Approved rate through Open e tender ID MAMC_2018_143460_9 for procurement of equipments for Anatomy Department.

Rate are valid upto 31.03.2019

Item NO. of Tender	Name of Item	Specification of item
1	**INCUBATOR**	Incubator (Memmert German Type): Inside made of aluminium anodized /stainless steel and outside mild steel finished in durable powder coating. Door having glass window for easy viewing. On/off switch, two pilot lamps, control dial, one built in thermometer 100℃, adjustable aluminium shelves with holes/stainless steel wire frame shelves, connecting cord & plug. Heating by elements placed under ribs at the bottom & sides. Temperature controlled by sensitive bimetal thermostat upto 60℃, with temperature uniformity of ±0.5℃, electric supply 220 volts A/C. Size of inside chamber Stainless Steel W X H X D : 300 x 300 x 300mm
2.	**TISSUE WATER BATH**	The black interior of the bath enables the operator to examine the near transparent section with ease. The exterior is attractively finished in white powder coating. Glass wool between the walls of the bath provides excellent thermal insulation. The bath is fitted with pilot light, on/off switch and thermostat to control temperature from ambient to 70℃, with an accuracy of ±1℃, for operation on 220 volts A/C. **Inside dia.,250x112mm depth**

6	**ELISA Reader and Washer**	Technical specs- ELISA reader and Washer 1. Should have 96 wells with reading capacity of 1 to 96 wells individually. 2. Should provide accurate, reproducible and fast measurements. 3. Should have a linear measurement of 0 to 3.000 Abs. 4. Should have both single and dual wavelength reading option with facility for kinetic measurement. 5. Should have wavelength range from 400- 750nm. 6. Machine should be supplied with 5 standard filters 405, 450, 492, 530 and 620 nm and also have 3 open positions for future additions. 7. Should have photometric accuracy of ±3% or better. 8. Should have a resolution of 0.0001 Abs and min resolution of 0.000i OD. 9. Should have inbuilt variable speed plate shaking capability with selectable speed and time.
7	**PCR Workstation**	W × D × H 30 in. × 24 in. × 24 in., AC/DC input 240 V AC Work area with Dual UV bulbs, Non-ventilated hood with acrylic windows for a clear view, Acid-resistant work surface, a laminated safety glass fascia, and double access doors. The germicidal lamps controlled by a 24-hr timer. The work light to be provided by dual fluorescent lamps
8	**Magnetic stirrer**	Magnetic Stirrer- • Stirring speed (RPM):100- 1500 • Speed control: Digital feedback control • Stirring capacity(liters max): 2 • Plate type: ceramic top plate • Plate size (WxD mm) : 150 X 160 • Overall size (WxDx H mm): 160 x 280x 115 • Weight (kg):2.5- 3
9	**pH meter**	pH Range 0 to 14.00 Electrode Combined PVC sleeved Display Digital

		Temp. comp. 0 to 100 degree C Power required 230 V AC 10% 50 Hz, 4 VA Warming time Not more than 5 minutes Consumables For standardisation of pH meter
11	**Hot plate for slide warming**	Hot plate 1500 WATTS (ISI marked), ceramic or aluminium top, non stirring, with digital temperature display
12	**SS blade for sectioning**	Low profile
13	**SS blade for sectioning**	High profile
14	**Drying oven**	(Size: 600 x600x600)mm Memmert german type, Size: 600 x600x600mm, inside made of stainless steel sheet and outside mild steel finish in durable oven baked enamel/powder coating with pure glass wool insulation between the walls. Supplied with 2/3 multi position stainless steel wire frame shelves.
15	**Thermocycler-** Gradient	1. Gradient PCR, capable of testing more than 6 different temperatures simultaneously across a gradient range of 1 - 20° C 2. To accommodate 96 x 0.1/0.2 mL PCR tubes as single or dual block, 3. 96-well PCR plates (Standard & low profile) 4. Time or Temperature increment/decrement with cycles in PCR program. 5. Adjustable ramp rate from 0.1° C to 3.0° C to meet critical amplification conditions 6. Customized programming

		7. Additional two blocks for expansion to be provided. 8. Auto Restart facility with user defined time interval when power fails and resumes 9. Log book function for error messages and new calibration 10. CE, ISO certified and RoHS compliance 11. Online UPS for at least half an hour power backup
17	**Electronic balance**	Weighing range:0.1mg-100gm, Sensitivity - 0.01mg Electronically controlled Closed cabinet for accurate weighing Digital monitor (LCD)

Approved rate of equipments for Pharmacology Department through Open e Tender ID 2018_MAMC_143460-7 Rates are valid till 31.03.2019

Item NO.	Name of Item	Specification of item
4.	**ELISA Reader with Washer**	**Plate type - 96 well plate,Wash head - 8/12** **Residual aspiration volume - <2ul** **Dispensing volume - 10-3000ul step by 1ul** **No. Of washing cycle -1-99ul adjustable ,Soak time - 0-999s** **Shaking time - 0-999s, Temperature - 5-35C** **Humidity - 15-85%** **Power supply-AC 110V, 60Hz, AC 220V, 50Hz** **Dimension(mm) - 400(L)x310(W)x16AC** **Weight - 8kg.**
7	**Water maze with smart video tracking system**	**Heater Intensity- 3000 W, Heating Speed-max 3 °C / hour, Pool Diam.-90 cm,Pool Height-60 cm, Temperature Range-22-30 °C(depending on environment), Power Requirements-110V, 50Hz**
8	**Elevated plus maze with smart video tracking system**	Rat – Dimensions 1000 (W) x 1000 (D) x 500 (H) mm Arm Length:100 (W) x 450 (D) mm Wall height:500 (H) mm Border height:30 (H) mm Elevation:650 (H) mm Mice- Dimensions:650 (W) x 650 (D) x 150 (H) mm Arm Length:60 (W) x 295 (D) mm

		Wall height:400 (H) mm Border height:18 (H) mm Elevation:15 (H) mm Material composition: Methacrylate, aluminium
9	**Semi-automatic diagnostic analyzer**	ndpoint, Fixed-time, Kinetics and Absorbance Wavelengths from 340 to 670 nm 7.0" TFT touch screen & pop up keypad External keyboard or mouse support via USB Up to 200 tests can be programmed Testing mode: flow cell or cuvette Power-failure protection Universal power supply
10	**Automatic isolated organ bath**	**Controller based single unit, with arrangement for filling and emptying of organ tube from control panel Supplied with glass organ tube, acrylic reservoir coil, frontal writing lever smoking type, frontal writing lever suitable for holding ink marker, ink marker, copler set With Analogue Temperature controller with temperature range of 5 deg c above ambient to 60 deg c, accuracy ±5 deg c With inbuilt submersible water circulation pump Supplied with aerator and tubing to connect aerator to organ bath**
11	**Sherrington Recording Drum**	**microprocessor controlled unit with stepper motor and LCD display Provided with spare fuse and inbuilt filter for mains socket**
15	**Isolated Organ Bath**	**Perspex with thermostat and stirrer,single inner tube volume 20 ml,oxygen tube,frontal writing levers,hook grips,blocks,Size-10x10x07inchs**
16	**Micro centrifuge**	**Speed-13000rpm,Dual-rotor replaceable, Holder capacity-- 1.5-2.0 ml PCR tube**
19	**Micro pipette**	**20-100ul,eppendorf**
20	**Micro pipette**	**100-1000ul ,eppendorf**

21	**-20c PCR mini cooler**	**Contain 0.2 ml pcr tube**
22	**-0c mini cooler PCR**	**Capacity- 1.5 ml tube**
27	**Frontal writing Lever for holding ink marking device**	**Size- 8 inch long SS**
29	**Soxhlet extraction apparatus**	**With heating mantle 240v, vol.-125 ml capacity,flask 500 ml**
34	**Weighing Machine**	**Cap.300gm,Readability-0.01gm, Pan size-140dia, Weight-2kg, Auto zero tracking, Display- custom LCD 10-12mm height**

Approved rate through Open e tender ID MAMC_2018_143460_2 for procurement of equipments for Microbiology Department. Rate are valid upto 31.03.2019

Item NO. of Tender	Name of Item	Specification of item
1.	Hot Air Oven	Memmert German Type, Size: 450 x 450 x 450 mm, Inside made of stainless steel sheet & outside mild steel finished in durable oven baked enamel/powder coating with pure glass wool insulation between the walls. Supplied with 2/3 multi position stainless steel wire frame shelves. Covered heaters placed under ribs at the bottom and sides to give equal and uniform distribution of heat. Temperature controlled by Digital temperature indicator cum controller (PID), upto 250°C, with an accuracy of ± 1°C. Provided with 3 heat switch, pilot lamps & air circulating blower to work on 220 V A/C. Complete with connecting cord and plug.
2.	Hot Air Oven	Memmert German Type, Size: 600 x 600 x 600 mm, Inside made of stainless steel sheet & outside mild steel finished in durable oven baked enamel/powder coating with pure glass wool insulation between the walls. Supplied with 2/3 multiposition stainless steel wire frame shelves. Covered heaters placed under ribs at the bottom and sides to give equal and uniform distribution of heat. Temperature controlled by Digital temperature indicator cum controller (PID), upto250°C, with an accuracy of ± 1°C. Provided with built-in L-shaped thermometer, 3 heat switch, pilot lamps & air circulating blower, 220 Volt A/C with connecting cord and plug.
3	BOD Incubator	Size: 825 x 500 x 415 mm, Tempertaure range 5°C to 50°C which is adjustable at any desired point by means of a precision double relay digital temprature indicator cum controller. Two air circulating fans to keep the temperature uniform inside the chamber. Inner chamber fabricated from thick stainless steel sheet. Outer body made of powder coated mild steel. Front door with magnetic gasket, lock & key. With Inner glass door. With automatic internal light, indicating lamps and stainless steel shelves. Complete unit mounted on castor wheels. 220 Volt A/C with connecting cord and plug.
4	Incubator	Memmert German Type, Size: 600 x 900 x 450 mm. Inside made of stainless steel and outside mild steel finished in durable powder coating. Door having glass window for easy viewing. With On /off switch, two pilot lamps, control dial, adjustable stainless steel wire frame shelves, connecting cord& plug. Heating by elements placed under ribs at the bottom & sides. Temperature controlled by temperature indicator cum controller (PID) upto 60°C with temperature uniformity of ±

		0.5°C, 220 volts A/C.
5	VDRL Rotator	With rubber covered metal tray of size 13" x 13". Rotated by fractional HP motor. With electronic speed regulator and automatic timer upto 60 minutes.
06	**Biosafety Cabinet Level Class II A-2**	Working area: 4' x 2' x 2', 1. Direction of flow : Vertical, 2. Front door transparent, vertical sliding with counter weight system, 3.Ultra violet lamp: 30 watt, Velocity : 100 fpm ±20%, 5.Noise level :65 db A + 5%, 6.Power supply : 220 V single phase ,50 Hz, 7.Working table : Made of perforated stainless steel sheet satin finished, 8.HEPA Filter : particle retention 0.3 micron ; efficiency -999.97%, pressure drop 23mm WG (appx), 9. Blower assembly, 10. Exhaust assembly, 11. Full body made of mild steel/ GI sheet duly powder coated, 12. Fluorescent tube illumination with diffusers-2 nos. 13.Standard accessories: Pressure manometer, additional power point, gas inlet nozzle, floor leveling, screws and wire cord & virus burn out/germicidal U.V. tube in exhaust duct. 14. With complete installation at the site, including that of the ducting, 15. Product should meet CE standard, 16. Comply with IEC 61010/IEC 60601 towards safety requirements, 17. Certificates for particle count for establishing that the equipment is maintaining class 100 environment, air velocity test, and lighting intensity.
7.	Autoclave (Vertical, Size: 600mm x 450mm)	Autoclave (Vertical) with automatic adjustable working pressure system Pressurestat, double walled, inside boiler made of stainless steel & outside mild steel finished in cream enamel. The lid is provided with a radial locking system. The panel is provided with on/off switch, pressure gauge, steam release valve & indicators to show the working of mains & pressure control system. Electrically operated on 220 volts A/C. With stainless steel basket, safety valve and water level indicator. Size: Height inside 600mm, Diameter inside 450mm (24"x18"), with low water cutoff.

8	Electronic Weighing Balance	Weighing range: 0.1mg-100gm, Sensitivity: 0.1mg, Electrstatically controlled, Closed cabinet for accurate weighing, with digital monitor (LCD).
9	Autoclave (Horizontal, Rectangular)	Double walled with steam jacket, electrically heated. With heavy duty steam jacketed autoclave chamber made of thick stainless steel, Mounted on M.S. tubular frame. Radial locking arms with safety valve. With pressure gauge, steam tray, air filter, steam release valve & one tray. With water level indicating window and pressurestat. 220 Volt AC, Size: Length 1200mm, Breadth 600mm, Height 600mm.
10	Ultrapure Water Purification System	1. For generating ultra pure water (Type 1 grade water) from portable tap water suitable for applications like Molecular biology, Chemical Anaylsis, Pathological, chromotographic& General lab applications.; 2. Should have pre-filter assembly with micron/carbon & anti sequestering hardness stabilizing filters, Multimedia in vessel etc. 3. The microprocessor controlled water purification system should comprise of three stages in general and all units to be installed in an aluminum door glass cabinet with locking facility; 4. Stage 1: The first stage system should combine multiple technolties with quick clip type filters/modules for pretreatment, reverse osmosis, and deionization to produce Type 2 quality at a rate not less than 25 liters/hr from a feed water supply from tap or pre-filter assembly, Hardness Stabilizing Softening Filter. It should have the following features: Microprocessor controlled system management with continuous water purity monitoring. To have control panel indicating operational mode. Alarm for Cartridge change & service check. Should have Self Test monitoring display, Display of RO percentage rejections, Auto rinsing, Recirculation, Online display of feed & product quality, upgradable system, Requirements for quality output water: Resistively : 10.0-15.0 Megohm – cm, TOC : Less Than 30 ppb, Flow rate : not less than 25 liters/hr, Product recovery: 25-40%; 5. Stage 2 Around 50 liter Cylindrical PE storage tank (imported) with air vent sensors, Sensors for Low/High water level control; 6. Stage 3 The Ultra Pure unit to produce Type 1 grade as per ASTM/NCCLs with following features: not less than 1.5-2.0 l/Minute dispense flow, dual wave length UV (185 & 254 nm) Photo oxidation irradiation lamp, should include Ultra filtration & Organic scavenging, System capable of “Complete sanitization’ of all internal tubing, easily performed by the end users. Output Details: Resisitivity at 25 degree C : 18.2 M – cm, TOC level :< 1- 5 ppb, Bacteria levels : < 1 cfu /ml, Endotoxin levels :< 0.001 EU/ml, Production flow rate: >1.5 Litres per Minute, CE certified Product.

11	Mechanical pippette, 8 channels, 30-300µL	Mechanical pippette, 8 channels, adjustable volume, 30-300µL, autoclavable
12	Mechanical pippette, Single channel, 2-20µL	Mechanical pippette, single channel, adjustable volume, 2-20µL, autoclavable
13	Mechanical pippette, Single channel, 20-200µL	Mechanical pippette, single channel, adjustable volume, 20-200µL, autoclavable
14	Mechanical pippette, Single channel, 100-1000µL	Mechanical pippette, single channel, adjustable volume, 100-1000µL, autoclavable
16	Needle destroyer	Should be lightweight, portable and compact, Housing should be moulded type, shock proof and made of ABS Plastic/ Stainless Steel 304 Grade, with removable discharge tray made for easy disposal of syringe hubs, with provision to burn the needle & to cut the syringe tips, with power On/Off switch and an indication for power
17	Serological Water Bath	Variable Temperature, Size of the chamber 450x300x175mm. Double walled body with special insulating material. Inner chamber made of stainless steel and outside mild steel, painted with white enamel, and with cover. Digital electronic temperature controller cum indicator, with an accuracy of +0.5°C or better. Along with stirrer with stainless steel stirring rod & blade and speed regulator.
18	Pharmaceutical Refrigerator	Volume 300 ltr, Microprocessor controlled with large LED temperature display, temperature range 2-8°C, with multilevel adjustable shelves and pull-out drawers, with safety lock, with high and low temperature alarm and door open alarm, with single double pane glass self closing door, with HFC Refrigerant & CFC-Free Insulation, operating on 220 V AC/ 50Hz.

Approved rate through Open e tender ID MAMC_2018_143460_1 for procurement of equipments for Pathology Department. MAMC

Rates are valid upto 31.03.2019

Item NO. of Tender	Name of Item with Specification of item
1.	**<u>Cytocentrifuge</u>** 1.Bench top design. 2.Should be able to process at least 12 samples atone time . 3. Speed ranging from 200 – 2000 rpm. 4.Should b edesigned to allow minimum cell loss and preservation of cellular architecture. 5. Should allow single handed opening and closing . 6. Safety lid lock – operations, with lid locked during rotation. Should have specimen safety alarms at frequent intervals in case of overload or out of balance or if lid is not properly locked. 7. Should have simple and precise control for programs. 8. Should have easily retrievable program memory upto last 20runs or better. 9.Time window displays the programmed and remaining run time from1-99 min. 10. Mechanical and electronic components should be protected from accidental spillage of fluid. 11.Should be easy to clean and disinfected. 12. Should be operable at regular electric requirement as in India. 13.System should have FDA approval. 14.The company should provide one backup unit in case any breakdown within 24hours so that patient care does not suffer.

	15.Should have 5 years warranty and 5 years AMC. 16.A free accessory kit for 5000tests to be provided along with the equipment. 17. Accessories of both reusable and disposable types should be included. 5 years warranty plus 5 years AMC should be provided free of cost.
4	**<u>Cold Plate for section Cutting</u>** Compact table top system with 1. Cold plate area to accommodate 40-60 regular size paraffin blocks. 2. Cold plate temperature -5$_0$C or better. 3. Power supply AC 220-240 V/50 Hz 4. List of installations in Delhi Govt. institutions for the samemodel/make of the quoted item along with performance and satisfactory after sales service
5.	**<u>Automated electric bone cutter</u>** Required for cutting 3-6 mm thin sections of the bony tissue received for pathological examination of amputated bone tumours and amputated limbs and body parts Should be electrically operated, user friendly, noise free operation without raising bone dust Table top design with a stage to hold the whole bone and limbs on the stage and cut using an electrically operated blade; hands free operation with the hands of operator to hold the specimen in desired angle for cutting The blade should have a swift motion with dust free cutting operation of the hard and soft bone specimens. Power requirements and plugs compatible with Indian supply and plugs.Should be made up of sturdy heavy metallic body.
7	**<u>Auto Stainer for H&E Staining</u>** 1.Should be easy to operate ,compact table top design with easy to clean and stain resistant surfaces made of steel/ break free sturdy material. 2. Fume containment hood and efficient fume extraction system to remove chemical fumes. 3. Open system with filter systems compatible to use with all chemicals in histopathology staining. 4.Capacity to stain 350-400 slides per hour with typical H&E staining protocol. 5.Provision of simultaneous staining of several protocols whichcan select program for each rack.

	6.Should be able to continuously upload and off load the slides without interrupting the staining protocol. 7.Sequence of use of stations and programme timings should be programmable. 8.asy to use microprocessor controlled menu driven programme with at least 10 programmes stored in memory with each upto 20steps. 9.Provision for staining programme to be terminated at any reagent stations and racks can be removed prior to completion of cycle. 10.18-20 reagent stations with capacity to hold 400-650ml reagent with adjustable agitation of slide racks. 11. 5-8 continuous wash stations with slide drying facility with adjustable temperatures. 12.Capable of operating continuously in ambient temperature of 4-45 C & relative humidityof 15- 90%. 13.Power input to be 220-20Vac , 50 Hz fitted with indian plug. 14 Suitable UPS with minimum one hour backup should be supplied to complete the staining cycle. 15. Sould be USFDA or European CE approved. 16.Should be provided with maintenance support. 17.List of installations user feedback and performance certificates to be provided . 18.Comprehensive training for laboratory staff and support services. 19.Should be complete with all accessories and functional from day of installation. 20. Should be provided with 5 spare reagent containers with adapters and holders and other extra spares that will be required for optimum functioning of the equipment. 21. 5years comprehensive warranty with subsequent 5 years AMC.
8	**<u>Cryostat</u>** 1.Should be an open top model with corrosion proof heated sliding window. 2. Stainless steel cool chamber with good illuminator. 3.Cooling facility in two separate refrigerator systems. 4.Temperature setting in the chamber from 0 to-40 C. 5.Separate specimen cooling adjustment upto -50 C. 6. Facility for quick specimen freezing upto -45 C. 7.Automatic programmable defrosting facility along with manual defrosting facility. 8.Space for specimens racks at least six.

	9. Removable waste tray. 10. Facility for rotation both 360 as well as X Y axis. 11. Specimen holder to be able to hold specimen size upto 70x50mm. 12. Fully motorised microtome with movement controlled facility of trimminginseps 0.5-1.5 micron. 13. Section thickness of 1-6 micron and motorised coarse speed of 500 micron / sec and 1000 micron /sec. 14.Section thickness setting from out side the cryochamber. 15.Knife holder for disposable blades with optimal height adjustment. 16.Encloseddrainage system. 17.Unit should be capable of working in ambient temperature of 5-45Cand relative humidity of 15-90%. 18. Power operation of 50-60Hz , universal voltage and appropriate circuits for constant voltage supply and india type plugs. 19. Shouldbe USFDA or European CE or 1315 approed. 20 List of installation, user feedback and performance certificate to be attached. 21.Routine maintenance support to be provided with prompt after sales service 5 years warranty plus 5 years AMC should be provided free of cost.
9	**<u>Digital pH Meter</u>** Digital pH meter Technical Specification 1. Should have Working range from 0 to 14. 2. Should have resolution 0.1/0.01 pH. 3. Should have Temperature compensation zero to 100 degree C with ATC 4. Should have RS.232C output and supply Data connector cable. 5. Should have Automatic calibration facility. 6. Should have data storage facility and record maximum and minimum value. 7. Should have 3 stage calibration. 8. Should have digital display with 0.001 pH unit readability 9. Should supply Tri-combination pH/ATC electrode 10. Should supply Electrode + Standard buffer solution (pH 4.0, 7.0, 10.01 x 50ml for each bottle) + standard electrode holder +Ac /DC Adaptor. 11. Should be provided with an electrode holder/arm with smooth movement
10	**<u>Pentahead with Camera attachment</u>** **1) Microscope Frame:** Upright microscope with Built in suitable LED illumination for transmitted 12V 100Watts with life span of 60,000 hrs. or more (higher will be preferred). **2) Observation tube and Eyepieces:** Siedentopf trinocular observation tube with three way

	light distribution (100:0/20:80/0:100). **3) Eyepiece:** 10X magnification with F.O.V 25mm - 2 nos or more. with both side diopter adjustment facility. **4) Teaching head attachment:** Teaching head attachment for five person including main observer. Siedentopf binocular tube (4nos.) with 10x magnification with F.O.V 22mm. should have color pointer with two color adjustment and intensity adjustment feature. **5) Mechanical Stage**: Ceramic coated coaxial stage with right-hand drive control with two slide holder. **6) Condenser:** High quality swing out condenser for all objectives(2x-100x). **7) Nosepiece:** Reversed septuple (seven position) revolving nosepiece. **8)** Ergonomic design microscope body. **9)** Lenses & all transmission tubes must be antifungal. **10) Objectives :** High performance Pan Achromat objective of- Plan Achromat 2X/ N.A 0.05/ W.D mm or better, spring loaded Plan Achromat 4X/ N.A 0.10/ W.D 25.00mm or better Plan Achromat 10X/ N.A 0.25/ W.D 10.00mm or better Plan Achromat 20X/ N.A 0.40/ W.D 1.0mm or better Plan Achromat 40X/ N.A 0.65/ W.D 0.55mm or better, spring loaded Plan Achromat 60X/ N.A 0.65/ W.D 0.55mm or better, spring loaded Plan Achromat 100X oil / N.A 1.25/ W.D 0.20 mm or better, spring loaded. **10)** Warranty for 5 years, followed by CMC rates for subsequent 10 years. **11)** The firm shall submit a certificate from manufacturer that the quoted model is not obsolete and **12)** All spares will be available for next 10 years. **13)** Firm must have service center in Delhi. **14)** Dust cover must be provided along with the equipment. **15)** Should quote latest model as per above specification. **16)** Should be provided with compatible table for the equipment and seating arrangement
11	**<u>Microscope</u>** 1. Optical system should have Infinity corrected system. 2. Focusing : Stage movement (coarse movement stroke 20mm) Fine focus graduation 2.5 micron. 3. Wide field plan optics. 1. Objectives : 5 plan achromatic lens objectives 4x ,10x,20x,40x, and 100x

	5. Body : Ergonomic design 6. Lens and tube must be antifungal, should be mechanical 7. Stage: Should be rack less mechanical stage. Suitable for two specimens. 8. Provision for dark field microscopy and fitted with trinocular tube. 9. Light illumination: Universal illumination which should beLED with life span of 50,000 hours or more . 10. Nose: piece should be fixed capbale of holding all the objectives. 11. Condenser: Universal condenser for bright field. 12. Eye piece: 10X magnification with F.O.V.20 mm or more -2 no or more with both side diopter adjustment facility 13. Observation tube: 30 degree inclined binocular tube with inter pupillary distance adjustable. 14. Minimum 5 years warranty and MC for 5 years should be provided by the manufacturer. 15. List and price of essential spare parts must be provided where price must be fixed for entire duration of AMC period. 16. Company should have a service centre in Delhi. Company should arrange demonstration in Delhi. 17. Should provide list of installation in Delhi and performance report from government institutions. 18.The Firm should have certificate from manufacturer that quoted model is not obsolete and all spares will be available for next 10 years. 19. All necessary accessories for keeping it in optimal function .
15	**<u>Automatic Tissue processor</u>** 1 Carousel type with12 stations of 1.8 -2 litres each10 reagent stations, 2/3 wax baths easy accessibility to all reagent stations. 2. The station should have in built vacuum which can be applied to any station preferably efficient fume control system . 3. Meta l reagent containers with beaker carriers. 4. Metal tissue basket with capacity approximately 100-200 cassettes. Second tissue basket provided for additional tissue cassettes. 5. Teflon coated wax baths should be maintained at the temperature of 50-65 0 C. 6. Audible alarm , error message and warning codes . 7. Display of warning in case of faulty running of the stations exceeding time limit at one s. 8. Ergonomic control panel with protected keyboard and LCD display. 9. Facility for editing and changing of programs , during a processing run. 10. Delayed start function facility to be available. 11. Infiltration time separately programmable. For each station.

	12.Freely selectable 10-12 programs. 13.Drain time 60 sec. 14. Possibility of interrupting an automatic process for reloading or removing cases special applications before the end of the run. 15.Baskets should automatically immerse in station during power failure. 16. Program should resume at the point of interruption once power is restored. 17. Instrument should work with voltage of 210-240 V . 50 Hz fitted with Indian plug. 18. 5 Years warranty and 5 years AMC to be provided. 19. List of installations to be provided.
16	**<u>Vortex Shaker</u>** 1. Variable speed control 2. Option of Touch or continous hands free function 3. Broad range of attachments of various shapes, sizes, and materials allowing for mixing of almost all common tubes or containers 4. Tough metal housing that provides a stable platform for all types of mixing.
20	**<u>Hot Plate 1500 Watts(ISI marked), ceramic or aluminium top, non stirrin, with digital temperature display</u>** Horizontal with ceramic or metalic top(, should be rust free). Should have a good temperature display.
21	**<u>Horizontal Hot Plate for warming slide for deparafinsation</u>** 1. Thermostatic heat control 2. Anodized black surface provides contrast 3. LED temperature display, both set temperature and display temperature 4. Thermostat setting range from room temperature to 70°C 5. Accomodates upto 60 slides
25	**<u>Benchtop centrifuge</u>** 1. Compact model is designed for routine work in medical laboratories 2. Has digital speed indicator 3. 0-60 minute digital countdown timer. 4. Stepless speed regulator 5. Safety Lid interlock to prevent cover opening during centrifugation 6. Max speed : 4400 rpm

	7. Max RCF : 2350g 8. Max capacity : 200mL 9. size : 330x370x295mm Supply: 220-240 Volts 50 Hz. Single Phase
29	**Floatation water bath** 1. Required for floating the thin tissue sections obtained from the microtome ,easy to visualize the sections and pick from the bath on the regular sized glass slides 2. Should have Ambient top 80 degree Celsius 3. Should have Exact temperature constancy of ±0.5° C 4. Should have Temperature range from ambient +5° C to 80° C 5. Thermostatic size should be approx: (dia x depth) 200x70 mm, for comfortable working depth 6. T here should be low 110mm depth of the bath allows comfortable and safe working 7. Bath interior made of black anodized aluminum 8. Housing should be made of powder coated aluminum 9. Front panel should have consist of temperature regulator knob, mains switch and pilot lamp with display of the temprature 10. Supplied with Dust Guard Lid made of black anodized aluminum **11.** It should work on 220/230V AC supply **12.** Warranty of 5 years.

Approved rate through Open e tender ID MAMC_2018_143460_3 for procurement of equipments for Bio Chemistry Department. Rate are valid upto 31.03.2019

Item NO. of Tender	Name of Item	Specification of item
1.	Magnetic Stirrers	➢ Stirring Speed (RPM) :100~1500 ➢ Speed control: Digital feedback control ➢ Stirring capacity(Litres Max): 2 ➢ Plate Type : Caramic top plate ➢ Plate size (WxD mm):150x160 ➢ Overall Size (WxDxH mm) : 160 x 280 x115 ➢ Weight (kg) : 2.5~3
5	Gradient Thermal Cycler & Heating & Mixing Block:- Gradient PCR with Silver/alloy block for 96 x 0.2ml PCR Tube or 96 well PCR plate	➢ Peltier technology based heating and cooling of block with precise control of temperature ➢ Should be capable of testing temperatures at Denaturation, Annealing & Extension steps ➢ Should be able to test 8-12 different temperatures in gradient function, gradient span should be over the ever entire block ➢ Gradient technology should ensure identical ramp rates in both gradient and normal operation ➢ Gradient temperature range from 30 – 99°C with 0.1ºC minimum gradient spread ➢ Block temperature control range: 4°C to 99°C ➢ 'Fast, Standard and Safe' temperature control modes providing ultimate flexibility for different applications. ➢ Adjustable user defined ramp rate to meet sensitive experimental conditions ➢ 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 (90°C) ➢ Heating and cooling rate: min. 4 °C/s and above 3 °C/s ➢ lid technology for protection of tubes from melting and sample evaporation preventation and to accommodate PCR tubes with flat or domed caps ➢ Intuitive Graphic programming with larger display ➢ Administrator and user login with or without PIN for enhanced security ➢ Preprogrammed template for easy selection from protocols (Minimum 10)

		➢ Time or Temperature increment with cycles in PCR program 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 ➢ System memory of more than 700 programs ➢ Two USB ports: for Protocol transfer, Self-test Option, 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 Two more PCR 96 well blocks gradient or non-gradient for higher throughput. ➢ Optional Self-test dongle to check functionality of all 6 peltier elements ➢ Interface: CAN in, CAN out ➢ Calibration according to NIST (USA), DKD/PTB (Germany) UKAS/NPL (UK), UL/cUL listed ➢ Should comply to RoHS (2011/65/EU) ➢ Two year warranty ➢ Following Items should be supplied Free of Cost: ➢ Suitable Online UPS with minimum 30 min power back up ➢ Heating & Mixing Block with following specification ➢ A compact Mixer with wide temperature control and application range (from 15 °C below RT to 100 °C) ➢ Temperature setting 1^{o} to 100^{o} C, with 1^{o}C increment ➢ Peltier element controlled heating and counter-cooling ➢ Excellent mixing and incubating performance ➢ Mixing frequency 300 to 3000 rpm, with stroke of 3mm ➢ Max. heating rate: 6 °C/min ➢ Max. cooling rate:2.5°C/min between RT and 100 °C ➢ Temperature accuracy of ± 0.5°C at 20-45°C ➢ Timer: 15sec to 99:30hr, continuous ➢ Selectable “time” and “temp” controls: timer function starts with program activation or when set temperature is reached ➢ Short-mix function, Interval mixing, USB interface, Pause function ➢ Should come with heated thermo Top/Lid for prevention of formation of condensation in the vessel top, thus to provide optimum reaction conditions, Top/lid should be simple and wireless with automatic recognition ➢ It should have anti spill technology/2D Mix control

		➢ Digital display with simple and intuitive operation, save upto 20 user defined programs ➢ RS-232 interface for remote control ➢ It Should be able to accommodate Ten different exchangeable thermo blocks for various formats (24x0.5ml, 24x1.5ml, 24x2.0ml, 8xeppendrof tube 5.0ml, 24x1.5-2.0ml cryo tubes, 8x15ml conical tubes, 4x50ml conical tubes, for MTP's & deep well plates, for 96x0.2ml PCR tubes, for 384 pcr plate) offer a high degree of flexibility ➢ Instrument to be supplied with 24x0.5ml, 24x1.5ml, 24x2.0ml, 8x 5 ml conical tube ➢ Quick release exchange and automatic thermo block identification and display of the maximum revolutions ➢ Quiet operation due to perfect fit of the test tubes in the thermo block ➢ Thermomixer should come with strument to be supplied with 24x0.5ml, 24x1.5ml, 24x2.0ml, 8x 5 ml conical tube and rest to be quoted in optional ➢ It should be European CE certified or US FDA Approved model.
7	Inverted Microscope with photographicsyste m	➢ Should be 12V 100 W Halogen illuminations. (Five Spare bulbs should be provided) or high intensity LED. ➢ Condenser should be Universal long working condenser for phase/bright field. ➢ Nose piece should be at least quardruple revolving nosepiece to accommodate four objectives at a time. ➢ Eye piece: Paired 10x magnification (F.O.V 22 mm), and paired 10x or better magnification with diopter adjustment facility on both eye. ➢ Rectangular XY Mechanical Stage with universal holder to accommodate all types of sample and dishes. ➢ Objective piece: plan and phase objective 4x,10x, 20x, 40x with phase slider and phase rings.
8	Electric dry Heater/Bath	➢ For DNA/RNA drying under different temperature control. ➢ Temperature range---upto100^{o}C ➢ Temperature adjustable. ➢ Timer—1 min to 99 hr ➢ Heating block compatible for 1.5-2.0 ml, 0.5ml microcentrifuge tubes (variable numbers).
10	Vortex Mixer	➢ Shaking action—Orbital ➢ Speed--0-3000 RPM ➢ Motor type--Brushless ➢ Maximum Load--0.5kg ➢ Power--100-240V, 50/60Hz

		➢ Operation--Digital/Manual ➢ Platform/dimension--Rubber suitable for Test tubes ➢ Certifications--CE marked ➢ Base/Feet--Silicone base with Ultra stability
11	Orbital shaker for 16 conical flask of 250ml with holder	➢ Shaking action—Orbital ➢ Speed--50-300 RPM ➢ Accuracy at 100 RPM--+/- 5 RPM ➢ Orbit Size--13mm ➢ Maximum Load--4kg ➢ Timer--1 min to 99 hrs 59 min ➢ Power--100-240V, 50/60Hz ➢ Display--Digital ➢ Platform dimension--10 x 13 x 5 inches ➢ Certification--CE marked ➢ Platform Suitable for--250 ml Erlenmeyer Flask
12	Gel Rocker	➢ Shaking Action--See-Saw rocking ➢ Speed--5-100 RPM ➢ Accuracy at 100 RPM--+/- 5 RPM ➢ Maximum tilt angle (Adjustable)--10^{o} ➢ Maximum Load--7 kg ➢ Operating temperature--+4 to $60^{o}C$ ➢ Timer--1 min to 99hr 59 min / continuous ➢ Power--100 – 240V, 50/60Hz ➢ Platform dimension--10 x 12 x 5 inches ➢ Certifications--CE marked ➢ Platform Tray--With Rubber mat, sticky pad
13A	Photoelectric Colorimeter Digital	➢ Wavelength range-400-700nm ➢ Filters-8 Filters ➢ Power Supply-230 V AC +10% 50Hz
14	Cylindrical Water Bath	➢ Stainless steel body ➢ Hanging test tube racks ➢ Approx 80 tubes
15	Analytical Balance	Readability 0.1 mg, Capacity 180-200gm, Linearity ±0.2mg, Repeatability 0.1mg, Operation Temperature $10^{o}C$-$45^{o}C$, Pan Size (diameter) ≥80mm, Response time 1-2 seconds, Calibration – Internal, Display – Backlit LCD Display, Cabinet-Glass shield cabinet, Power supply – 230V AC+/- 10% 50Hz
16	Vortex Mixer	Adjustable and Continuous Mode Operation. Speed: 0-2500 RPM, (Adjustable) Orbit diameter: 4 to 5mm, Design: Table top, Power: 220- 240V, 50/60Hz, Display: Analog type Mixer should be a small footprint, low profile, Ergonomic design and three anti-sliding feet which absorb the vibration highest electric protection degree.

17	Clinical Centrifuge (Imported)	Speed: 300–4000RPM, RCF: 2000 x g, Rotor capacity: 3 type (1.5,15 and 50ml), Run time : 60sec- 99 mins, Motor : Brushless DC motor , Display : LCD, Safety devices: Door interlock, over speed detector , Automatic internal diagnosis , Power : single phase 110 v-240v, 50Hz/60Hz,3A, Precise control of speed (100RPM) , Faster acceleration and deceleration(20s/20s) CE certified & IVD confirmed
18	Refrigerated Centrifuge : Imported (Table Top)	-Refrigerated table top centrifuge of compact size with stainless steel bowl -Temperature setting range (-10^{o}C) to Ambient temperature -Should have speed range 400-15000RPM, also should be suitable for low speed s with an accuracy of +/-50 RPM - Rotors required: A. Fixed angle (50ml) rotor with adapters for 15ml Falcon tubes (for 15ml Tubes, RCF should reach 15000Xg) B. Fixed angle (15ml) rotor C. Swing out 50ml with adapters for 15ml Falcon tubes D. Swing out 15ml rotor, E. Micro filter plate rotor, speed range 3000-4500 RPM F. Micro centrifuge 24x1.5ml rotor with speed up to 15,000 RPM. – Should have window for external speed control (lockable) and digital display for parameters - should have motorized lid latch -should run on maintenance-free induction drive motor -Automatic imbalance detection -Should have illuminated display keys for start, stop and for lid opening -There should be an option of pre-cooling the rotor during standing with CFC- free Refrigeration -CE & voltage & US-FDA registered - With suitable stabilizer
19	Gel Shaker	Shaking action: gyratory motion, Speed range: 10-80RPM, Platform size: 9 x 9 inches, Rocking angle: 7^{o}, Maximum load: 3kg/6.6LBs, Operation temperature range: +5 to 40^{o}C, Maximum Humidity: 80^{o}C, Plate dimensions Display: 12 x 12inches LED, Time setting range: 1min-20Hr, Electrical supply: 110-220V, 50/60Hz, 30W.
20	Microscope	Magnification:10-1000x Optical System:UIS2 (universal infinity-corrected) optical system. Illumination:Built-in transmitted illumination system, Kohler illumination (fixed field diaphragm). Focusing: Stage height movement (coarse movement stroke: approx. 15 mm), Stroke per rotation for coarse adjustment

		knob: approx. 36.8 mm. Eyepiece Lens : 10x(F.O.V. : 20 or better) Coarse/fine Focusing: Coaxial coarse/Fine focusing, Fine : 0.1mm/rotation, minimum reading: 1 um Coarse motion torque adjustable, Refocusing Function, Eyepiece Tube: Binocular Tube (for F.O.V. 20mm), Controls: Image capture button. Motorized control switches (field diaphragm, aperture diaphragm, objective changeover, objective escape, observation mode changeover), Nosepiece: Revolving, Fixed quintuple nosepiece with inward tilt. Stage: Wire movement mechanical fixed stage, (W × D): 211 mm × 154 mm, Traveling range (X × Y): 76 mm × 52 mm, Dry-film Coated Stage with Specimen holder for 2 slides opens to the left, Ceramic-coated stage with specimen holder for 1 opens to the left, Ceramic-Coated stage without specimen holder (specimen holder for 2 slides (open to the left) or for 1 slide (open to left) can be attached, Cross travel 54(Y)x78(X) mm, with Vernier calibrations, stage handle height and torque adjustable. Observation Tube: Type (anti-fungal)-Trinocular, Eyepiece (anti-fungal) – 10X Field Number: 20, Tube Inclination 30°, Light Path Selector – None (eyepiece/camera port = 50/50 fixed), Interpupillary Distance Adjusting Range 48-75 mm. CONDENSER: Condenser focusing stroke- 27mm, Achromat Swing-out 2-100x, Slide Achromat 2-100x, Abbe condenser NA 1.25 with oil immersion, Universal condenser with 7 turret positions: BF (4 - 100X), 2X, DF, Ph1, Ph2, Ph3, FL, Condenser turret lock pin (BF only), Built-in aperture iris diaphragm, AS lock pin, Darkfield (dry,oil), Achromat/Aplanat. OBSERVATION METHOD: Bright field, simple polarization, fluorescence, phase contrast, dark field Epi-fluorescence, sensitive colour polarizing. Fluorescence Light Source: Easily add an LED reflected fluorescence illuminator (peak excitation wavelength 470 nm: B excitation only), precentered. POWER CONSUMPTION: 1.0A/13W. WEIGHT: 15.4KG (Binocular standard set). Rated Voltage/Electric Current AC: 100-240 V, 50/60 Hz, 0.4 A Objective piece:plan objective 4x, 10x, 20x, 40x and 100x(oil) CERTIFICATION : US-FDA OR European CE
21	Multi-Stack Shaking Incubator	Multi-Stackable shaking Incubator: Should have for independently controllable shaking platform design for large quantity shaking incubation. Shaking Mechanism: Should have

		electronically controlled shaking mechanism with quiet orbital motion. Should have digital PID control with touch-sensitive membrane type keypad with timer. Microprocessor PID control: should provide precise temperature control with 0.1C precision. Built- in Safety and Convenience : Should have over temperature and current protection, leakage breaker to ensure user safety. Front Mount Glass Window for Operation View. Shaking have timer, Alarm and Auto-Tuning Function, Shaking Motion should stop automatically when door is opened. Stack: At least 4 stacks , Temperature Range: 5^{o}C to 60^{o}C, Temperature Uniformity: + 0.5^{o}C at 37^{o}C, Temperature Accuracy : + 0.1^{o}C at 37^{o}C, Speed range: 0 to 300 RPM, Stroke:20mm Orbital Motion, Controller Digital PID Multi-Function Controller, plate Size 700x 450 (W D mm), Door Outer Magnetic Packing Door with Pair Glass Material: Inner – Stainless Steel, Outer – powder Coated Steel, Safety Device: Pause Stop Switch, Over Temperature Protector, Over Current & Leakage Beaker Electric Supply 220v, 50/60Hz. USFDA approved.
23	Technical : Ultrasonicator	Ultrasonicator with 750watt. Or more for High Intensity Ultra Sonic Liquid Processor, 250µl to 1L, and 20KHz. Ultrasonicator should have Automatic tuning, energy (joules). It should monitor-digital wattmeter, and have Integrated Temperature Controller, Equipment should have Micro-processor-based, programmable, LCD screen with user prompts, Converter should be sealed and display real time, Equipment should have 10 or more programs storage capability. It can control independently processing time form 1 second to 10 hours. Ultrasonicator should have Automatic Amplitude Compensation to ensure uniform probe amplitude. Standard probe 1/2” (13mm) with replaceable tip with Equipment. Should be supplied sound box, temp. Probe. Accessories. Convertible cable length should be 5’or more. Dimension should be approximately 230x190x330mm. Temperature Probe (Optional) to measure samples temperature up to 100^{o}C. Assorted types probes and tips for different volume as optional may quoted as optional Ultrasonicator should have sound abetting system to prevent ultrasonic waves. Accessories like adjustable platform, Chamber, lab-jack, etc. should be provided. Probe of Titanium alloys Ti-6AI-4V connecting stud.
24	Liquid Nitrogen Container of 35 Ltrs with 6 Canister	CapacityLN2 Container- At least 33.3 Ltr. Empty Weight less than 16kgs. Neck Diameter-50mm or more. Outer Diameter-460mm+/- 50mm. Total Height – 685mm or less. Static Holding time – 282 days or more. Canister od- 38mm. No. of canister -06. Straw capacity Single label -720 -0.5 ml; 1560-0.25 ml. Straw

		capacity double label 1440-0.5ml; 3120-0.25ml.
25	Tissue Homogenizing System (Imported)	Volume processing Range: 0,03ml-1L. Power: more than watts. RPM: 5000-25000. Speed control: Analog; Variable speed form 5000- 25000 RPM with separate ON/OFF switch. Noise: Less than 80DB. CERTIFICATION : CE or US FDA

Approved rate through Open e tender ID MAMC_2018_143460_7 for procurement of equipments for Pediatric Department. Rate are valid upto 31.03.2019

Item NO. of Tender	Name of Item	Specification of item
02	**Automated Cytogenetics Platform**	Fully Motorized Upright Research Microscope with Multi port Design, in which the following accessories are required: ♦ Motorized Z-axis control with readout of 50 nm s or better ♦ Motorized Revolving Sextuple DIC Nosepiece, ♦ High N.A. Achromatic Condenser ♦ Motorized Switching of light path. ♦ Motorized Fluorescence attachment with 6-cube filter turret fluorescent attachment along with noise terminator mechanism for observing weakly fluorescing specimens especially in dynamic live cell imaging experiment. ♦ Motorized Optical zoom from 0.8x-2x (continuous), zoom ratio 2.5:1 **Illumination system:** Should have a 12V 100W halogen illumination system with **"Fly-eye" lens built into the transmitted light illumination ensures uniform illumination**. **120/130W or more Mercury/Metal Halide light illuminator with facility for no heat and electrical noise transfer from lamp to the microscope body is conducted, lamp should have lifetime of 2000 hrs or more** Eyepiece lenses:- **10x paired wide field eyepieces with F.O.V. 25mm or higher** Objectives: **Plan Achromat 4X,10,20x, 40X and high N.A. Plan Fluor 60x Oil, 100x Oil objectives** Band pass Fluorescent filters **Band pass Fluorescent filters for FITC/GFP, TRITC/Rhoda mine, DAPI/Hoechst applications** so that no cross talk is available**.**

		Digital mono cooled camera capable of handling very low light fluorescence images with 2/3" ccd chip, 1.40 million (1392x1040) total pixel resolution (1.45 net) or better, pixel size of 6.45um x 6.45um, binning mode : 2x2, 4x4, 18.9 fps at full resolution, 48 fps max. Frame transfer rate with bining & roi, peltier cooling to 10ºc below ambient, linear full well capacity of 17,000e-, readout noise 8 e-, exposure time 1ms to 600 seconds, usb port with a single wire for easy installation having reducing c-mount of 0.7x lens for covering wider field of view. **CYTOGENTIC SOFTWARE SHOULD HAVE FOLLOWING FEATURES** **Interface:** designed for cytogenetic applications it's use friendly and drives users from karyotyping until MFISH. The interface is unique for all the applications from the karyotyping until CGH and Multicolor, this gives the opportunity to pass in very easy way from one technique to the other and to mix images, in order to compare, cases acquired in different modes. Local Language translation is available. **Archive:** modular and with the opportunity to be modified, also in the time, directly from the user; no limits of number of fields or labels. The archive can stay also alone, for example it's possible to have just the Archive software in a computer in order to insert patient data. **Server:** If more stations are connected in networking it's possible to have a server where is resident the archive, on the server it's possible to make the back up and the archiving of data; all the other units access to the archive of the server. It's anyway possible to work on local way without the connection with the server or with the other stations. **Networking:**Cases can be analysed in real time on different workstations. Import and export of images: the system can import or export images in the standard formats like Tiff,Jpeg,Bmp. After the importing it's possible to threshold again images of metaphases and to build the karyotype. Images with the karyotype can be thresholded also if the karyotype has just been made. **Acquisition:** ➢ Threshold of images :it's possible to delete total or ROI of

		background and on ROI it's possible to modify the contrast before to save images. ➢ Acquisition of images at full screen resolution with live image at 1280x1 024. ➢ Automatic focusing of images on different planes automatically or manual if there is not any hardware component or motorised microscope ➢ Automatic Saving of images after capturing of thresholded or Raw. **Eyeball Analysis:**itls offered the opportunity to associate pairs of chromosomes imposing the numbers manually from the users on the image of the metaphase. Images of Eyeball analysis are able to be printed with the numbers on. **Count:** It's possible to count automatically chromosomes from the system and to edit later or directly proceed to count manually from the beginning. **Working sheet:** It's available a sheet where the user can insert some information related to the case under analysis. The Working sheet it's related to the archive in order do not have to insert again some data related to the patient. **Manual Karyotyping:** the system can create manual karyotype for very complex samples or not human chromosome. It's possible to select single chromosomes to do also partial karyotyping in very easy way. **Automatic Karyotyping:** ➢ Splitting of chromosome also on the karyotype ➢ Automatic splitting of chromosomes on the metaphase without drawing any lines but just using a click of the mouse. ➢ Automatic count of bands ➢ Karyotyping also on long chromosomes. ➢ Adjustment of the layout of karyotype from the buttom or from Identification of centromeres, opportunity to print the karyotype with the identification of the centromeres with lines. ➢ Package for ideogram with the opportunity to create abnormal and save them on a data bank

		Collage:on the collage it's possible to combine chromosome captured with different modes like brightfield (GIR banding) QFQ, ORANGE ACRIDINE,FISH CGH and Mfish. It's possible to create more collages for a case and it's possible to combine chromosomes from different cases together. **FISH Imaging** ➢ **Fish** software should Gives the opportunity to threshold ROI of images. Different planes of focus of the same fluorochromes can be better acquired. Combination of chromosomes in FISH with brightfield or other techniques acquired on the same or different case. Building of Karyotype on Fish images. ➢ **Consumables for 100 reactions for identifying aneuploidies X,Y, 13,18 and 21.** **PC for Image analysis** Branded, 8 GB RAM, DVD Writer, 2TB or higher HDD, 18.5"LED color monitor , Multimedia Kit along with UPS and Laser colour Printer. **The system should be upgraded for Automatic Metaphase finder, MFISH, CGH etc. in future.**
03	**Nitrogen Generator**	1. Membrane Technology based operation. 2. N2 Purifier to remove all other unwanted impurities. 3. Capacity at least upto 150 LPM 4. Nitrogen Purity : 99 % and above . 5. Minimum Output /Out flow Pressure : 4 -7 bar at consistent flow rate with digital display on front panel 6. Temperature :15 to 45^0C 7. Compressor 5 HP and above, Oil Free (In built). 8. System in equipped with micro filters for the removal of dust and suspended particles from the compressed air at the input end of the compressor. 9. System should be compact , portable , easily, automated, upgradeable fitted with requisite safety valves. 10. Atleast 20 meter tube (1/4'') for nitrogen flow from ports to reactor system. 11. Aircompressor should be from Anest Iwata motherson 12. Power supply :220 +/- 10 V ac , 50 Hz & Three phase 13. Should have 5 year comprehensive warrenty & 5 year annual maintenance contract.

		14. ISO/ CE certification is a must.

Approved rate through Open e tender ID MAMC_2018_155658_1 for procurement of equipments for MRU Lab., Bio-Chemistry Department, MAMC.

Rate are valid upto 31.10.2019

Item NO. of Tender	Name of Item	Specification of item
1.	**Specification for double door ultra low temperature deep freezer (-80°C) type : vertical Type: Vertical Double Door**	**Specification for double door ultra low temperature deep freezer (-80°C) type : vertical Type: Vertical Double Door/Single Door** Microprocessor Temperature Control: - 80°C or Less Work space volume: Approx 650-700 Liters Non- CFC, non-HCFC insulation and refrigerant. Also the system should have Exterior Single/ Double doors & four or more separate inner doors to open individually to allow maximum sample protection through minimum sample warming. Should have Flexible shelves (04 Nos. or more) to ensure optimal sample storage System must have stainless steel interior Noise level to be less than 60dB The equipment should be Lockable, easy to operate door handle & should have one hand operation. Temperature deviation of maximum +/-2.5 Temperature stability in sample over time less than +/- 0.1 degree C. Ambient temperature: 10-40°C. The system must have LED display for better visibility. Air-cooled compressor. Should have seal made of PVC on the outside and silicone on the inside of the outer door to ensure stable temperature and little freezing over. Opening Voltage-Must be usable in Indian condition on 230V, 15 Amp. Plug with dedicated circuit, time delay breaker. Automatic Voltage Compensator The Freezers insulation should be minimum 150 mm thick made from high-pressure polyurethane foamed in place, low energy consumption & delayed temperature rise in the event of power failure. Rate List of spares and their cost which will be frozen nfor next 5yrs. Appropriate Voltage Stabilizer, reputed make quality certification. USFDA or EU certified Warranty: Five Years Comprehensive Warranty (including spares and Labor)

2.	**Deep Freezer -20^{0}C** **Type: Vertical double door**	**Deep Freezer -20^{0}C** **Type: Vertical double door** **Built** in condenser with low energy consumption **N**o dust, low noise, combination of pull out drawers and fast freeze shelves (5+3) Control panel at the top of cabinet with thermometer or temperature warning light. Lockable facility Thermostat, fast freeze button and lamp, mains warning lamp CFC free heavy-duty compressor Goss capacity: 250 litre and above Hours from -18 to -9: 15 to 18 hr Automatic voltages stabilizer Input 140 -280 V output 220 V with automatic low high cutoff device and time delay relay USFDA or EU certified Warranty: Five Years Comprehensive Warranty (including spares and Labor)
3	Ultrapure Water System:- Water quality required for Molecular biology, Tissue culture/HPLC applications	Ultrapure Water System:- Water quality required for Molecular biology, Tissue culture/HPLC applications. - System should be able to produce Type 1 water from tap water supplied by DJB to MAMC, campus for the use of molecular biology work, tissue culture/HPLC application **Prefilter Unit:** - A prefilter unit with 1 & 5 micron filter to remove particulate, motor and booster pump for feed pressure. - R O grade water system - Prefilter with antiscaling and activated carbon reverse osmosis - Conductivity cell PV event before RO stage - Feed water handling of conductivity upto 2000microns/cm. **Water Quality from prefilter and RO system** - Flow rate:5L/hr - Organic ion removal upto 99% - Resistivity:5-15 cm., TOC < 30 ppb, Colloidal index SDI < 3 - Feed water pressure bar: 0 -5 - Reservoir of 20 L capacity of type 2 water with auto cutoff tank level sensor should be provided. - Electrical feed voltage 90 – 230V ± 10% - One pair of extra cartridge for all filters. **Ultrapure water machine producing water of the following quality:** - **Type 1 water for molecular biology use** - Output/flow rate upto: 10 lt per day - Conductivity of 0.055 microns/cm - Resistivity of 18.2 mega ohm. Cm - Bacteria cfu/ml < 0.005 cfu/ml

		- Particles :<1/ml @0.1um - TOC: < 1-3ppb - Endotoxin(Pyrogen):< 0.001EU/ml - RNAses:<2pg/ml - DNAses:<20 pg/ml - Proteases: <0.15 µg/ml - The system should be upgraded to produce VOC free water through an additional dispenser for use in LC-MS-MS/GC-MS-MS(the cost should be mentioned and will be frozen for next 5 yrs), upgradable part also should have 5 yr free warranty from the date of installation - Easy to operate and easy to replace cartridges ect. - Data for quality control of water should be downloadable - The system should display all information of water quality and instrument performance and automatic alarms for exhaustion of filters - Product should be CE certified or US FDA approved - **Five years comprehensive warranty (with labor and spares)** - **Five years CAMC, from 6th to 10th year (including labor and spares)** - **Cost of all consumables (including pretreatment, RO system) to be mentioned and will be frozen for 10 yrs.** - **Cost of all consumables to be procured every year for next 5 yrs for output of 10 liters per day type 1 molecular biology grade water to be mentioned and will be added to the cost of the equipment for calculation of L1** - **If consumable cost exceeds the mentioned amount, bidder shall have to bear the additional cost of the consumables** - **Installation and training should be free.** **Standard penalty clause**
4	**Real time PCR Specifications**	**Real time PCR Specifications** • Real time PCR in Peltier-based rotor system • Block Format/rotor format 96-well and 384 wells compatible with 96-well and 384 wells (0.1 ml/0.2ml) plates/tubes, at least 8-tube (0.1 ml/0.2ml) strips with optical flat caps and Individual (0.1 ml/0.2ml) tubes with optical flat caps, • Supported Volumes 10–50 µL • Sample Ramp Rate at least 4°C/sec to maximum of 6^0C/sec • Temperature Range 25°C-100°C, Temperature Accuracy at least +/-0.25°C and Temperature Uniformity at least +/-0.4°C within 10 sec of

		arrival at 90 ^{0}C. • Melt Curve Resolution at least 0.1°C • Optical System: LED excitation source (six or more), six or more emission filters channels, and photodiode detector/CCD Each filter corresponding to one dye that ensures smooth differentiation of even dyes having high degree of spectral overlap. Should be capable of detecting FAM, SYBR Green I, VIC, JOE, NED, TAMRA red, ROX dyes, Syto9, Quasar 705, Cy5, Cy3 with option to select no passive reference and should be calibrated for all the dye mentioned above at installation. • Should be able to five multiplexing in the same tube. • Ture 3-5 Multiplexing with use of 3-5 different fluorophores without the need of addition of any internal reference dye. • Open system capable of running various chemistries so that different chemisteris using TaqMan, Molecular Beacon, SYBR green, SYTO 9 ect all can be performed. • 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) • Peltier/rotor cooling and heating for uniform temperature control • System should be factory calibrated and no further calibrations should ne required after installation forever or free 5 yr calibration with reagents. • Data Collection in all filters for all wells regardless of plate setup. • System should have HRM facility • At least 6" VGA color LCD Touch screen capable of being used with PC/Laptop (atleast with 13 processor), with UPS of atleast 30 mins back up for PC/Laptop should be attached • Online 2KVA UPS with minimum 2 hours back-up for main equipment. • Warranty: 5 years comprehensive warranty (including spares and labour) • 5 years CMC after completion of warranty period from 6th to 10th year (including spares and labor). • Product should be CE certified or US FDA approved Penalty clause as per standard

5.	**<u>Vertical and horizontal elctrophorosis with power pack and Western Blotting Apparatus with fast Semi Dry transfer blotting assembly</u>**	**<u>Vertical and horizontal elctrophorosis with power pack and Western Blotting Apparatus with fast Semi Dry transfer blotting assembly</u>** **<u>Vertical</u>** Electrophorosis unit: ● Should include tank, lid with power cables, electrode assembly, casting stand for minimum 4 gels, five 10 well combs of 1.0 mm thickness and five sets of glass plates with fixed 1.00 mm spacers ● Gel Casting and Running System should have the following specifications ● Should be able to run 1- 4 hand casted mini gels(8.3 x 7.3cm) ● Should require not more than 700 ml buffer for 2 gels ● Should have casting stand with wing clamp assembly for simple and leak proof casting ● Each system should consist of leak proof casting stations (2 nos.), spacer plates (10 nos.) and short plates (10 nos.) for 0.75 mm and 1.0 mm gels or thicker. ● Two sets of 10 and 15-well Combs or better should be provided per system. ● Four spare sets each of spacer plates (20nos.: 10 each for 0.75 mm/1.0 mm gels or thicker), short plates (20 nos.) and combs (20 nos.) should be provided per system. ● Gel running apparatus should accommodate at least four mini gels individually or simultaneously per run. ● Should include an interchangeable module, which can do western blotting and transfer blot in same buffer tank ● Should provide full wet transfer blot assembly **<u>Midi horizontal Electrophorosis</u>** ● Should be able to run gel size of 15 x 10 cm and the gel tray should be supplied along with the gel tank with safety lid ● The supplied gel trays should be UV proof and the trays can be directly kept on the UV transilluminator and should have a integrated fluorescent ruler in the tray. The ruler should get illuminated on exposure to UV light for easy and safe calculation of band movement ● System should include tape free gel casting module for leak free operations ● System should include two 1.5 mm combs, 15 and 20 well fixed height combs each and have the option for adjustable height combs with comb holders. ● Migration rate of bromophenol blue dye should be similar to 4.5 cm/hr (at 75V) ● System should have a lid with the safety banana

		jacks, which breaks the circuit when the lid is running. ● Should be provided with a bubble leveler for even gel casting ● System should be capable to run precast ready agarose gels and hand cast gels **Power pack for electrophorosis** ● Instrument should have an option for electrophoresis to be done at constant voltage, power and current. ● Programmable power supply should be capable of operating four electrophoresis units simultaneously with LCD Display ● Should have voltage output from 10V to 300V ● Should have current output from 4 to 500 mA ● Should have power output = 1 to 75 W ● Instrument should have an inbuilt timer from 1 min-99 hr. ● Should be able to run at constant voltage and constant current and have automatic recovery after power failure ● Spare leads (10 nos.) and electrodes for the running apparatus (4 nos.) should be provided. ● Should also have safety feature like no load detection, sudden load change detection, ground leak detection, overload/ short circuit protection, over voltage protection Western blotting assembly(semi dry transfer apparatus) ● Should be able to blot a maximum gel size (W X L) 24 X 16 cm ● Should have a gel capacity of 4 mini hand cast gels ● Should have a buffer requirement of no more than 200 ml ● Should have platinum coated titanium anode plate electrode and stainless steel cathode plate electrode. ● A programmable semidry protein transfer system with preprogrammed methods and also the facility to create save and edit customized methods. Preprogrammed methods for Low molecular weight, mixed molecular weight and also for high molecular weight proteins should be available. ● The system should be compatible with both precast and labmade polyacrylamide gels. The entire system should be made of inert, chemically resistant material. The system should support the use of traditional transfer buffer as well as proprietary transfer buffers. ● The system should be capable of transferring proteins ranging from 10 KDa to 300 KDa from polyacrylamide gels to Nitrocellulose or PVDF

		membranes in a short time (<60 minutes). System should be capable of transferring 4 mini gels or 2 midi gels simultaneously. ● All four units should be from the same manufacture for better compatibility between units, like minigel casting system, semi dry transfer assemble, electrophoresis apparatus(vertical and horizontal) with a power pack from the same company. ● System should have a LCD/LED display and indicate warnings in case of lack of passage of current or power failure. Should be FDA (USA)/CE (Europe)/UL /EMC/CSA certified. In-House Service Engineers from principal company/ or authorized agents should be available in India on one-week notice basis in case of emergency. Compliant points should be given (in the sheet) in order of the specifications' serial order. Compliant points should be highlighted in the company catalogue with page number. Must include: User's list (atleast 10, preferably from government institutes) with telephone numbers and email address. Vendor should submit an undertaking from manufacturer regarding the responsibility of maintenance in case of merger or acquisition. Rate list of spares should be provided. A performance certificate from at least 5 users preferably from government institutes from Delhi/NCR should be provided. Biannual Preventive Maintenance should be provided Warranty: 5 years comprehensive (including spares and labor) 5 years CMC (6th – 10th year) after completion of warranty period with spares and labor Standard Penalty Clauses apply
6.	**<u>Chemiluminescence gel documentation Imager</u>**	**<u>Chemiluminescence gel documentation Imager</u>** ● Application: The system should be capable of the following application / dye imaging: Chemiluminiscence, Chemi fluorescence, Quantum dots, sliver stain, Ethidium Bromide, Coomassie Blue, Flamingo, Nano Orange, Sypro ruby, Sypro Orange, Sybe safe, Syber Glod, Oligreen, Pico green, Texas red, Cy2, ProQ emerald, FITC ● System with true 16 bit CCD(not A/'D nor Digital) camera; pixel density of 65,536 gray levels. ● Image resolution >4 megapixel; Pixel size should be at least 6.7 x 6.7 µm or bigger ● The camera should have peltier based cooling of minimum minus 30^0C absolute or minus 50^0C from

		room temperature. ● Motorized zoom lens with C mount, f/1.2 , 12- 75 mm ● Light source should include - Trans- UV, trans white, epi -white and should have option for trans blue (for SYBR safe DNA application) ● Should be possible to image samples with size 28 x 36 cm or more. ● Should have autofocus feature with precalibrated focus for any zoom setting or sample height ● The system should have lens flat fielding and dynamic image flat fielding with precalibrated and optimized setting for every image. ● System should have automatic focus and iris adjustment for all compatible applications. ● The imaging system must be capable of imaging stain free protein gels and stain free blots allowing users to image protein gels and blots without the need of staining/ destaining post running the gels. This should be supported by showing data in a technical bulletin or peer reviewed publication ● The instrument should be supplied with an inbuilt UV transilluminator which can slide in and out of dark room hood for easy access ● System software ● Software should have highest level of automation in hardware calibration, image optimization, capture, and analysis ● Should have automated workflow recorder in a protocol file from image capture to result thus eliminating need for training ● Should allow 100 % respectability of the workflow by any user and ensure optimized image data and analysis from a gel in a single uninterrupted, fast and completed reproducible workflow ● Should have automated image capture driven by a selected gel or blot application ● Computer system should be provided with atleast 3 processor with preinstalled software for image analysis and ups backup of 30 mins ● Should generate the publication ready images in tif , jpeg format with user defined dpi, dimension and format with one click export option. A performance certificate from at least 5 users preferably from government institutes from Delhi/NCR should be provided. Warranty: 5 years comprehensive (including spares and labor) 5 years CMC (6th – 10th year) after completion of warranty period with spares and labor Standard Penalty Clauses apply