

Department of Microbiology

Sr. No	Name of Equipment	Specification	Qty required	Suggested Manufacturers Name	Approx. Unit Cost (Rs.)	Usage
1.	Biological Safety Cabinet	<p>Modular construction, combining aesthetic appeal with functional utility and efficiency. These are designed to meet class 100 requirements and per US Federal Standard 209 E, with in work zone.</p> <p>Ideal for microbiological manipulations, work with bioassays sterility testing & research work, vial filling & bunging operation in parenteral units & for general dry-processing work in semiconductor industry etc. provides a comfortable ‘sit down ’ working position for the operators.</p> <p>Construction :- Full body including top made us of S.S., complete with transparent front door, static pressure, inclined manometer, built in UV germicidal light, cock for gas, air or vacuum line.</p> <p>side panels of thick transparent plexiglass .</p> <p>Air flow and Filtration :- Laminar Flow principle involves double filtration of air. Atmospheric air is drawn through pre filter and is made to pass through highly effective HEPA (High Efficiency Particular Air) filters having efficiency rating as high as 99.99% with hot DOP, thus retaining al airborne particles of size 0.3 micron and larger. Double filtered air blows in laminar flow through the work tale at designed velocity of 90 ft. min.± 20%.</p> <p>Blower Motor Assembly :- duly balanced, direct drive motor blower units sized to provide adequate air flow volume over the entire surface of HEPA filter. Fitted with reputed make motor and operates with minimum noise level i.e. lower than 65 db scale and Vibration less than 2.5 um.</p>	08	*Biocon *Navyug *Lab Tech	70000-80000/-	For culture purpose of aseptic preparation.

		<p>Lighting :- work area properly illuminated by diffused, glare free fluorescent light providing 800 LUX, or as per requirement.</p> <p>Powder Requirement :- 230 V. 1 phase, 50 Hz, ac supply.</p> <p>Working Area 4'x2'x2'</p> <p>Size of HEPA filter 4'x2'x2'</p> <p>No. of HEPA filter 1</p> <p>No. of Pre filter 2</p> <p>Illumination 2x40W</p> <ul style="list-style-type: none"> • Product must be CE marked. <p>Manufacturer must be ISO certified with WHO GMP compliance certified plant.</p>				
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2.	Fluorescent Microscope	<p>Optical System: Infinity optical system F – 200 mm Anti Fungus Wide base with extra lateral optical system Eyepiece: Wide field high eye point Eyepieces 10x/22 mm with diopter adjustment An Rubber Eyecups (Pair). Plan Achromat Objective PL 4X/0.15 Plan Achromat Objective PL 10X/0.35 Plan Achromat Objective PL 40X/0.60 Plan Achromat Objective PL 100X/0.70 FLUORESCENCE ATTACHMENT Epi – Fluorescence attachment with Filter for Four wave bands Mercury Lamp 100 w Lamp house HBO 100 w FILTER FOR FLUORESCENCE MICROSCOPY</p> <ol style="list-style-type: none"> 1. DAPI, Exciter 330-380, DM 400, BA 420 (UV) 2. FITC, Exciter 450-490, DM505, BA 520 (Blue) 3. TRITC, [Rhoda mine] Exciter 510-560, DM 575, Ba590 (C 	01	<p>*Ozone *Motic</p>	400000-500000/-	It is most used microscope in medical and biological fields for MP tuberculosis.
3	Horizontal Laminar flow	<p>Size: 4' x 2' x 2' size of Hepa filter —4' x 2' x 6' - Stainless steel top, transparent front door (5mm size) - Unit fitted with prefilter & one 2 x 40 W HEPA filter (0.03 Micron size) - Fluorescent illumination. - Built in germicidal UV light - Cock for gas - Height of working table should be comfortable In 'Sit down' working position for the operator. - Recessed knee space</p>	01	<p>*Biocon *Navyug *Lab Tech</p>	65000-75000/-	For culture and aseptic preparations.
4.	Electrophoresis complete set	<p>Mini-plus horizontal gel unit with removable casting tray and 2 x 1 mm thick, 16- sample combs and coloured loading strips</p> <p>Technical Specification Unit Dimensions (Wx L x H) - 16.5 x 23 x 6.5 cm Gel Dimension (W x L) - 10 x 11.5 cm</p>	01	<p>*Avantor India *Biorad</p>	200000-250000/-	For electrophoresis.

		<p>Buffer Volume - 450 ml Maximum Sample Capacity - 80 Combs - 2 Comb Thickness - 1, 1.5 or 2 mm Comb Throughput - 4 to 20 samples Comb Slots - 4 Migration Distance Between Comb slots - 2.5 cm Recommended Running Voltage - 75 to 125 V Power Output Connectors (diameter) - Shrouded, 4mm</p>				
5.	Carbon dioxide incubator	<ul style="list-style-type: none"> • Inner chamber made of stainless steel and outer body of M/steel painted with white stoving enamel. • Full view thick glass door tightly clamped to the gasket making the chamber leak proof • An inlet nozzle at the rear of the control provided for admission of Co₂ or air/CU mixtures. • Temp range from 5 degree C above ambient to 60 degree C ± 0.5 degree C with digital temp indicator-cum controller (thermostat) • Supplied complete with stainless steel trays (02) inlet 1 outlet of air/gas, cord and phy. • To work on 220/230V, single phase, A.C. Supply • Chamber size(WXHXD) a. 450x700x450mm 	02	<p>*Mackflow *Thermo</p>	300000-500000/-	For anerobic culture.
6.	Electronic top loading Balance	<p>Capacity : 220gm ,Accuracy : 0.001g, Responsebility (approx):<math>\pm 0.001\text{gms}</math>. Linearity : <math>\pm 0.003\text{gms}</math>. Response Time (approx): 1.0-1.2secs. Ambient Temp : 5-40Deg.C Temp conrilicant of sensltivilty (10-35Deg.C):$\pm 5\text{ppm/Deg}</math>.(10-30deg.C) Pan Size : 100x100mm Dimensions (approx): 170Wx240Dx75Hmm Weight (approx.): 2.2kgs.$</math></p>	01	<p>*Scaltop *Shimadzu</p>	10000-50000/-	For weighing purpose.

		Power Req.: AC adapter, 80V-264V,+/-10%,50/60Hz Std. accessories : Simple windbreak, Protective in – Use cover Display :LCD												
7.	Anerobic apparatus with Petri plate and test tube carrier	(Anerobic system mark III supplied with transparent, unbreakable polycarbonate jar of 3.5 liter capacity with sturdy, aluminium lid clamp and sealing ring with built –in safety features, pressure valv with safty valve & 2 way pressure gauge.	02	*Hi Media *SIGMA	2000-3000/-	For anerobic culture.								
8.	Deep freezer	For quick freezing and storing of Blood Components, Serum, Vaccines, Biological and Medical Specimens. Clinical Samples etc., at low temperatures. with superior Insulation and specially designed refrigeration system. Constructed of double walls exterior is of sheet steel & interior of stainless steel having PUF insulation. Technical Data: Vertical Freezers: <table border="1" data-bbox="430 711 1157 889"> <thead> <tr> <th>Vol.</th> <th>Inner Dim</th> <th>External Dim</th> <th>Min Temp</th> </tr> </thead> <tbody> <tr> <td>170</td> <td>50x43x85</td> <td>63x58x138</td> <td>-20°C</td> </tr> </tbody> </table> Supply: 230 V Single Phase 50 Hz AC with built in with Digital Temperature Indicator cum Controller with audio visual alarm. Product must be CE marked.	Vol.	Inner Dim	External Dim	Min Temp	170	50x43x85	63x58x138	-20°C	02	*Blue star *REMI	80000-100000/-	For quick freezing and starring medical specimens.
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10.	ELISA PLATE READER –	<ul style="list-style-type: none"> • Extensive On-board Data Analysis comparable to PC Software. • Includes Curve-fitting, formulas, Transformations and Control / Assay Validation. • Stores up to 75 Assay definitions in memory. • Saves 20 Microplate Test Results in memory. • Unique Assay Definition capability via a new Windows program. • Reads 24, 48, or 96-well microplates. • Optional 384-well plate capability. • On-board Diagnostic Testing of Optical and Performance Specifications. • Longest and most comprehensive Warranty in the Industry. • Low-cost, High-value microplate reader <p>TECHNICAL SPECIFICATIONS: Microplates : Microplates with 28, 48 and 96-wells read Optional capability to read 384-wells. Speed : 30 seconds for 96 wells. Absorbance : 0.000 to 3.000 Abs. Resolution : 0.001 Abs. Accuracy : +/- 1% +/- 0.010 Abs from 0 to 2.000</p>	02	*Avantar *Robonic *Transassia *Lilak	170000-200000/-	For ELISA test for various disease.								

		<p>Precision (repeatability)@ 300µl : Processing time (full plate) : 350µl x 3 cycles x 8 port: 180 sec. Residual volume : < 5µl per well Maximum soak time : 250 seconds Wash Heads : Interchangeable 8 or 12 channel (optional) Programs in memory : 7 Liquid contact materials : Glass, Polypropylene, Polyethylene, Stainless Steel, Tygon, Teflon, Derlin and Nylon. Recommended Decontaminants : Decon, Virkon or 5% Sodium Hypochlorite solution mixed with deionized water.</p>				
12	Lyophilizer/ freezer drier	Laboratory type having capacity of at least 6 lit. cooling up to -53°C with cfc free technology . Having pneumatic or hydraulic doors. Having vials of capacity 2 ml, 5 ml, 10 ml. with inner stainless steel jacket & thermo isolated. With cooling of at least 6 liters per day. Having rearrange able racks.	01	*Novyug *Labtach *Bombay scientific	200000- 300000/-	For preservation of culture.
13	Multichannel pipette	<p>TECHNICAL DATA :</p> <ol style="list-style-type: none"> 1. Rechargeable Battery operated multipurpose pipette & dispenser can also be used for reverse pipetting . 2. Having 5-6 Channels for dispensing with variable programming modes . 3. Having a display and buttons to decrease or increase volume . 4. Preferably also have a manual mode . 5. Should have button for tip removal. 6. Dispense volume preferably 0.5-100 micron. 	02	*ThermoFisher *Tulip *Ependors	35000- 40000/-	For pipetting.
14	Refrigerated	For working with heat sensitive material. The control panel is a	01	*LABY	125000-	For centrifuge in cold

	centrifuge :-	<p>separate unit compact and elegant incorporating self illuminated start stop switches, dynamic brake, step less speed regulator with zero start switch digital speed meter timer and digital temperature controller indicator.</p> <p>TECHNICAL DATA</p> <table border="1"> <tr> <td>Max Speed</td> <td>Rpm</td> <td>15000 or more</td> </tr> <tr> <td>Max ref</td> <td>G</td> <td>7400</td> </tr> <tr> <td>Max tube size</td> <td>ml</td> <td>200</td> </tr> <tr> <td>Max Capacity</td> <td>ml</td> <td>1200 or higher</td> </tr> <tr> <td>Width</td> <td>mm</td> <td>890 or more</td> </tr> <tr> <td>Depth</td> <td>mm</td> <td>620 or more</td> </tr> <tr> <td>Height</td> <td>mm</td> <td>625 or more</td> </tr> <tr> <td>Lowest Temp</td> <td>°C</td> <td>-8</td> </tr> <tr> <td>Connected load</td> <td>KVA</td> <td>1.6</td> </tr> </table> <p>Supply 230 Volts Single Phase 50Hz. AC The product must be CE marked</p>	Max Speed	Rpm	15000 or more	Max ref	G	7400	Max tube size	ml	200	Max Capacity	ml	1200 or higher	Width	mm	890 or more	Depth	mm	620 or more	Height	mm	625 or more	Lowest Temp	°C	-8	Connected load	KVA	1.6		*ELTTEC	150000/-	temperature.
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15	Incubator	<p>Temperature range upto 70°C thermostatically controlled. Three Side heating elements which are placed in ribs at the bottom and sides. Double walled Inner chamber made of S/Steel. Outer chamber of M.Steel duly painted with epoxy coating with synthetic rubber gasket on doors. Door has double glass windows to view samples, Built in horizontal 'L' shape thermometer and perforated adjustable shelves. To work on 220/230 V AC. Supplied with or without Air circulation fan. Chamber Size: 450 x 450x450 mm, Trays: 18"x18"x18" (02)</p>	02	*Biocon *Novyug *Labtech	50000-100000/-	For incubating culture plates at 37 degree C.																											
16	Dark ground Microscope attachment	<ul style="list-style-type: none"> • Dark Filed central stop enables dark field observation at 4x through 40x when the attachment is mounted on the bright field • Condenser bottom section. 	01	*Labomed *Olympus	100000-150000/-	For Spirochetes.																											

		<ul style="list-style-type: none"> To fit In (compatible) with ordinary microscope. 				
17	Auto Pipettes	<p>(Variable & fixed volume) fixed:- 5µl, 10µl, 20µl, 50µl, 100µl, 200µl, 500µl, 1000µl, Variable:- 0.1-2 µl (1)</p> <p>1-10 µl (1)</p> <p>2-20 µl (1)</p> <p>5µl - 50µl (2)</p> <p>10µl - 100µl (2)</p> <p>100µl - 500µl (2)</p> <p>100µl - 1000µl (2)</p> <p>Multi Channel Autopipette 1µl - 100µl (2)</p>	13	*Thermofisher \ *Eppendorf	6000-10000/-	For pipetting.
18	Shaker incubator (for bacteriological research purposes)	<p>1. Chamber</p> <p>(i) Volume: 10 Cubic Feet (\pm 10%) or approximately 260 Liters.</p> <p>(ii) Internal Fluorescent Lighting.</p> <p>(iii) Stainless Steel interior with Single Door. Door should be easily opened without excess support.</p> <p>(iv) Tight seal when door is closed.</p> <p>(v) View port or window on door preferred.</p> <p>(vi) One or more access ports.</p> <p>(vii) Germicidal mechanism to reduce bacterial load in the air is desirable.</p> <p>(viii) Internal electric Outlet.</p> <p>2. Control Panel, Refrigeration, Display with Temperature and rpm Control.</p> <p>(i) Microprocessor based control with Digital LED Display of temperature, speed and alarms.</p> <p>(ii) Temperature range: 4° to 50 °C, Calibrated, Temperature Accuracy & Control (\pm 0.1° C) at 25 °C.</p> <p>(iii) Audible and visible alarms on temperature exceeding set temperature range.</p> <p>(iv) Uniform temperature (\pm 0.5° C) control at all temperatures inside with the use of fans/ forced circulation.</p> <p>(v) Programmable for time, temperature and rpm. Ability to program machine to stop shaking and cool samples to 4 °C after</p>	01	*Biocon *Navyug *Labtech	15000-18000/-	For incubation of Petridish feasis-staining trays.

		<p>24 Hrs.</p> <p>(vi) Data logging features that allow interface with computers to analyze run parameters over time.</p> <p>(vii) Precise regulation of Speed, Running Time, Incubation & Refrigeration over time.</p> <p>3. Safety related features</p> <p>(i) Machine stops shaking when out of balance or in case of excess vibration.</p> <p>(ii) Machine stops if Door is opened during an experiment.</p> <p>(iii) Machine stops if the High or low temperature limit is exceeded.</p> <p>(iv) Automatic start at correct temperature and rpm after power failure.</p> <p>(v) Indication/Alarm when machine needs urgent maintenance.</p> <p>4. Shaking related features:</p> <p>(i) Shaking speed: 40 – 500 rpm with control (± 5 rpm)). Shaking drive should be smooth without jerking movements. Drive should be protected from liquid spills in case of breakage of flasks.</p> <p>(ii) Shaking Load Capacity: At least upto 20 kg. Universal Platform with dimensions equal to or exceeding 70 X 40 cm and with the ability to hold 6 L flasks. Platform should be easily removable for cleaning.</p> <p>(iii) Flask Holders: 8 X 2 Litre. 4 X 4 Litre, 2 X Test-Tube Rack. Please list other flask holders and stands as optional items.</p> <p>(iv) Minimal External footprint. Shaker should be stackable.</p> <p>(v) Low Energy Consumption, Quiet Operation.</p>				
19	Spiral plating machine	<ol style="list-style-type: none"> 1. Able to plate on both 90mm 150mm plates. 2. Can accommodate more than one plate. 3. Dispensing volume variable from 20μl to 500 μl 4. Having counting range of 10- 4X 10⁵ CFU/ ml at different dilutions. 5. Should have various deposition modes 6. Installation requirement is class I 	01	*Biotech *Insta-bio Analytik	10000-15000/-	For automated plating.

		<ol style="list-style-type: none"> 7. Should be automatic 8. Standard plating time should be <10 sec/ plate 9. Storage temp. -10 to 55⁰ C 10. Working temp. 20- 40⁰ C 11. Electric supply 100- 240 V (50Hz) 12. Plating speed 1-3 rps 13. Syringe capacity up to 500 µl 14. Preferably one step cleaning 15. Able for inhouse validation 16. Having internal (preferable) or external vacuum source 				
20	Air curtain (For Laboratory purposes)	<ol style="list-style-type: none"> 1. Stainless steel body, corrosion resistant, galvanized. 2. maximum effective width per motor blower assembly shall be no more than 48” and all cabinets shall have structural sidewall supports a maximum 48” apart. Units to have full-length discharge and flush louvers with 1-inch directional vanes for for maximum 40° sweep for optimum airflow adjustment. 3. Input power- 110-240 V/ 50 Hz 4. Noise- <55 dB 5. Filter 6. Air velocity- min.-07 m/sec Max.- 17m/sec 7. Fan speed- adjustable to low & high 8. Motor- 1 or 2, heavy duty, totally enclosed, permanent split capacitor with double extended shafts. All motors shall be single speed. Internal motor power cord shall feature quick-disconnect plugs for easy removal of blower base assembly for cleaning and maintenance. 9. Type of installation- wall/ glass/ suspension 10. Cabinet grill shall allow for no tools access to motor/blower assembly and shall be constructed of 	07	*EURONICS * SGM Lab-Solutions.		Prevent the influx of outside air throw an opening into area.

		expanded metal to allow for maximum airflow.				
21	Fumigation machine	Already purchased for other Departments ,so same specification can be used	02	*Skan *D4 surgical pvt ltd	25000-40000/-	For sterilization of OT and Lab.
22	Distillation Plant of steel	Double Stage. Automatic electrically heated all steel stand, plug and cord. (Electrical embedded heater distillation apparatus)- With auto cut device, capacity 5 litres	01	*Aqua Lab *Millipore	100000-200000/-	For eater distillation.
23	Inspissator	-Double Walled -Inner Tank and Outer chamber is made of Stainless Steel -Insulation in between the outer body & stainless steel tank. -Provided with jacket for sterilizing the media. -Transparent Glass / Acrylic cover to see the samples. -Tapered shelf for proper placement of sampling tubes. -able to easy cleaning. -Heating by immersion heaters. Temperature range up to 100°C. (Accuracy $\pm 1^\circ\text{C}$) -Operating Voltage: 220 Volts AC (50 Hz) -Temperature Controlled by microprocessor based digital temperature indicator cum controller - Tube capacity 100	02	*Zenith *REMI	80000-100000/-	For making culture media.
24	Hot Air oven	Temperature thermostatically controlled by hydraulic thermostat from 50-250°C with a sensitivity of +/- 1°C. Beaded heating elements are placed in ribs at the bottom and sides. Built in 'L' shape thermometer. Double walled, inside made of S/Steel and outer M. steel painted with attractive stove enamel with perforated adjustable trays two pilot lamps on/off switch. To work on 220/230 V AC. (150 lts)	01	*Biocon *Navyug *Labtech	20000-50000/-	For sterilization of glass wares.
25	Colony Counter	Automatic 3 digit LED digital Display, Counting Plate with	01	*Hi Media	50000/-	For colony culture.

		illuminated standard Wolfhugel 100 mm Dia Len		*Dinamico		
26	Lovibond comparators	Path length 33mm Mode Transmittance Filter Disc Disc 1 - ASTM No. 0.5, 1.5, 2.5, 3.5, 4.5, 5.5, 6.5, 7.5 Path Length 33mm Illuminant C Voltage 12V ac PSU, 110/120V or 220/240V, 50/60Hz (swtichable) Size (HxWxD) 15 x 23 x 27cm Weight 1.5kg	02	*LoviBond	10000/-	For Ph measurement on media making.
27	Micrometer Eye piece	Wide field high eye point or inbuilt pointer, 10x0r 15x paired.	05	*labomed *Olympus	2000/-	For viewing microorganism
28	Micrometer Stage	Wide field high eye point or inbuilt pointer, 10x0r 15x paired.	05	*Labomed	2000/-	For viewing microorganism
29	Distilled water plant (glass)	Double Stage. Automatic electrically heated all Borosil Glass stand, plug and cord. (Electrical embedded heater distillation apparatus). - With auto cut device, capacity 5 liters	01	*Borosil *Millipore	50000/-	For distillation of water
30	VDRL shaker (Digital)	Body made out of thick mild steel finished with powder coating. Heavy duty motors. Platform is provided with lotus type clamps or rubber discs to hold flasks. RPM range – upto 250 RPM, electronic control, 0-60 min timer. Workable on 220 V AC 50 Hz Single phase.	02	*Biocon *Navyug	8000- 30000/-	For VDRL test.
31	Digital Water	Double walled filled with high grade glass wool insulation	02	*Biocon	15000-	For serological testing.

	bath(serological)	between the two chambers. Outer chamber of serological water bath is made of mild steel with powder coating and inner chamber is made of stainless steel. Temp. Controller by thermostatic Temp. Range varies 5°C above ambient to 60°C. Size 4 racks, 500 watts		*Navyug	50000/-	
32	Digital Thermometers:	large size lcd indication , low battery indication , k-type, thermocouple (option) , □ handheld lightweight design, reading hold function, maximum record , °c or °f annunciators display , □ 1°C or 0.1°C (1°F or 0.1°F) □ □ °c °f switchable on front panel, single thermocouple input, user-selectable resolution, front panel offset adjustment	10	*Hatco *Lab depot *Novatech International.	1000-2000/-	To measure temperature.
33	pH determination apparatus	Parameter- 350, Portable, Waterproof, PH range: -2 to 16, calibration point, Automatic buffer recognition, Results stored	01	*Systonics *Horiba	20000/-	To measure Ph of media.
34	Vortex machine	tube vortex, cyclomixer	04	*Labline *REMI	5000-8000/-	For uniform shaking.