ANNEX 01

1. Blood Bank Refrigerator 2-8 Degree Celsius

Use	BLOOD BAG STORAGE
Purpose of Equipment	A refrigerator for storing whole blood or red cell packs in a blood bank
Type of Equipment	Compression type refrigerator that uses CFC-free refrigerant gas/ green gas
Capacity	As required by the blood bank (e.g., 200/400/600/900 blood bags of about 350/450 ml. each)
Construction	Internal: Stainless steel (min. 22g) External: Corrosion Resistant (CR at least 1mm thickness) CFC-free insulation Drawers: Roll out type, Stainless steel scratch resistant material, perforated on the bottom for perfect and homogeneous distribution of cold air. The separators, if provided in the drawers, should be such that blood bags are held in a vertical position with the label side visible. Number of drawers: 5 to7 Door: Singe door with Glass, Automatic closing of the front door below opening angle of 90° and opening angle limited to 110°. Insulation and gasket should be silicone. Polyurethane Insulation should be minimum 80 mm Door opening audio and visual display alarm. Touch screen with password protection(optional)/ lock
Temperature range	2°c to 6°C and adjustable with setting accuracy of ±0.1•c with set temperature of 4°C. User Parameter settings: set point, high alarm point, low alarm point, buzzer off time, C/F Temperature choice
Electrical Characteristics	Input voltage: 220/240V 50Hz. Equipment meets electrical safety specifications such as that of /EC (Class I). A line voltage corrector of appropriate rating will form part of standard configuration Minimum Compressor Starting Voltage: 22% below nominal voltage
Internal Temperature Control	Electronic temperature control, range +2 °C to +6 'C with setting accuracy of ±1 'C whatever the load Fan air cooling

External Ambient Temperature	• Performs in an ambient temperature of +10 to +40 °c • Hold-Over Time: A full load of blood packs at +4 °C (±1 °C) takes at least 30 minutes to rise to above +6 ·c • Internal temperature holds over time in case of power failure should be at least 1.5 hours. • Cooling Down Time: A full load of blood packs at +25 °c takes a maximum of 13 Hrs. for all the packs to reach below +6 degree Celsius
Temperature Monitoring	• Digital temperature (LED) display with 0.1 °C graduation • Microprocessor based temperature controller with integrated audio-visual temperature and power alarm function with digital monitoring display. • Independent safety thermostat to avoid negative temperatures. • At least 2 Temperature Sensors: Sensor for temperature monitoring shown on front display, Sensor for managing use of compressor. • Smart View Compatibility
Temperature recording device	• Visual and audible alarm system indicating unsafe temperatures • Battery backup for alarm and temperature recording device • Facility for remote alarm contact • Seven days graphic temperature recorder with range of -10°C to +20°C with data logger, with supply of free charts for a period of warranty. • Ideal compressor running time of 27% at room temperature. • Door locks should be available. • Audio and visual alarm for variation in temperature • Interior lighting • External ambient temperature +10°C to +40°C • Auto defrosting • Cooling time - Maximum 13 hours for all the packs to reach below +6°C
Certifications	• Product certification: CE Class II A or US FDA certified • Quality Certification: ISO certified • Electrical Safety: Equipment meets electrical safety specifications such as that of IEC (Class I)

2. Plasma Thawing bath

Use	THAWING OF FRESH FROZEN PLASMA AND CRYOPRECIPITATE Bath is designed to safely quickly and optimally and reliably thaw fresh frozen plasma (FFP) and cryoprecipitate for the recovery of coagulation factors and cryoprecipitate antihemophilic factor (AHF). For thawing of plasma and cryoprecipitate at required temperatures.
Technical Specification	• uses both controlled temperature and agitation to substantially reduce thaw times while ensuring the safety of your plasma. • convenient and easy to operate, allowing you to load, program, and walk away. • Benchtop • 4bags capacity, Capacity of minimum 10 to 15 plasma bags with rack holders • Separate thawing baskets with independent controls provides the Ability to thaw separate orders at the same time. • Independent controls and LED digital temperature display for each basket • Controller type digital microprocessor • Independent controls per basket set time / cycle time displayed in minutes programmable cycles multiple time selections • High temperature alarm audibles and visual Heater status indicator visual • Cycle pause/resume option should be available • chamber material stainless steel • Drain system quick connects • Basket material stainless steel
	Internal Body Material: • Stainless Steel (Non-Corrosive, Non-Magnetic) Having a deep thawing chamber with a stirrer and with water maintained at +37°C with pumping mechanism and in-line heating system to ensure uniform thawing Quick thawing (< 20 minutes) • Should be able to thaw FFP/ cryoprecipitate / Aphaeresis or plasma bags of any size. • Should be a water bath-based system operating at a preset and precise temperature of 37° ±0.2 °C • Should have two separate basket assemblies with built-in fingers for securely holding the plasma bags of all sizes. • Trays with individual compartment to ensure that ports of bags may be kept above water level during the procedure.
	Tray:

	• Removable type stainless steel trays with Partitions for holding plasma bags • Should give an alarm when the plasma bags are thawed. • Provision for programmable time setting for length of thawing • Should have digital timer clearly displaying the programmed set time or remaining cycle in minutes • Should have audio visual over-temperature alarm system • Should have a system to drain the chamber easily. • Should be supplied with a cover to keep the unit covered when not in use • Simple to operate, easy to read LED display • Drain Line with Shut off valve can be connected to existing plumbing. • Power supply: 220-240 volts at 50 Hz, single phase
Accessories	• Reusable wrap bag - 8 numbers • Frozen plasma bag holder • Compression rack holder • Reference thermometer
Certifications	• Product certification: CE Class II A or US FDA certified • Quality Certification: ISO certified • Electrical Safety: Equipment meets electrical safety specifications such as that of IEC (Class I)

3. ELECTRIC TUBE STRIPPER

Use	TO STRIP UNDILUTED BLOOD FROM THE DONOR TUBING
Detailed Requirement	Should work for all kinds of bags available in the market. Should be light weight and easy to handle Temperature for operation 0 -40 degree Celsius
Power supply	: 100-240 VAC, 50/60 Hz Should be ISO 9001:200, CE mark, S mark. Electrical safety should conform to standards for electrical safety IEC- 60601 /IS-l3450

4. PLASMA FREEZER (<-30)

Use	STORAGE OF FRESH FROZEN PLASMA AND CRYOPRECIPITATE Temperature (-30 degree Celsius) Separate compartments Temperature displayed
Purpose of Equipment	To freeze and store plasma Type of Equipment: Compression freezer with CFC-free refrigerant
Capacity	As required by the blood bank (e.g., 200/400/600/900 plasma bags of 200 ml. each)
Construction	**Internal:** Stainless steel (min. 22g) **External:** Solid Outer Cabinet Corrosion Resistant (at least 1mm thickness) CFC-free insulation **Design:** Upright Type **Door**: Solid door, Automatic closing of the front door below opening angle of 90' and opening angle limited to 110'. Insulation and gasket should be silicon. Separate inner doors to prevent cold loss **Drawers:** Roll out type Healing device on frame to avoid condensation.
Electrical Characteristics	**Input voltage:** 220/240V 50HZ A line voltage corrector of appropriate rating should form part of configuration. Minimum Compressor Starting Voltage: 22% below nominal Voltage **Internal Temperature Control:** Electronic temperature control Operating temperature reachable lowest up to -45°C with setting accuracy of ±1 •c whatever the load Fan air cooling Automatic defrost within safe temperature range Casing & door should have insulation panel with polyurethane foam >80mm thickness.
Refrigeration	Heavy duty hermetically sealed compressor air cooled cascade refrigeration system, maintains inner temperature below -40°C. Option for duct from equipment lo connect to common main duct to throw hot air out of the room. Refrigerant CFC free/ green gas. Optional: Access port for CO2 backup system for refrigeration.

	External Ambient Temperature: Performs in an ambient temperature of +10 to +40 °C Hold over time: 2 hrs. at ambient temperature Cooling Down Time: A full load of plasma packs at +25'C takes a maximum of 5 hrs. for all the packs to reach below -5 °C A full load of plasma packs at +25 "C takes a maximum of 30 hrs. for all the packs to reach below -20 °C
Temperature Monitoring	• Digital temperature (LED) display with 0.1 °C graduation • Temperature recording device: • Microprocessor control for operation with integrated audio-visual temperature alarm function with digital monitoring display. There should be a method to check alarm system. • Seven days inkless graphic temperature recorder with range of 0°C to - 50°C with data logger, with supply of free charts for a period of warranty. • Battery backup for alarm and temperature recording device. • Provision to connect with central (temperature) monitoring system • Mounted on Lockable Castor wheels • Alarm history: Temperature maximum and minimum, average temperature during alarm period, time of duration of alarm. • Desirable: Noise factor should not exceed 60 decibels. • Should have compressor running time < 60 to 70% •
Additional Requirements	• All equipment's should specify Design qualifications, Installation qualifications, Operational Qualifications and Performance qualifications. Validation and calibration reports should have traceability towards applicable national/ international standards. • Complete with comprehensive set of spare parts including a spare compressor, refrigerant gas cylinder etc. and a suitable capacity voltage stabilizer. The make, rating, model, description, specifications, price, quantity of each item shall be furnished separately. • Necessary catalogues, technical write up in English shall be attached with the offer both in hard and soft copies. • Performance, efficiency, other factors such as distortion etc. as applicable be also furnished • Complete construction, details in respect of material specification, thickness, finish etc. are to be furnished.
Certifications	Product certification: CE Class II A or US FDA certified Quality Certification: ISO certified Electrical Safety: Equipment meets electrical safety specifications such as that of IEC (Class I)

5. STERILE TUBE CONNECTION SYSTEM

Use	BAG CONNECTING/WELDING TO ATTACH EXTRA BAGS
Technical Specification	• Automated table top device • Produces a singular aseptic tubing connection from two separate tubing segments. • Can be used where aseptic tubing connections are required. • With self-controlled heating operation and temperature monitoring, • Automated mechanical assembly to perform the tube welding operation. • Compatible single use, disposable cutting blade should be available. Easy to use • Fast and reliable • Wet to dry & dry to dry connection • Should accommodate and weld all types of blood bag tubing in use. • The welding should be seamless. • Should be capable of joining wet-wet/wet-Dry/ Dry-Dry tubes. • Welding should not affect the quality of the tube in terms of its physical and chemical properties and it should not cause hemolysis. • It should have LED indicators to display the actual status of the ongoing procedural steps and audio-visual alarm system for any functional irregularities. • The welding necessaries should be available with the local agent throughout year. • Compatible UPS with half an hour backup. • Power supply 220V, 50 Hz AC.
Certifications	• Product certification: CE Class II A or US FDA certified • Quality Certification: ISO certified • Electrical Safety equipment meets electrical safety specifications such as that of IEC (Class I)

6. AUTOMATIC PLASMA EXPRESSOR

Use	PLASMA SEPARATION The equipment should be able to express the blood components, from primary bag into various satellite bags automatically. after initial manual loading of the bag system on to the machine.
Technical Specification	• The equipment must be compatible with any blood bag including top and top, top and bottom. • The equipment should have built in weighing mechanisms to measure the weight of various components separated (Plasma, Red cells and Platelets). • It should give at least one log leukoreduction for red cells and platelets • The equipment should have an integrated system of sealing heads and optical sensors to automatically control the flow of various blood components (Plasma, Platelets and red cells) in satellite tubing's. • The equipment should have a control panel with display system to indicate various procedural steps. • The tube sealing should be of radio frequency type. • The equipment should have the provision to store and transfer the blood component details including the identification number of the donor unit to a central facility. • The equipment should have built in alarm system to indicate the completion of the procedure. • IR Sensor Motor activated clamping • Audiovisual Alarm • Spring Loaded Acrylic Plate • Uniform Pressure • Automatic Control microprocessor based automatic calibration for different makes of tube and bags. • Should have clamp mechanism, both automatic & manual clamping modes should be available used.
Electrical Supply	• Voltage 220 to 240 V AC, Frequency 50/60 Hz • Compatible UPS, to complete the ongoing procedure, with a back-up supply for at least half an hour, should be supplied with the equipment. • A computer should be supplied having seamless integration with equipment. • Any other accessories for its interface with computer should also be supplied along with.
Certifications	• Product certification: CE Class II A or US FDA certified • Quality Certification: ISO certified • Electrical Safety: Equipment meets electrical safety specifications such as that of IEC (Class I)

7. DOUBLE PAN BALANCE

Use	FOR WEIGHING BLOOD BAG FOR BALANCING BBK CENTRIFUGE
Technical Specification	• Double Pan Balance is Micro Controlled Blood bank Scale which is designed for weighing Blood and Blood Components with display of Weight and Volume. • LED or LCD displays of Weight and Volume with accuracy of ± 1ml/gram. • It helps better balancing of refrigerated centrifuge. • It has Tare provision to account for the weight of the blood bag. • Double Pan Scale Outer body is molded in ABS Plastic • Auto Calibration • Measure Two bucket Separately. • Measure weight up to 2500 grams. • Accuracy up to +2/1 grams. • Balanced weight audio & visual Alarm • Taring switch built in. • Calibration port built in. • Battery backup up to 8 hrs. • Double Pan Balance / Scale

8. BINOCULAR MICROSCOPE

Use	FOR MICROSCOPY OF CROSS MATCH, ICT, DCT
Technical Specification	Binocular head, 360° rotatable 10x focusable eyepieces with large 20mm field of view 4x, 10x, 40x, 100x (oil) infinity plan objectives LED transmitted illumination with variable illumination control

9. BLOOD BANK SCALE

Use	WEIGHING BLOOD BAG
Technical Specification	Auto-conversion of weight to volume. Auto calibration LCD micro-processor-based display. Compact model. Tare Function Polycarbonate molded body. Accuracy = 1gm/ml.

10. LABORATORY REFREGERATOR

Use	FOR STORAGE OF BLOOD BANK REAGENTS AND SAMPLES
Technical Specification	• Temperature range 2-8 degree Celsius, 110 Liter • Temperature display • Internal gross volume: 118, 130 or 200 L • Compression type, CFC-free refrigerant. Insulation material: polyurethane, CFC-free. • Fan-cooled for even distribution of air in the cabinet. Stainless steel structure or its equivalent or inner chamber PS plate depending on the refrigerator model. • Internal gross volume: 118, 130 or 200 L • Easily adjustable shelves. • Lockable door, solid. • Electronic temperature control: 2°C to 8°C. • Accuracy, regardless of the load: +/- 1°C. • Ambient operating temperature acceptable range: Lower 10°C, upper 32 °C.
Temperature monitoring	• External digital display with actual interior temperature, minimal graduation 0.1°C. • Electronic temperature recording device: includes data logger (optional or standard, depending on the refrigerator model). • Audio and visual alarm system indicates unsafe temperatures (optional or standard, depending on the refrigerator model). • Battery back-up for audio and visual alarm system, and temperature recording device optional or standard, depending on the refrigerator model).
Other requirements	• Fitted with integrated castors. • Minimum compressor starting voltage compressor starting voltage: +-10% • Meeting quality standard ISO 8187 / EN 28187 or similar. • Meeting safety standards: EMI 89/336EEC, 73/23/EEC and 93/68/EEC code AB1 or

	Similar. • Power requirements: 220 V / 50 Hz or 110/60 Hz (if requested). • Power consumption: approx. 125 to 250 W or more energy efficient.
Supplied with Automatic voltage regulator	• A microprocessor-controlled spike and surge protection and protection against disturbances. • Nominal output voltage: 220 V / 50 Hz, Single phase, 110/60 Hz (If requested), Single Phase. • Accepted input range: 160-280 VAC for 220 V/50 Hz system and 82-159 volt for 110/60 Hz (If requested), Single Phase. • Output accuracy: ≤ +/- 10 %. • Response time: <15 ms or 50 s (depending on the model) • LED display showing connected/disconnected status, voltage fluctuation and load as % of nominal current or a digital display showing temperature, voltage, electricity (depending on the refrigerator model). • Permissible overload: Permissible overload: 1000 % within 60 ms protection. • Electronic fuse disconnects and reconnects automatically (optional depending on the model). • kVA rating matches power consumption of the refrigerator.

11. LABORATORY CENTRIFUGE

Use	CENTRIFUGING SAMPLES / PREPARATION OF CELL SUSPENSION
Detailed Requirement	Bench top centrifuge machine with angle rotor Built in speedometer, variable speed control, lid locking and braking device Maintenance free motor Lid safety interlock Noiseless and vibration free Power Supply 220V 50 Hz, AC USER ADJUSTABLE SETTINGS: Speed 4500–5000 rpm. Digital control of Timing up to 60min
Displayed Parameters	Digital display of speed, timing Rotor Imbalance detection
Accessories	Complete with standard and operation accessories Servo Controlled Voltage Stabilizer with surge protection facility