

## ANNEX 01

### 1. Blood Bank Refrigerator 2-8 Degree Celsius

<b>Required Quantity:</b>	01
<b>Purpose of Equipment</b>	A refrigerator for storing whole blood or red cell packs in a blood bank
<b>Type of Equipment</b>	Compression type refrigerator that uses CFC-free refrigerant gas/ green gas
<b>Capacity</b>	200 blood bags of about 450 ml each
<b>Construction</b>	<ul style="list-style-type: none"> <li>• <b>Internal:</b> Stainless steel (min. 22g)</li> <li>• <b>External:</b> Corrosion Resistant (CR at least 1mm thickness)</li> <li>• CFC-free insulation</li> <li>• <b>Drawers:</b> 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.</li> <li>• Number of drawers: 5 to7</li> <li>• <b>Door:</b> Single door with Glass, Automatic closing of the front door below opening angle of 90° and opening angle limited to 110°.</li> <li>• Insulation and gasket should be silicone.</li> <li>• Polyurethane Insulation should be minimum 80 mm</li> <li>• Door opening audio and visual display alarm.</li> <li>• Touch screen with password protection(optional)/ lock</li> <li>• <b>Cabinet type:</b> upright</li> <li>• The system should have electrical heater prevents condensation on glass door.</li> <li>• Lockable caster for easy moving and stop.</li> </ul>
<b>Temperature range</b>	<ul style="list-style-type: none"> <li>• 2°C to 8°C and adjustable with setting accuracy of <math>\pm 0.1^\circ\text{C}</math> with set temperature of 4°C with fan air cooling.</li> <li>• <b>User Parameter settings:</b> set point, high alarm point, low alarm point, buzzer off time, C/F Temperature choice</li> </ul>
<b>Electrical Characteristics</b>	<ul style="list-style-type: none"> <li>• <b>Input voltage:</b> 220/240V 50Hz. Fitted with UK plug.</li> <li>• Equipment meets electrical safety specifications such as that of /EC (Class I).</li> <li>• A line voltage corrector of appropriate rating will form part of standard configuration</li> <li>• Minimum Compressor Starting Voltage: 22% below nominal voltage</li> </ul>

<b>Standard Accessories</b>	<ul style="list-style-type: none"> <li>All standard/necessary accessories must be supplied along with the unit which can be include temperature chart recorder, shelves and baskets, LED lamp, temperature Probes, access port and Door key without an extra cost.</li> </ul>
<b>External Ambient Temperature</b>	<ul style="list-style-type: none"> <li>Performs in an ambient temperature of +10 °c to +40 °c</li> <li>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</li> <li>Internal temperature holds over time in case of power failure should be at least 1.5 hours.</li> <li>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</li> </ul>
<b>Temperature Monitoring</b>	<ul style="list-style-type: none"> <li>Digital temperature (LED) display with 0.1 °C graduation</li> <li>Microprocessor based temperature controller with integrated audio- v i s u a l temperature and power alarm function with digital monitoring display.</li> <li>Independent safety thermostat to avoid negative temperatures.</li> <li>At least 2 Temperature Sensors: Sensor for temperature monitoring shown on front display, Sensor for managing use of compressor.</li> <li>Smart View Compatibility (Optional)</li> </ul>
<b>Temperature recording device</b>	<ul style="list-style-type: none"> <li>Visual and audible alarm system indicating unsafe temperatures</li> <li>Battery backup for alarm and temperature recording device</li> <li>Facility for remote alarm contact</li> <li>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.</li> <li>Ideal compressor running time of 27% at room temperature.</li> <li>Door locks should be available.</li> <li>Interior lighting</li> <li>Auto defrosting</li> <li>Cooling time - Maximum 13 hours for all the packs to reach below +6°C</li> </ul>
<b>Certifications</b>	<ul style="list-style-type: none"> <li>Product certification: CE Class II A or US FDA certified</li> <li>Quality Certification: ISO certified</li> <li>Electrical Safety: Equipment meets electrical safety specifications such as that of IEC (Class I)</li> <li>Certificate of calibration.</li> </ul>

## 2. Plasma Thawing bath

<p><b>Use</b></p>	<p>THAWING OF FRESH FROZEN PLASMA AND CRYOPRECIPITATE</p> <p>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 anti hemophilic factor (AHF). For thawing of plasma and cryoprecipitate at required temperatures.</p>
<p><b>Required Quantity:</b></p>	<p>01</p>
<p><b>Technical Specification</b></p>	<ul style="list-style-type: none"> <li>• Uses both controlled temperature and agitation to substantially reduce thaw times while ensuring the safety of your plasma.</li> <li>• Convenient and easy to operate, allowing you to load, program, and walk away.</li> <li>• Benchtop</li> <li>• 4 bags capacity.</li> <li>• Separate thawing baskets with independent controls provides the Ability to thaw separate orders at the same time.</li> <li>• Independent controls and LED digital temperature display for each basket</li> <li>• Controller type digital microprocessor</li> <li>• Independent controls per basket set time / cycle time displayed in minutes programmable cycles multiple time selections</li> <li>• High temperature alarm audibles and visual Heater status indicator</li> <li>• Cycle pause/resume option should be available</li> <li>• chamber material stainless steel</li> <li>• Drain system quick connects</li> <li>• Basket material stainless steel.</li> <li>• chamber volume should not exceed 32L.</li> </ul> <p><b>Internal Body Material:</b></p> <ul style="list-style-type: none"> <li>• 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 (&lt; 20 minutes)</li> <li>• Should be able to thaw FFP/ cryoprecipitate / Aphaeresis or plasma bags of any size.</li> <li>• Should be a water bath-based system operating at a preset and precise temperature of 37°±0.2 °C</li> <li>• Should have two separate basket assemblies with built-in fingers for securely holding the plasma bags of all sizes.</li> <li>• Trays with individual compartment to ensure that ports of bags may be kept above water level during the procedure.</li> </ul>

	<p><b>Tray:</b></p> <ul style="list-style-type: none"> <li>• Removable type stainless steel trays with Partitions for holding plasma bags</li> <li>• Should give an alarm when the plasma bags are thawed.</li> <li>• Should have digital timer clearly displaying the programmed set time or remaining cycle in minutes</li> <li>• Should have audio visual over-temperature alarm system</li> <li>• Should have a system to drain the chamber easily.</li> <li>• Should be supplied with a cover to keep the unit covered when not in use</li> <li>• Simple to operate, easy to read LED display</li> <li>• Drain Line with Shut off valve can be connected to existing plumbing.</li> <li>• Power supply: 220-240 volts at 50 Hz, single phase fitted with UK Plug.</li> </ul>
<b>Standard Accessories</b>	<ul style="list-style-type: none"> <li>• Plasma wraps bags- standard size / have to ensure minimum quantity of 500 pieces</li> <li>• Reference thermometer</li> <li>• All standard/necessary accessories must be supplied along with the unit.</li> </ul>
<b>Certifications</b>	<ul style="list-style-type: none"> <li>• Product certification: CE Class II A or US FDA certified</li> <li>• Quality Certification: ISO certified</li> <li>• Electrical Safety: Equipment meets electrical safety specifications such as that of IEC (Class I)</li> <li>• Certificate of calibration</li> </ul>

### 3. ELECTRIC TUBE STRIPPER

<b>Use</b>	TO STRIP UNDILUTED BLOOD FROM THE DONOR TUBING
<b>Required Quantity:</b>	01
<b>Detailed Requirement</b>	<ul style="list-style-type: none"> <li>• Should work for all kinds of bags available in the market.</li> <li>• Should be light weight and easy to handle</li> <li>• Ambient Temperature for operation 0 -40 degree Celsius</li> </ul>
<b>Power supply</b>	<ul style="list-style-type: none"> <li>• 220-240 VAC, 50/60 Hz fitted with UK Plug.</li> <li>• Should be ISO 9001:200, CE mark.</li> <li>• Electrical safety should conform to standards for electrical safety IEC- 60601 /IS-13450</li> </ul>

#### 4. PLASMA FREEZER (<-30 degree Celsius)

<b>Required Quantity:</b>	01
<b>Purpose of Equipment</b>	STORAGE OF FRESH FROZEN PLASMA AND CRYOPRECIPITATE
<b>Capacity</b>	200 Plasma Bags of 250ml.
<b>Construction</b>	<ul style="list-style-type: none"> <li>• <b>Type of Equipment:</b> Compression freezer with CFC-free refrigerant</li> <li>• <b>Internal:</b> Stainless steel (min. 22g)</li> <li>• <b>External:</b> Solid Outer Cabinet Corrosion Resistant (at least 1mm thickness)</li> <li>• CFC-free insulation</li> <li>• <b>Design:</b> Upright Type</li> <li>• <b>Door:</b> Solid door Single/Double, Automatic closing of the front door below opening angle of 90° and opening angle limited to 110°.</li> <li>• Insulation and gasket should be silicon.</li> <li>• Separate compartment inner doors to prevent cold loss.</li> <li>• <b>Drawers:</b> Roll out type</li> <li>• Heating device on the frame to avoid condensation.</li> <li>• Should have security key locks on the outer doors</li> </ul>
<b>Electrical Characteristics</b>	<p><b>Input voltage:</b> 220/240V 50HZ fitted with UK Plug. Minimum Compressor Starting Voltage: 22% below nominal Voltage</p> <p><b>Internal Temperature Control:</b></p> <ul style="list-style-type: none"> <li>• Operating temperature reachable lowest up to -45°C with setting accuracy of ±1 °c whatever the load</li> <li>• Fan air cooling</li> <li>• Automatic defrost within safe temperature range</li> <li>• Casing &amp; door should have insulation panel with polyurethane foam &gt;80mm thickness.</li> </ul>
<b>Refrigeration</b>	<ul style="list-style-type: none"> <li>• Heavy duty hermetically sealed compressor air cooled cascade refrigeration system, maintains inner temperature below -40°C.</li> <li>• Option for duct from equipment to connect to common main duct to throw hot air out of the room.</li> <li>• Refrigerant CFC free/ green gas.</li> <li>• Optional: Access port for CO2 backup system for refrigeration.</li> <li>• External Ambient Temperature: Performs in an ambient temperature of +10 °C to +40 °C</li> <li>• Hold over time: 2 hrs. at ambient temperature</li> <li>• Cooling Down Time:</li> </ul>

	<ul style="list-style-type: none"> <li>• A full load of plasma packs at +25°C takes a maximum of 5 hrs. for all the packs to reach below -5 °C</li> <li>• A full load of plasma packs at +25 °C takes a maximum of 30 hrs. for all the packs to reach below -20 °C</li> </ul>
<p><b>Temperature Monitoring</b></p>	<ul style="list-style-type: none"> <li>• Digital temperature (LED) display with 0.1 °C graduation</li> <li>• Temperature recording device.</li> <li>• Microprocessor control for operation with integrated audio-visual temperature alarm function with digital monitoring display. There should be a method to check alarm system.</li> <li>• 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.</li> <li>• Battery backup for alarm and temperature recording device.</li> <li>• Provision to connect with central (temperature) monitoring system</li> <li>• Should have Mounted on Lockable Castor wheels</li> <li>• Alarm history: Temperature maximum and minimum, average temperature during alarm period, time of duration of alarm.</li> <li>• Desirable: Noise factor should not exceed 60 decibels.</li> <li>• Should have compressor running time &lt; 60 to 70%</li> <li>• Should have multiple sensors to constantly monitor the temperature.</li> </ul>
<p><b>Additional Requirements</b></p>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• A Suitable capacity voltage stabilizer.</li> <li>• The make, rating, model, description, specifications, price, quantity of each item shall be furnished separately.</li> <li>• Necessary catalogues, technical write up in English shall be attached with the offer both in hard and soft copies.</li> <li>• Performance, efficiency, other factors such as distortion etc. as applicable be also furnished</li> <li>• Complete construction, details in respect of material specification, thickness, finish etc. are to be furnished.</li> <li>• All standard/necessary accessories must be supplied along with the unit.</li> </ul>
<p><b>Certifications</b></p>	<p><b>Product certification:</b> CE Class II A or US FDA certified  <b>Quality Certification:</b> ISO certified  <b>Electrical Safety:</b> Equipment meets electrical safety specifications such as that of IEC (Class I)  Certificate of calibration</p>

## 5. STERILE TUBE CONNECTION SYSTEM

<b>Use</b>	BAG CONNECTING/WELDING TO ATTACH EXTRA BAGS
<b>Required Quantity:</b>	01
<b>Technical Specification</b>	<ul style="list-style-type: none"> <li>Automated table top device</li> <li>Produces a singular aseptic tubing connection from two separate tubing segments.</li> <li>Can be used where aseptic tubing connections are required.</li> <li>With self-controlled heating operation and temperature monitoring,</li> <li>Automated mechanical assembly to perform the tube welding operation.</li> <li>Compatible single use, disposable cutting wafer/blade should be available. Easy to use.</li> <li>Fast and reliable</li> <li>Should accommodate and weld all types of blood bag tubing available in market.</li> <li>The welding should be seamless.</li> <li>Should be capable of joining wet-wet/wet-Dry/ Dry-Dry tubes.</li> <li>Welding should not affect the quality of the tube in terms of its physical and chemical properties and it should not cause hemolysis.</li> <li>It should have LED indicators to display the actual status of the ongoing procedural steps and audio-visual alarm system for any functional irregularities.</li> <li>The welding necessities should be available with the local agent throughout the life cycle of equipment.</li> <li>Power supply 220V, 50 Hz AC fitted with UK plug.</li> <li>All standard/necessary accessories must be supplied along with the unit.</li> </ul>
<b>Certifications</b>	<ul style="list-style-type: none"> <li>Product certification: CE Class II A or US FDA certified</li> <li>Quality Certification: ISO certified</li> <li>Electrical Safety equipment meets electrical safety specifications such as that of IEC (Class I)</li> <li>Certificate of calibration &amp; Validation.</li> </ul>



## 6. SEMI AUTOMATIC PLASMA EXPRESSOR

<b>Use</b>	<p>PLASMA SEPARATION</p> <p>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.</p>
<b>Required Quantity:</b>	01
<b>Technical Specification</b>	<ul style="list-style-type: none"> <li>• The equipment must be compatible with any blood bag.</li> <li>• The equipment should have(optional) built in weighing mechanisms to measure the weight of various components separated (Plasma, Red cells and Platelets).</li> <li>• 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.</li> <li>• The tube sealing should be of radio frequency type.</li> <li>• The equipment should have built in audio-visual alarm system to indicate the completion of the procedure.</li> <li>• IR Sensor Motor activated clamping</li> <li>• Audiovisual Alarm</li> <li>• Spring Loaded Acrylic Plate with adjustable spring tension.</li> <li>• Uniform Pressure</li> <li>• Should have clamp mechanism, both automatic &amp; manual clamping modes should be available.</li> <li>• It must have a handle with ball end provides a comfortable grip.</li> <li>• Stainless Steel Optional.</li> <li>• Required Hook that keeps the handle in place before and after expression.</li> </ul>
<b>Electrical Supply</b>	<ul style="list-style-type: none"> <li>• Voltage 220 to 240 V AC, Frequency 50/60 Hz fitted with UK plug.</li> <li>• Ambient Temperature Working environment +5°C to +40°C.</li> <li>• All standard/necessary accessories must be supplied along with the unit.</li> </ul>
<b>Certifications</b>	<ul style="list-style-type: none"> <li>• Product certification: CE Class II A or US FDA certified</li> <li>• Quality Certification: ISO certified</li> <li>• Electrical Safety: Equipment meets electrical safety specifications such as that of IEC (Class I)</li> </ul>



## 7. DOUBLE PAN BALANCE

<b>Use</b>	FOR WEIGHING BLOOD BAG FOR BALANCING Blood Bag CENTRIFUGE
<b>Required Quantity:</b>	01
<b>Technical Specification</b>	<ul style="list-style-type: none"> <li>• Double Pan Balance is Micro Controlled Blood bank Scale which is designed for weighing Blood and Blood Components with display of Weight and Volume.</li> <li>• LED or LCD displays of Weight and Volume with accuracy of <math>\pm 1\text{ml/gram}</math>.</li> <li>• It helps better balancing of refrigerated centrifuge.</li> <li>• It has Tare provision to account for the weight of the blood bag.</li> <li>• Double Pan Scale Outer body is molded in ABS Plastic</li> <li>• Auto Calibration/Zeroing.</li> <li>• Measure Two bucket Separately.</li> <li>• Measure weight up to 2500 grams.</li> <li>• Accuracy up to <math>+2/1</math> grams.</li> <li>• Balanced weight audio &amp; visual Alarm</li> <li>• Taring switch built in.</li> <li>• Battery backup up to 8 hrs.</li> <li>• Dead weights should be provided for confirmation.</li> </ul>

## 8. BINOCULAR MICROSCOPE

<b>Use</b>	FOR MICROSCOPY OF CROSS MATCH, ICT, DCT
<b>Required Quantity</b>	02
<b>Technical Specification</b>	<ul style="list-style-type: none"> <li>• The Optical system must be color Corrected Infinity Optical System (CCIS).</li> <li>• The Observation tube should be binocular head with feature of Siedentopf type.</li> <li>• The Diopter adjustment should be possible on both eyepieces, <math>\pm 5</math> diopter.</li> <li>• Nosepiece: Reversed sextuple</li> <li>• The Objective mounting thread (RMS standard)</li> <li>• Stand type - Upright</li> <li>• Focus mechanism Coaxial coarse and fine focusing system with tension adjustment</li> <li>• Upper limit stop must be preset and adjustable</li> <li>• Filter holder on top of the illuminator with fixing cap</li> </ul>

	<ul style="list-style-type: none"> <li>• Binocular head 30° inclined &amp; 360° rotatable</li> <li>• 10x focusable eyepieces with large 20mm field of view</li> <li>• 4x, 10x, 40x, 100x (oil) infinity plan objectives</li> <li>• LED transmitted illumination with variable illumination control</li> <li>• Accessories included Dust cover, power cord, Allen key, immersion oil (5ml), blue filter, spare fuse.</li> <li>• Power input to be 220-240 VAC, 50Hz fitted with UK Plug.</li> <li>• Certificate of calibration</li> <li>• Should be FDA, CE Certified</li> <li>• All standard/necessary accessories must be supplied along with the unit.</li> </ul>
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## 9. BLOOD BANK SCALE

<b>Use</b>	WEIGHING BLOOD BAG
<b>Required Quantity:</b>	01
<b>Technical Specification</b>	<p>Bench Top, Auto-conversion of weight to volume.                      Auto calibration                      LCD micro-processor-based display.                      Compact model. Tare Function                      Polycarbonate molded body.                      Accuracy = 1gm/ml.                      Weighing range: -up to 5000 gm.                      Power Supply: - 230 volts, 50 Hz fitted with UK plug.</p>

## 10. LABORATORY REFREGERATOR

<b>Use</b>	FOR STORAGE OF BLOOD BANK REAGENTS AND SAMPLES
<b>Required Quantity:</b>	02
<b>Technical Specification</b>	<ul style="list-style-type: none"> <li>• Temperature range 2-8 degree Celsius, 450 – 650 Liter</li> <li>• Temperature display LED/LCD</li> <li>• Compression type, CFC-free refrigerant. Insulation material: polyurethane, CFC-free.</li> <li>• 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.</li> <li>• Easily adjustable shelves.</li> </ul>

	<ul style="list-style-type: none"> <li>• Lockable door, Glass double/Single</li> <li>• Microprocessor/Microcontroller temperature control: 2°C to 8°C.</li> <li>• Accuracy, regardless of the load: +/- 1°C.</li> <li>• Ambient operating temperature acceptable range: Lower 10°C, upper 40 °C.</li> </ul>
<b>Temperature monitoring</b>	<ul style="list-style-type: none"> <li>• External digital display with actual interior temperature, minimal graduation 0.1°C.</li> <li>• Electronic temperature recording device: includes data logger (optional or standard, depending on the refrigerator model).</li> <li>• Audio and visual alarm system indicates unsafe temperatures (optional or standard, depending on the refrigerator model).</li> <li>• Battery back-up for audio and visual alarm system, and temperature recording device (optional or standard, depending on the refrigerator model).</li> </ul>
<b>Other requirements</b>	<ul style="list-style-type: none"> <li>• Fitted with integrated castors.</li> <li>• Minimum compressor starting voltage compressor starting voltage: +-10%</li> <li>• Meeting quality standard ISO 8187 / EN 28187 or similar.</li> <li>• Meeting safety standards: EMI 89/336EEC, 73/23/EEC and 93/68/EEC code AB1 or Similar.</li> <li>• Power requirements: 220 V / 50 Hz fitted with UK plug.</li> <li>• Power consumption: approx. 125 to 250 W or more energy efficient.</li> </ul>

## 11. LABORATORY CENTRIFUGE

<b>Use</b>	CENTRIFUGING SAMPLES / PREPARATION OF CELL SUSPENSION
<b>Required Quantity:</b>	01
<b>Detailed Requirement</b>	<ul style="list-style-type: none"> <li>• It should be Microprocessor Controlled with large Display of time, speed and error with buttons.</li> <li>• Operation to change from RPM/RCF setting should be present.</li> <li>• Bench top centrifuge machine with Swing rotor</li> <li>• Built in speedometer, variable speed control, lid locking and braking device</li> <li>• Maintenance free brushless motor drive with frequency drive, low noise level less than 58dB at Max speed.</li> <li>• Rotor and centrifuge Chamber should be made of chemical resistant and rust - free (stainless steel) and easy to clean.</li> <li>• Automatic door opening with emergency lid lock release facility.</li> <li>• Tube Capacity Swing-out Rotor: 7x15ml tubes x 4 buckets</li> <li>• Total capacity of all bucket not less than 420 ml</li> <li>• Speed Accuracy: ±1rpm or ±1 x g</li> </ul>

	<ul style="list-style-type: none"> <li>• Speed output should be stable even under fluctuating voltage conditions.</li> <li>• Profile selection: At least 3 user selectable acceleration &amp; deceleration profiles</li> <li>• It should have an option to store user defined program /minimum of 10 program.</li> <li>• Should have Gas hinge to prevent door falling.</li> <li>• Lid safety interlock</li> <li>• Noiseless and vibration free</li> <li>• Power Supply 220V 50 Hz, AC fitted with UK plug.</li> <li>• USER ADJUSTABLE SETTINGS: Speed 4500–5000 rpm.</li> <li>• Digital control of Timing up to 60min</li> <li>• The unit should only be supplied with specific rotor, all required adaptors, bucket,</li> </ul>
<b>Displayed Parameters</b>	<ul style="list-style-type: none"> <li>• Digital display of speed, timing</li> <li>• Rotor Imbalance detection</li> </ul>
<b>Accessories</b>	<ul style="list-style-type: none"> <li>• All standard/necessary accessories must be supplied along with the unit.</li> </ul>