

The minutes of the pre-bid meeting held on 02-03-17 at F1-02, Pro-VC Hall, Administrative Building, Central University of Tamil Nadu, Thiruvavur against the tender enquiry No. 39/2016-2017 for the supply and installation of laboratory Equipment for the Departments of Life Sciences.

The following members were present from the Departments of Life Sciences

- (1) Dr. E.M. Shankar, Associate Professor & Head, Dept. of Life Sciences ...
(Chairperson)
- (2) Dr. Dinakar Challabathula, Assistant Professor, Dept. of Life Sciences...
(Member and Convener)

Dr. Jayalakshmi Krishnan (Assistant Professor), Dr. Meganathan Kannan, (Assistant Professor) and Dr. Indranil Chattopadhyay (Assistant Professor), Dept. of Life Sciences could not attend the meeting due to pre-occupation.

The personnel from various companies attended the pre-bid meeting to raise queries and to make suggestions regarding the tender notification. The specifications accepted by the committee in view of the suggestions raised by the bidders are enclosed. The finalized specifications (after modification) for the ~~the same~~ are enclosed in **Annexure I**.

Equipments

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**DEPARTMENT OF LIFE SCIENCES
CENTRAL UNIVERSITY OF TAMIL NADU
THIRUVAVUR-610 101.**

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The technical queries and clarifications sought by the prospective bidders along with the modifications accepted by the committee are mentioned below.

S. No	Query/ Clarification Sought	Modifications accepted by the committee
Item No.1- Centrifuge with Multiple Rotors (9 rotors)		
1.	Fixed-angle rotor with aerosol-tight aluminium lid for 30x1.5/2.0 ml tubes	Fixed-angle rotor with aerosol-tight aluminium lid for 24 (and above) x 1.5/2.0 ml tubes
2.	Fixed Angle Root for 6x85 ml tubes including rotor lid	Fixed Angle Root for 6x85ml (and above) tubes including rotor lid
Item No. 2. Refrigerated Centrifuge		
1.	Item No. 2. Refrigerated Centrifuge	No change is required.
Item No. 3. Ultrapure Water Systems		
1.	Water Quality Type II – Flow rate should 20 lts/hrs	Water Quality Type II – Flow rate should 15 lts/hrs Mention ionization & deionization Electrode ionization External Pre Filtration assembly with RO system Flow rate : 50 litre/hour Prefiltration should include 1 micron, 5 micron and activated carbon (Additional 3 sets of spun should be supplied along with the system) 24 volt pump with Float switch facility for automatic Cut – Off 100 Litre storage tank
Item No. 4. Thermo Mixer with 24 reaction vessels 1.5ml,220-240V		
1.	Item No. 4. Thermo Mixer with 24 reaction vessels 1.5ml,220-240V	No change is required.
Item No. 5. Electronic Balance		
1.	Item No. 5. Electronic Balance	No change is required.
Item No. 6. Stereo Zoom Microscope (Dissection)		

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1.	STEREO ZOOM MICROSCOPE (Dissection) Main Body: Microscope Zoom body with a zoom ratio of 6.7:1.	STEREO ZOOM MICROSCOPE (Dissection) Main Body: Microscope Zoom body with a zoom ratio of 7:1 or more
2.	The minimum magnification using 1X objective and 10X eyepiece should be 6.7 times or lesser (there should be an option to provide minimum magnification of 2 times)	Total magnification required: Minimum 50x times or more
3.	With fibre optic illuminator for cold light	With fibre optic illuminator for LED cold light

Item No. 7. Binocular Bright Field Microscope

1.	Optical System ; Universal infinity corrected system	Optical System ; Infinity corrected system
2.	Frame: Rigid with ergonomic design. Built in torque adjustable focusing knob, built in slot for slider for polarizing attachment	Frame: Rigid with ergonomic design. Built in torque adjustable focusing knob, provision for single polarization
3.	Revolving nosepiece: Inward facing quintuple nosepiece (for 5 objectives) with analyser holder	Revolving nosepiece: Inward facing quintuple nosepiece (for 4 - 5 Objectives) with analyser holder
4.	Stage; X-Y Movement by wire diagram system (Hence no protruding ends like in case of rack and pinion driven stage)	Stage; X-Y Movement

Item No. 8. Electrophoresis unit

1.	Item No. 8. Electrophoresis unit	No change is required.
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Item No. 9.ELISA (Enzyme Linked Immunosorbent Assay) Reader and Washer

1.	I Mark Micro Plate Absorbance Reader with Micro Plate Manager Software	Micro Plate Absorbance Reader with Micro Plate Manager Software (200 – 999 nm monochromator)
2.	Motorized door for plate loading	Motorized door for plate loading (6 well – 384 well plates)
3.	Wavelength Range: 400-750nm	Wavelength Range: 200 - 999nm

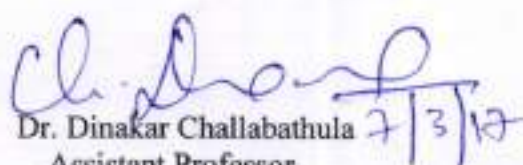
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Item No. 10.Refrigerator		
1.	Item No. 10.Refrigerator	No change is required.
Item No. 11.Nano Spectrophotometer		
1.	Item No. 11.Nano Spectrophotometer	No change is required.
Item No. 12.Multipurpose High Speed Centrifuge		
1.	Item No.12.Multipurpose High Speed Centrifuge	No change is required.



Dr. E M. Shankar
Associate Professor & Head
Department of Life Sciences



Dr. Dinakar Challabathula
Assistant Professor
Department of Life Sciences

REVISED TECHNICAL SPECIFICATIONS**Laboratory Equipment for Department of Life Sciences**

Sl. No.	Equipment Description	Qty
	<p>1. Centrifuge with Multiple Rotors (9 Rotors) Specification:</p> <p>Technical Specifications: Maximum Rotational Speed: 14000 rpm. Maximum Centrifugal Force: 20,800xg. Temperature Range: -9°C to +40 °C. Sample Temperature : < 4°C at Maximum Speed .Speed RCF or Radius correction values should be entered. Centrifuge should offer high degree of user comfort. Ergonomically ideal access height for easy exchange of adapter and rotors. Simple programming with 35 programs memory with write protection and very low noise level. Automatic rotor recognition with speed limitation for maximum safety Automatic imbalance detection and cut-off for fulfilling the requirements of IEC 1010-2-020 safety standard. Motorized lid latch Fast Temp function for fast pre-cooling, Standby cooling system should maintain temperature when centrifuge is not use in ECO shut-off for reduced energy consumption. Extended compressor life and inbuilt condensate drain to eliminate water accumulation and prevent corrosion Display should show speed, RCF, Time and Temperature 10 acceleration and Breaking Ramps for sensitive sample material. Interface for connection capabilities. Power switch on at front of the device for ease in operation. Maximum power requirement: 1650 W Dimension(WXDXH): 0x61x35 cm Weight: without rotor: 99 kg</p> <p>Fixed-angle rotor with aerosol-tight aluminum lid for 24 (and above) x 1.5/2.0ml tubes. Max. Rotational speed: 14,000 rpm Max.RCF: 20,800 x g Rotor, lid and adapters should be autoclavable (20 min, 121°C) Anodized aluminum for high chemical resistance, aerosol-tight centrifugation should be possible.</p> <p>PCR strip Fixed-angle rotor Max. Rotational Speed: 12,000 rpm Max.RCF: 15,350 x g Should accommodate up to 6 x 8-tube strips and 48 x 0.2 ml PCR tubes. Safe easy handling without additional lid.</p> <p>Fixed Angle Root for 6 x 85ml (and above) tubes including rotor lid Max. Rotational Speed: 11,000 rpm (12,000 rpm) Max. RCF: 15,500 x g (18,000 x g).</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>

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<p>Six boreholes for different tubes (max. tube size: 85 ml). Conical tubes such as 15 ml and 50 ml falcon tubes can be centrifuged with adapter. Light weight design (only 3.25 kg incl.lid) for easier handling Anodized aluminum for high chemical resistance. Rotor, lid and adapters should be autoclavable (121°C, 20 min).</p> <p>Adapter for 50 ml tubes (set of 2) For use with fixed-angle rotor. No. Of tubes per rotor:6 Diameter of adapter bore :17mm Maximum Rotational Speed:11,000 rpm (12,000 rpm) Maximum Centrifuge Force:14,450 x g (17,200 x g)</p> <p>Adapter for 15 ml tubes (set of 2) For use with Fixed angle rotor. No. of tubes per rotor:6 Diameter of adapter bore:17mm Maximum Rotational speed:11,000 rpm (12,000 rpm) Maximum Centrifuge force:14,450 x g (17,200 xg)</p> <p>Drum rotor with lid without adapters Should hold 60 x 1.5/2.0 ml tubes Max. Rotational Speed:14,000 rpm Max. RCF:16,400 x g Horizontal Centrifuge force Pellet formation at tube bottom and should be ideal for low quantity samples.</p> <p>Rotor aerosol-tight lids and removal tool Max speed:4,500 rpm (rcf: 3,486 x g) Rotor can handle up to -2 x 4 MTP -2 x 2 cell culture plates -2 x 1 DWP Maximum loading height of 60 mm Aerosal-tight lids Rotor, and buckets are autoclavable (121°C, 20 min)</p> <p>Deep well plate rotor incl. 2 buckets, Max. Rotational Speed:3,700 rpm Max. RCF:2250 x g Rotor should handle up to -2 x 5 MTP -2 x 4 cell culture plates -2 x 2 DWP -2 x 1 Filtration plate kits Maximum loading height of 89 mm Rotor, and buckets should be autoclavable (20 min 121°C)</p> <p>Swing-bucket Rotor, including 4x100ml rectangular buckets Max. Rotational Speed (rpm): 5,000 min⁻¹ Maximum centrifugal Force: 4,400 x g</p> <p>Adapter for 15 ml tubes(set of 2) For use with 100 ml rectangular bucket No. of tubes per rotor:16 Diameter of adapter bore:17.5 mm Max. Rotational Speed (rpm):5,000 min⁻¹. Max. Centrifugal Force:4,300 x g</p>	<p>3</p> <p>3</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>2</p>
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	<p>Adapter for 50 ml tubes (set of 2) For use with 100 ml rectangular bucket No. of tubes per rotor:4 Diameter of adapter bore:31 mm Max. Rotational Speed (rpm):5,000 min⁻¹. Max. Centrifugal Force:4,300 x g</p> <p>Swing-bucket Rotor, including 4x500ml rectangular buckets Max. Rotational Speed (rpm): 4,000 rpm Maximum centrifugal Force: 3,220 x g. Rotor can handle up to 20 x 50 ml Falcon or 48 x 15 ml Falcon tubes Buckets, lids and adapters should be autoclavable (121°C, 20 min)</p> <p>Adapter for 15 ml tubes (set of 2) For use with 500 ml rectangular bucket in rotor No. of tubes per rotor:48 Diameter of adapter bore:17.5 mm Max. Rotational Speed (rpm):4,000 min⁻¹. Max. Centrifugal Force:3,100 x g</p> <p>Adapter for 50 ml tubes(set of 2) For use with 500 ml rectangular bucket in rotor No. of tubes per rotor:20 Diameter of adapter bore:31 mm Max. Rotational Speed (rpm):4,000. Max. Centrifugal Force:3,100 x g</p> <p>Swing-bucket rotor including plate buckets Max. Rotational Speed:4,000 rpm Max. Centrifugal Force: 2,900 x g. Maximum loading height of 60 mm. Rotor should handle up to -4 x 4 MTP -4 x 2 cell culture plates -4 x 1 DWP</p>	<p>2</p> <p>1</p> <p>2</p> <p>2</p> <p>1</p>
<p>2</p>	<p><u>Refrigerated Centrifuge</u></p> <p>Technical Specification: With foil keypad, without rotor, 230 V/50-60Hz. Multipurpose refrigerated micro centrifuge</p> <p><u>Specifications:</u> Automatic rotor recognition Foil keypad for easy Programming Cleaning stores up to 50 routine programs 'fast Temperature' for achieving required temperature in shortest possible time 'Fast Temp pro' for having the centrifuge Refrigerated and ready for use at desired pre-set time. Backlit graphical liquid crystal display Low access height:25 cm Maximum Speed: 17,500 rpm Maximum RCF: 30,130 x g. Acceleration time to max.rpm :< 14s. Breaking time from max.rpm :< 15s.</p>	<p>3</p>

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	<p>Soft ramp: adjustable. Timer: 30s-Continuous Noise Level-<67 dB. Temperature range:-11°C to 40° C. Dimension (WXDXH) 38x64x30 cm. Weight without rotor: 56 Kg. Power Requirement: 475 W.</p> <p><u>Rotor lid, aerosol-tight, coated</u></p> <p>24x1.5/2.0 ml High-speed Micro centrifuge tube rotor for use with centrifuge. Maximum RCF: 31,000 x g. Maximum Speed: 18,000 rpm.</p> <p><u>Rotor incl. rotor lid and adapter</u></p> <p>6X15ml/50ml Falcon/Conical tube rotor for use with centrifuge. Maximum RCF: 7,197 x g. Maximum Speed: 7,830 rpm.</p>	<p>3</p> <p>3</p>
<p>3</p>	<p><u>Ultrapure Water Systems</u></p> <p>High ultrapure water quality is required. It should be integrated with high efficiency RO filtration with 1 micron, 5 micron and activated carbon filter UV lamp (185 254 nm) and hollow-fiber ultra-filter module to not only prevent microbiological growth and reduce the TOC content to <2 ppb, but also to remove Endotoxins, microorganisms, RNA DNA and DNases and RNases.</p> <p>Should be ideal for all critical applications in the laboratory such as – HPLC, GC-MS, AAS, ICP-MS, Ion chromatography, TOC analysis, PCR, Electrophoresis, Endotoxin analysis, Immunocytochemistry, Nutrient media for cell culture, Production of Monoclonal antibodies, Photometry.</p> <p><u>Water Quality</u></p> <p>--Type I- 1.5 ltrs /mints --Type II- Flow rate should 15 ltrs/hrs --Electrode ionization --0.2us/cm conductivity of Type II water --Source of feed water is tap water --Chamber size – 60 liters</p>	<p>1</p>

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	<ul style="list-style-type: none"> - Conductivity: 0.055 $\mu\text{S}/\text{cm}$ ($\approx 18.2 \text{ MO}+\text{cm}$) - TOC content: <2 ppb - Endotoxins: <0.001 EU/ml - RNases: <0.004 ng/ml - DNases: <0.024 pg/μl - Microorganisms: <1 CFU - Particles: <1/ml <p>*Suppliers may visit the Life Sciences lab at CUTN to test the quality of feed water before quoting the product.</p> <p>External Pre Filtration assembly with RO system Flow rate : 50 litre/hour Prefiltration should include 1 micron, 5 micron and activated carbon (Additional 3 sets of spun should be supplied along with the system) 24 volt pump with Float switch facility for automatic Cut – Off 100 Litre storage tank</p>	
4	<p><u>Thermo Mixer with 24 reaction vessels 1.5ml, 220-240V</u></p> <p>Peltier controlled device for heating and mixing in 1.5ml tubes</p> <p><u>Specifications:</u></p> <p>Should be customized for 1.5ml micro test tubes</p> <p>2D Mix-Control</p> <p>Optimized mixing and Anti-spill technology</p> <p>Short mix function</p> <p>Intuitive operation using predefined temperature keys</p> <p>Small foot print</p>	1

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	<p>Technical Specifications:</p> <p>Temperature control range: from approx. 4 °C above room temperature to 100 °C, min temperature setting of 1°</p> <p>Mixing frequency: 300 - 1500 rpm</p> <p>Maximum Temperature Accuracy: $\pm 0.5^{\circ}\text{C}$ at 20-45°C</p> <p>Temperature Homogeneity: Max. $\pm 0.5^{\circ}\text{C}$ at 20-45°C</p> <p>Maximum Heating rate: 11°C/min</p> <p>Mixing stroke in Φ : 3 mm</p> <p>Power supply: 220 - 240 V, 50 - 60 Hz</p> <p>Power requirement: 200W max</p> <p>Dimensions (W x D x H): 20.6 x 30.4 x 13.1 cm</p> <p>Weight of basic device: 6.0 Kg</p>	
5	<p>Electronic Balance</p> <p>Capacity : 220 g</p> <p>Readability : 0.1 mg</p> <p>Tare range (subtractive) : 220 g</p> <p>Response time (avg) : 2.5 s</p> <p>Repeatability : $\leq \pm 0.1\text{mg}$</p> <p>Linearity : $\leq \pm 0.2\text{ mg}$</p> <p>Pan (diameter) : 90 mm</p> <p>Weighing chamber (WxDxH) : 185x182x230 mm</p> <p>Standard features/Equipment supplied</p> <p>Monolithic Weighing Technology</p> <p>Balance should be incorporated with monolithic weighing cell which is robotically etched from a single block of a special, highly resilient aluminum alloy using the high speed cutting techniques. This monolithic weighing cell technology should offer fast response time, high degree of reliability and long service life.</p> <ul style="list-style-type: none"> - Motorized calibration weight (internal Calibration) - Bidirectional data interface port - ISO/GLP-compliant printing/recording of weighing and calibration data when connected with the printer - Hanger for below-balance weighing - Overload protection - Lug for anti-theft locking device - Leveling feet; level indicator should be positioned directly next to the display for fast and easy levelling. <p>-The following applications programs should be integrated</p> <ul style="list-style-type: none"> * mass unit conversion by toggling, * counting with automatic reference sampling updating, * weighing in percent, * Net—total formulation (totalizing) * animal weighing, * Calculation: multiplication, division <p>Complete with Instructional Manual</p>	1

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Sl. No.	Equipment Description	Qty.
I. Lab Equipment for Vector Biology Research Lab, Department of Life Sciences		
6	<u>STEREO ZOOM MICROSCOPE (Dissection)</u> Main Body: Microscope Zoom body with a zoom ratio of 7:1 or more Total magnification required: Minimum 50x times or more Maximum magnification using 1X objective & 10X eyepiece should be 45 times Working distance 110mm Zoom adjustment knob is left/ right single Shaft horizontal knob Built in 1X objective and built in C-mount adapter, mounting arm Standard stand Black and white reversible plate. With fiber optic illuminator for LED cold light - including double interlock light guide 12V 22W light guide illuminator AC adapter and standard bulb Power cord, Collector lens 12V 22W bulb with mirror reflector.	1
7	<u>Binocular Bright Field Microscope</u> Optical system : Infinity corrected system. Illuminator : Built-in-Koehler illumination for transmitted light 6V30W halogen bulb (pre-cantered) Frame : Rigid with Ergonomic Design. Built-in Torque Adjustable Focusing Knob, provision for single polarization Revolving nosepiece : Inward Facing quintuple nosepiece (for 4-5 Objectives) With analyzer holder Stage : X-Y Movement Condenser : Abbe type for bright field studies Objectives : Plan achromat objective 4X/ 0.1, WD 18.5 Plan achromat objective 10X/ 0.25, WD 10.5 Plan achromat objective 40X/ 0.65, WD 0.6 (spring) Plan achromat objective 100X/0.125, WD 0.13 (spring, oil)	4
8	<u>Electrophoresis unit</u> <u>Vertical Electrophoresis apparatus with Wet transfer blot system (Trans-Blot Module)</u> Mini Protein Tetra Cell Electrophoresis system, 10 well, 1 mm thickness, 2 gel system includes 5 combs, 5 sets of glass plates, 2 casting stands, 4 casting frames, Sample Loading Guide and electrode assembly, companion running module, tank, lid with power cables, mini cell buffer dam) Number of gels 1-2 Gel size (W x L) Precast : 8.6 x 6.8 cm; hand cast : 8.3 x 7.3 cm Glass plate size (W x L) Short plate : 10.1 x 7.3 cm Spacer plate : 10.1 x 8.2 cm Total buffer volume for 2 gels 700 ml	1




- Total buffer volume for 4 gel 1,000 ml
 - Typical run times for SDS-PAGE 35–45 min (at 200 V constant)
 - Dimensions (W x L x H) : 12 x 16 x 18 cm
- System should run 2-4 mini gels of 8.6 cmx6.8cm simultaneously in less than hour**

Mini Trans-Blot Module

Without lower buffer tank and lid - includes 2 gel holder cassettes, 4 foam pads, modular electrode assembly, blue cooling unit.

- System should provide rapid, high quality western transfer
- Must accommodate at least two mini gels of size at least 10*7.5cm
- Transfer time for both gels must be supported in a time frame of One hour
- Overnight transfer must also be taken care
- Preferably with a cooling unit to take care of heat generated
- Buffer requirement should not exceed 450 ml – 500ml per run
- Modularity of same tank to run PAGE gels must be provided
- System should run 4 mini gels Of 8.6cmx6.8cm simultaneously in less than hour.
- Should be compatible with both precast and hand cast gels.
- Same system should be upgradable to Western blotting also.
- System should come with casting stand and casting frames with cam closer for Precision alignment and casting.
- System should come with Glass plates with permanently bonded Spacers for leak Free casting.
- System should have sample loading guide to prevent skipped or repeated loading Lanes.
- The apparatus to have a buffer volume of 700 to 1000ml.
- **Cooling apparatus for wet blot system**

9 ELISA (Enzyme Linked Immunosorbent Assay) Reader and washer

Micro plate Absorbance Reader with Micro plate Manager Software (200 – 999 nm monochromator)

Features and Specifications:

Motorized door for plate loading
(6 well – 384 well plates)

Wavelength Range: 200-999nm

Photometric methods: Single or dual wave length

Bandwidth 10 nm

Photometric Range: 0.0 – 3.5 OD

Linearity ≤ 1.0% from 0.0-2.0 OD; ≤ 2.0% from 0.0 – 3.0 OD

Accuracy: ± 1.0% or 0.0101 from 0.000-3.000 OD at 490nm

Precision: 1.0% or 0.0005 OD from 0.0 -2.0 OD, 1.5% from 2.0-3.0 OD

Resolution: 0.001 OD

Light source: Xenon Halogen lamp (20W), 3000 hr. average lifetime or more

Plate shaking 3 speeds: Low, mid, high: Duration: 0.999 Sec

Plate types: 96-well micro plate; maximum plate height; 16mm

Interchannel variation: ≤ 1.0% from 0 to 3.0 OD

Read time Fast mode: 6 sec at single wavelength, g th 10 sec at dual wavelength. Step mode: 15sec at single wavelength 25 sec dual wavelength

Data output: On-board graphical thermal printer and USB2 Interface with PC, or Mac data

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Stations

Data storage: Calendar/clock function; 64 assay protocols

Flexible configurations with ability to read flat- U, or V-bottom micro plates or 8 – or 12 well strip plates automatic calibration before each reading variable – speed plate shaking capability

USB2 port for external computer control (with Micro plate Manager Software, PC) and suitable PC

Data and protocol presentation of LCD display on board data storage of protocols, standard curves, and graphs self-diagnostic capabilities to detect lamp burnout at start up

Motorized door for plate loading

Software Specification:

High-Throughput Analysis and Reporting Running of 12 separate assays on the same plate optional automatic printing upon completion of measurement

Multiple plate processing with automated data export custom reporting function that provides on button screening for predefined assays, such as for TSE comprehensive curve fit analyses

Linear, quadratic, cubic, or logistic (4 parameter) fit types

Linear or logarithmic automatic axis scaling

External standard curves for multiple plates

Curves fit graph overlay or comparison

Performance verification parameters include:

- Accuracy
- Precision
- Linearity
- Spectral blocking
- Complex kinetic analyses
- Choice of number of calculations points for Vmax
- Simple velocity calculation
- Negative or positive slope calculation
- Absorbance limit selection
- Kinetic correlation coefficient display and calculation for fit (r value)
- Real – time data acquisition display and ability to zoom in on a well
- Automatic scaling and real-time monitoring

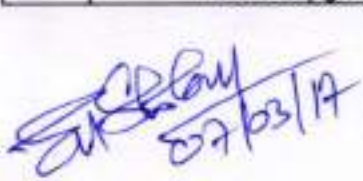
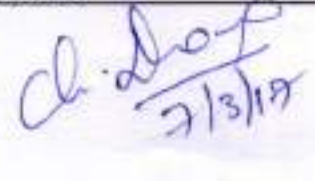
Suitable Desktop computer

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<p>10</p>	<p>Refrigerator</p> <p>Capacity</p> <ul style="list-style-type: none"> • Net Total (Liter)- 302 ℓ • Net for Freezer (Liter)- 72 ℓ • Net for Refrigerator (Liter)- 230 ℓ • Gross Total (Liter)- 321 ℓ • Gross for Freezer (Liter)- 88 ℓ • Gross for Refrigerator (Liter) - 233 ℓ <p>Physical specification</p> <ul style="list-style-type: none"> • Net Dimension (WxHxD)(mm)- 600 x 1,635 x 672 mm • Net Width(mm)- 600 mm • Net Case Height with Hinge(mm)-1,635 mm • Net Case Height without Hinge(mm)-1,635 mm • Net Depth with Door Handle(mm)- 672 mm • Net Depth without Door Handle(mm)- 672 mm • Net Depth without Door(mm)-580 mm • Packing Dimension (WxHxD)(mm) -641 x 1,700 x 709 mm • Packing Width(mm)- 641 mm • Packing Height(mm)- 1,700 mm • Packing Depth(mm)- 709 mm • Net Weight(kg)- 57 kg • Packing Weight(kg)- 61 kg • Gross Dimension (WxHxD)(mm)- 641 x 1,700 x 709 mm • Gross Weight(kg)- 61 kg <div data-bbox="614 1086 949 1579"> <p>600 mm (W)</p> <p>1,635 mm (H)</p> <p>672 mm (D)</p> </div>	<p>1</p>
<p>11</p>	<p>Nano Spectrophotometer</p> <ul style="list-style-type: none"> • Instrument Type: Spectrophotometer for measurement of 0.5 – 2 µL DNA, RNA, and protein samples • Measure very low and high concentration samples (0.4 – 15,000 ng/µL dsDNA) • Cuvette capability allows for kinetics (time or time / temperature studies) and cell culture (OD 600) measurements. • Minimum Sample Size: 0.5 µL • Path length: 1 mm (auto-ranging to 0.05 mm) • Light Source: Xenon flash lamp • Detector Type: 2048-element linear silicon CCD array • Wavelength Range: 190-840 nm • Wavelength Accuracy: +1 nm 	<p>1</p>

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	<ul style="list-style-type: none"> • Spectral Resolution: <1.8 nm (FWHM @Hg 253.7 nm) • Absorbance Precision: 0.002 absorbance (1 mm path) • Absorbance Accuracy: $\pm 2\%$ (at 0.76 absorbance at 257 nm) • Absorbance Range: 0.02 -300 (10 mm equivalent) • Detection limit: 2 ng/μL dsDNA • Maximum Concentration: 15,000 ng/μL (dsDNA) • Measurement Time: < 5 seconds • Sample pedestal Material • of Construction: 303 stainless steel and quartz fiber • Operating Voltage: 12 VDC • Operating Power Consumption: 12-18 W, (max 30 W) • Software Compatibility: Windows® XP (32 bit) • Cuvette specifications • Z-Height: 8.5 mm • Heating: $37 \pm 0.5 ^\circ\text{C}$ • Stirrer: 150-850 rpm • Path Length : 10, 5, 2, 1 mm • Absorbance Range: 0.008 - 1.5 • Detection Limit: 0.4 ng/μL-Maximum Concentration 750 ng/μL (dsDNA) • Measurement Time: < 3 seconds • Cuvette Dimensions: 12.5 mm x 12.5 mm, up to 48 mm H • Type : Masked cuvette • UL/CSA and CE: All units are approved to these standards • One year warranty & 3 yrs AMC • Computer with Highest RAM and highest GB space Should be provided with Nanodrop spectrophotometer 	
12	<p>Multipurpose High speed Centrifuge</p> <ul style="list-style-type: none"> • Compact centrifuge for speed up to 17,500 rpm • Relative Centrifugal for RCF: Max.30,130 x g • Temperature range $-11^\circ\text{C} - + 40^\circ\text{C}$ • Centrifuge machine should be manufactured as per IVD directive. • Dials and digital display for easy setting. • Acceleration time to max. rpm : <14 s • Should have 50 programs memory capacity • Rotor should run with or without lid • Automatic rotor recognition with speed limitation • SOFT break function for smooth stopping of rotor • ECO shut-off function (Automatic switch-off after particular time) • Facility for pre-setting the programme via date & time to have the centrifuge Refrigerated and ready to use at the pre-selected time. • Built-in condensation drain to eliminate water accumulation & prevent corrosion. • Brushless motor • Automatic imbalance detections for customer safety • Autoclavable rotors • Separate Short Spin Key • Motorized lid latch • Aerosol – tight rotor for 24 X 1.5/2ml tubes with minimum 17500rpm and 30100xg • Rotor For 6 x 15ml/50ml Falcon tubes with minimum 7800 rpm and 7700 Xg. • Machine should have option to use Swing bucket rotor for MTP & PCR plates for Future upgradations. 	1

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