the defrost cycle. • Audible/visual warnings for over temperature, under temperature and power failure, with visual status reports on critical functions. • Smooth scratch resistant painted interior and exterior surfaces for easy cleaning. • Ext Dimensions HxDxW inches: 77.5 x 35.5 x 56.5
137	**Deep Freezer(-80oC) Specifications**	• Type: Upright • Capacity: 800-850 Liters , Vial capacity 60,000 to 70,000 • Temperature range:-50ºC to -86ºC • Operating temperature: Programmable upto –86°C with 1°C increments, even at ambient temperature of 30°C • Internal structure: Compartments with painted stainless steel shelves of adjustable height, insulated inner doors to minimize cold□air loss when external door is opened • Freezer should be painted with high-impact, scratch resistant powder coat finished interior and exterior to ensure long-term viability and maximum interior temperature uniformity. • Prevention of vacuum formation: Heated air vent to prevent vacuum formation during door openings and front panel air filter.

		• Alarms: Audible and visible alarms for temperature, power failure, system failure, probe failure, clean filter, door. • Refrigerant: CFC□FREE, HCFC□FREE non□flammable Hydrocarbons refrigerants. • Touch-screen user interface for providing access to vital freezer information including event log, settings and user profiles. Store up to 15 years worth of temperature and event data on the on-board controller. • Vacuum Insulation Panel Technology to increase the internal capacity of the cabinet. • Outer door gaskets: heated gasket should provide security and protection, maximizing cabinet temperature and eliminating frost build-up. • Inner doors: polystyrene insulated inner doors should help in maintaining cabinet temperature during openings. At least four inner doors with three to four shelves. • Certification/compliance/Regulatory approval: Machine should be cULus and CE certified/ listed. • There should be provision for easy to remove washable filters to increase refrigeration performance. • Single outer door and single hand door handle operation with integrated key lock. • Security features: Key lock, Padlock and optional at least two access key cards. • Power management system should protect voltage variation and should be easily accessible through the touch-screen display. • Freezer should not warm to -50°C from -80°C set point in under 280-320 minutes during a power failure in a 20°C room. • Should have USB port • Energy Consumption not more than 12kw-hr/day