

Technical specifications of medical Equipment for Rugerero Treatment Center				
No	Department	Equipment	Required Qty	Specifications
1	Laboratory	Laboratory chairs	10	Laboratory stool/chair with chemical-resistant, non-absorbent polyurethane/vinyl seat; height adjustable approx. 450–650 mm; 360° swivel; stable 5-star base or glides; optional foot ring/backrest; load ≥120 kg; easy to disinfect; no exposed fabric.
2	Laboratory	Automated Hematology Analyzer	2	Parameters: WBC, RBC, HGB, HCT, MCV, MCH, MCHC, PLT • Throughput: 60 samples per hour • Sample Volume: 20 µL • Display: LCD touchscreen • Storage: 100,000 results • Connectivity: USB, Ethernet • Electrical power supply: 220-240VAC/50Hz Data Handling: LIS Connectivity: The ability to connect to a Laboratory Information System for data transfer Quality Control: Features for internal and external quality control to ensure reliable results User Interface: A touch screen or integrated computer for operation and results review
3	Laboratory	Hematology Blood Mixer	2	Bench-top hematology tube mixer/roller; suitable for EDTA blood tubes; capacity ≥15 standard tubes; gentle 360° rolling/rocking action; speed approx. 20–40 rpm adjustable or fixed; continuous operation; non-slip rollers; removable/easy-clean platform; 220–240 V, 50 Hz; low-noise motor.
4	Laboratory	Binocular Light Microscope	2	Binocular bright-field laboratory microscope; infinity-corrected optical system; LED illumination with intensity control; binocular head 30° inclined, interpupillary adjustment; wide-field eyepieces 10×/20 mm; plan achromat objectives 4×, 10×, 40× and 100× oil; mechanical stage; Abbe condenser NA ≥1.25; coaxial coarse/fine focus; dust cover and immersion oil included.
5	Laboratory	Rotator	5	Bench-top laboratory rotator for slides/tubes; speed range approx. 0–80 rpm adjustable; timer 1–999 min or continuous; platform/attachments suitable for serology cards, tubes or slides; digital/analog control; stable low-vibration operation; 220–240 V, 50 Hz; easy-clean platform.
6	Laboratory	Vortex	2	1. General Description The vortex shaker shall be a compact, robust laboratory device designed for rapid and efficient mixing of liquid samples in various types of vessels. The system shall support both touch (short-time) and continuous operation modes to accommodate different laboratory workflows. 2. Shaking Mechanism and Performance Type of movement: Orbital Orbital diameter (shaking stroke): 4 mm Speed range: 0 to 2500 rpm, infinitely adjustable Minimum adjustable speed: 500 rpm The system shall provide stable and uniform mixing across the entire speed range Permissible shaking weight (including attachments): minimum 0.4 kg 3. Operation Modes Touch operation (short-time mode): Activated by pressing the attachment Continuous operation: For prolonged mixing applications The unit shall be suitable for 100% duty cycle (continuous use) 4. Motor and Drive System Motor input power: approximately 60 W Motor output power: approximately 10 W The system shall feature an eccentric drive mechanism with ball bearings for smooth and reliable operation The motor shall include self-ventilation to minimize heat generation during continuous use 5. Attachments and Flexibility The shaker shall support interchangeable attachments for different applications Attachments shall securely lock into position without tools Compatible with various laboratory vessels, including: Test tubes Microtiter plates (minimum capacity: 1 plate) Erlenmeyer

				flasks (up to 250 mL) Optional adapters and inserts shall be available for expanded applications 6. Construction and Design The outer casing shall be made of durable metal (zinc die-cast or equivalent) The unit shall have a compact and space-saving design The base shall include anti-slip, high vibration-damping feet (e.g., silicone base) to ensure stability at high speeds 7. Control and Display Speed control shall be analog or dial-based with continuous adjustment No digital speed display is required Operation shall be simple and user-friendly 8. Environmental and Operating Conditions Permissible ambient temperature: 5°C to 40°C Permissible relative humidity: up to 80% Noise and vibration levels shall be minimized to ensure comfortable laboratory use 9. Electrical Requirements Power supply: 200–240 V AC Frequency: 50/60 Hz 10. Safety and Protection Protection class: IP21 or equivalent, ensuring protection against solid objects and dripping water The system shall be designed for safe operation under continuous use conditions 11. Dimensions and Weight Approximate dimensions (W × H × D): 127 × 136 × 149 mm Weight: approximately 4.5 kg 12. Scope of Supply Main vortex shaker unit Standard attachment head for general-purpose mixing User manual and power cable 13. Additional Requirements The unit shall ensure stable operation without excessive vibration or movement The design shall allow for easy cleaning and maintenance 14. Compliance and Certification CE-IVD certification is mandatory CE and/or FDA approval Manufactured under ISO-certified quality systems Certificate of Origin must be provided 15. Warranty and Support Minimum warranty period: 2 years Availability of local service support Supplier must ensure availability of spare parts and technical service 16. Training Requirements Comprehensive training package for laboratory staff must be provided Training shall include operation and preventive maintenance.
7	Laboratory	Water distiller	2	1. Capacity ●Daily production: 40 liters of distilled water per 24 hours. ●Boiler/reservoir size: Sized to allow continuous operation to produce 40 L/day and above. 2. Material ●Boiler & condenser: Stainless steel (SS304 or SS316) – corrosion-resistant. ●Collection container: Glass, stainless steel, or food-grade plastic. ●External body: Stainless steel or powder-coated metal. 3. Heating System ●Type: Electric heating element (immersion or steam generator). ●Power rating: ~3–6 kW depending on production speed. ●Temperature control: Automatic shutoff at boiling point. 4. Cooling System ●Condenser: Coil or shell-and-tube, stainless steel. ●Cooling water requirement: Continuous water flow for condensation, or built-in cooling fan. 5. Output Water Quality ●Purity: ≥ 99.8% free from salts, minerals, and bacteria. ●pH: Neutral (~7). ●Conductivity: < 2 µS/cm (ultrapure for lab use may be lower). 6. Controls & Safety ●Automatic operation (on/off). ●Thermal cutoff / overheat protection. ●Low water level sensor. ●Indicator lights for operation. 7. Dimensions & Weight ●Depends on manufacturer, typically ~60–80 cm height × 40–60 cm width × 40–50 cm depth. ●Weight: 30–50 kg (empty). 8. Optional Features ●Built-in storage tank. ●UV sterilization for final output. ●Digital display for production rate and water quality. ●Automatic refill and drainage.
8	Laboratory	Automated Biochemistry Analyzer	1	Fully automated clinical chemistry analyser; random-access; throughput ≥200 photometric tests/hour (≥300 preferred); ≥40 reagent positions with refrigerated compartment; sample positions ≥40; automatic dilution/re-run, liquid-level/clot detection; wavelength range approx. 340–800 nm; onboard QC/calibration; LIS bidirectional connectivity; ISE module for Na/K/Cl preferred; water consumption

				and reagent system stated; starter reagents/calibrators/QC included. Electrical: 220–240 VAC, 50 Hz, plug compatible with Rwanda; supplied with power cable and voltage protection as appropriate. Safety/quality: CE-marked or FDA-cleared where applicable; manufacturer ISO 13485/QMS evidence; IEC 60601 series compliance for medical electrical equipment. Supply to include user manual, service documentation, essential accessories, installation/commissioning, user training and minimum 2-year warranty; spare parts/service support ≥5 years.
9	Laboratory	Wall thermometer	3	Wall-mounted digital thermometer/hygrometer; temperature range at least –10°C to +50°C, accuracy ±0.5°C; relative humidity 20–90%, accuracy ±5% RH; min/max memory; large display readable at ≥3 m; battery powered; calibration certificate preferred.
10	Laboratory	Top Table Centrifuge	2	High-Speed Benchtop Microcentrifuge – Technical Specifications General Requirements Bench-top high-speed microcentrifuge suitable for molecular biology, microbiology, clinical laboratories, research laboratories, and academic institutions. Compact, low-noise design with maintenance-free motor. CE marked and compliant with IEC 61010 safety standards. Performance Maximum Speed: 15,000 rpm minimum. Maximum Relative Centrifugal Force (RCF): ≥21,000 × g. Speed Accuracy: ±20 rpm or better. Timer Range: 30 seconds to 99 minutes 59 seconds and continuous operation. Acceleration and deceleration control. Rotor System Capacity: 24 × 1.5/2.0 mL microcentrifuge tubes. Fixed-angle rotor included. Swing-out rotor option available. Aerosol-tight rotor lid. Quick rotor exchange without special tools. Control Panel Digital LCD or LED display. Simultaneous display of speed, RCF, time, and operating status. Touch keypad or membrane control panel. Programmable operation settings. Last-run parameter memory function. Safety Features Automatic lid locking system during operation. Imbalance detection and automatic shutdown. Overspeed protection. Motor overheat protection. Lid-open protection. Error code display and alarm system. Construction Corrosion-resistant steel or ABS housing. Chemical-resistant rotor chamber. Brushless maintenance-free motor. Low vibration and low noise operation (≤60 dB). Electrical Requirements Power Supply: 220–240 V AC, 50/60 Hz. Power Consumption: ≤500 W. Suitable for standard laboratory electrical outlets. Accessories Fixed-angle rotor (24 × 1.5/2.0 mL). Aerosol-tight rotor lid. Tube adapters where applicable. User manual. Power cable. Warranty Minimum 1 year comprehensive warranty.
11	Laboratory	Micropipettes (10uL-100uL)	2	Single-channel adjustable air-displacement micropipette, 10–100 µL; increment ≤0.1–1 µL; autoclavable lower assembly; ergonomic low-force plunger; tip ejector; compatible with universal tips; calibration certificate traceable to ISO 8655; stand/rack compatibility; 1-year warranty.
12	Laboratory	Micropipettes (100uL-1000uL)	2	Single-channel adjustable air-displacement micropipette, 100–1000 µL; increment ≤1–10 µL; autoclavable lower assembly; ergonomic low-force plunger; tip ejector; compatible with universal tips; calibration certificate traceable to ISO 8655; 1-year warranty.
13	Laboratory	Micropipettes Holder	2	Bench-top carousel or linear pipette stand; capacity ≥6 single-channel pipettes; chemical-resistant ABS/PP or metal; stable non-slip base; easy-clean; compatible with common pipette brands without stressing tip cones.

14	Laboratory	Timer	2	Digital laboratory timer; count-up/count-down; range at least 99 h 59 min 59 s; audible alarm ≥ 60 s; large LCD; memory/last-setting recall; magnetic back/stand and hanging option; battery included.
15	Laboratory	Electric Bunsen Burner	2	Flameless electric laboratory sterilizer/micro-incinerator for inoculating loops; operating temperature $\geq 800^{\circ}\text{C}$; heating zone diameter ≥ 14 mm and depth ≥ 100 mm; warm-up ≤ 20 min; ceramic heating element; no open flame; over-temperature protection; 220–240 V, 50 Hz; stand/loop holder included.
16	Laboratory	Cool boxes for sample transport	2	Specimen transport cool box; rigid leak-resistant insulated container, 10–20 L; maintains 2–8°C with conditioned ice packs for transport period; smooth disinfectable interior; secure lid and carrying handle; supplied with sufficient ice packs, absorbent material and internal rack; compatible with triple-packaging requirements.
17	Laboratory	Beakers	50	Laboratory beaker set, borosilicate glass 3.3; low-form with spout and graduated markings; autoclavable and chemical/thermal resistant; assorted capacities 100, 250, 500 and 1000 mL; permanent graduations.
18	Laboratory	Test tubes (pack of 100)	5	Laboratory test tubes, borosilicate glass or medical-grade polypropylene as appropriate; approx. 12–16 mm diameter $\times$ 75–150 mm length; clear, chemically resistant; autoclavable if reusable; compatible caps/stoppers supplied where required; assorted sizes.
19	Laboratory	Test tube holder	5	Test-tube rack/holder; autoclavable polypropylene or coated stainless steel; capacity ≥ 40 tubes; accommodates 12–18 mm tubes; alphanumeric indexing preferred; chemical-resistant, stable and easy to clean.
20	Laboratory	Staining Rack	2	Should be good slide-staining racks / systems appropriate for hematology, Microbiology, histopathology: Be resistant to acids, alcohols, xylene and other reagents (so stainless steel or good plastics). Hold a reasonable number of slides (10, 25, 30 etc.), depending on throughput. Support standard slide sizes (75 $\times$ 25 mm etc.). Allow immersion, rinsing, draining without losing carry-over or contaminating slides. Be easy to clean / sterilize or autoclavable if material allows. Have good ergonomics: handles, tilt/drain features, lids or covers if needed for humidity or to protect from dust, Minimum warranty period: 2 years
21	Laboratory	Slide Drying Bench	2	Laboratory slide drying bench/warmer; capacity ≥ 20 microscope slides; adjustable temperature approx. ambient +5°C to 70°C; digital thermostat; uniform heated anodized-aluminium surface; over-temperature protection; 220–240 V, 50 Hz; easy-clean construction.
22	Laboratory	Wire Loop	2	Reusable inoculating loop/needle; nichrome/platinum-iridium wire with insulated handle; loop diameter approx. 2–4 mm; total length ≥ 200 mm; suitable for flame/electric sterilization; corrosion-resistant; supplied as loop and straight needle assortment.
23	Laboratory	Westergren Tubes	4	Westergren ESR pipettes/tubes; 200 mm graduated scale 0–200 mm in 1 mm divisions; clear glass or validated plastic; bore and dimensions compliant with ICSH/Westergren method; open-ended or closed system compatible with ESR rack; reusable glass tubes autoclavable or sterile single-use.
24	Laboratory	Sedimentation Rate Rack	2	Measurement Method: Infrared detection Analysis Result: Westergren ESR value (mm/hour) Throughput: Maximum 80 tests/hour Analysis Channels:40(load up to 40 samples for analysis at the same time) Loading Type: Load samples at any time, measure at any time Analysis

				Time:30 minutes or 60 minutes selectable Sampling Interval:3min Measurement Range:0~150mm/h Temperature Compensation: automatically corrected to the result at 18°C Result Resolution:1mm/1h and 1mm/2h Blood Level Range:46mm~64mm HCT Range:0.2~1.0 Repeatability:0~10mm/h, SD≤1.5mm/h; >10mm/h, CV≤15% Channel Consistency:0~10mm/h, SD≤1.5mm/h; >10mm/h, CV≤15% Reading Accuracy:0.2mm Coincidence: ≥90% Display:7 inch color LCD touch screen Communication Interface: Type-C, USB interface Printer: Built-in thermal printer Power Supply:AC 220V, 50Hz Compliance and Certification CE-IVD certification is mandatory CE and/or FDA approval Manufactured under ISO-certified quality systems Certificate of Origin must be provided Minimum warranty period: 2 years Availability of local service support Training Requirements Comprehensive training package for laboratory staff must be provided Training shall include operation, maintenance, troubleshooting, and data analysis. The supplier must submit a detailed and itemized list of all required reagents and consumables with pricing,
25	Laboratory	First Aid Kit	2	Wall/portable first-aid kit in durable lockable case; contents suitable for laboratory minor injuries: sterile gauze/dressings, adhesive plasters, bandages, eye pads, antiseptic wipes, saline eyewash, gloves, scissors, tweezers, burn dressing and CPR face shield; clearly labeled, inventory list and expiry tracking included.
26	Laboratory	Slide Boxes	2	Microscope slide storage box; rigid chemical-resistant plastic/cardboard with hinged lid; capacity ≥100 standard 25 × 75 mm slides; numbered/indexed slots; moisture-resistant; secure closure.
27	Laboratory	Diamond Pencil	2	Laboratory diamond-tip glass-marking pencil; industrial diamond point; knurled metal handle; replaceable/retractable tip preferred; suitable for permanent marking of glass slides and laboratory glassware.
28	Laboratory	Pisettes	5	Laboratory wash bottle, LDPE, 500 mL capacity (assorted 250–1000 mL acceptable); leak-resistant screw cap; integral angled dispensing tube; chemical-resistant; squeezable; clearly labelable; autoclavable PP option preferred where required.
29	Laboratory	Electrolyte analyser (ISE)	1	Automated electrolyte analyser using ion-selective electrode (ISE) technology; parameters at minimum Na ⁺ , K ⁺ , Cl ⁻ ; sample types serum/plasma/whole blood; sample volume ≤150 µL; throughput ≥60 samples/hour; automatic calibration, QC, rinse and electrode diagnostics; onboard printer/display; LIS/USB connectivity; starter reagents, calibrators and QC included. Electrical: 220–240 VAC, 50 Hz, plug compatible with Rwanda; supplied with power cable and voltage protection as appropriate. Safety/quality: CE-marked or FDA-cleared where applicable; manufacturer ISO 13485/QMS evidence; IEC 60601 series compliance for medical electrical equipment. Supply to include user manual, service documentation, essential accessories, installation/commissioning, user training and minimum 2-year warranty; spare parts/service support ≥5 years.
30	Laboratory	Coagulation analyser	1	Semi-automated or automated coagulation analyser; tests at minimum PT/INR and aPTT, with fibrinogen/TT capability preferred; optical/mechanical clot detection; ≥4 test channels or throughput ≥40 tests/hour; pre-warming positions; programmable reagent/test parameters; QC/calibration

				storage; printer/USB/LIS connectivity; starter reagents and cuvettes included. Electrical: 220–240 VAC, 50 Hz, plug compatible with Rwanda; supplied with power cable and voltage protection as appropriate. Safety/quality: CE-marked or FDA-cleared where applicable; manufacturer ISO 13485/QMS evidence; IEC 60601 series compliance for medical electrical equipment. Supply to include user manual, service documentation, essential accessories, installation/commissioning, user training and minimum 2-year warranty; spare parts/service support ≥5 years.
31	Laboratory	Urinalysis analyser	1	1. General Description The urinalysis workstation shall be a fully automated system capable of performing both urine chemistry (dipstick analysis) and urine sediment analysis within a single integrated platform. The system shall enhance laboratory efficiency by combining physical, chemical, and microscopic examination with minimal manual intervention. 2. Analytical Principles 2.1 Chemistry Analysis The system shall utilize: Color detection technology (CIS or equivalent) Multi-wavelength colorimetry (minimum five wavelengths) Reflectance/refraction-based measurement methods The system shall support automatic strip reading with real-time strip image display 2.2 Sediment Analysis The analyzer shall use: Digital imaging technology Flow-based particle analysis (e.g., sheath flow or equivalent) Advanced automated recognition algorithms for particle identification The system shall provide automatic classification and quantification of urine formed elements 3. Throughput and Performance Chemistry analysis throughput: minimum 300 tests per hour Sediment analysis throughput: minimum 120 tests per hour Combined (chemistry + sediment) throughput: minimum 120 tests per hour The system shall ensure continuous loading and efficient workflow management 4. Parameters and Test Capabilities 4.1 Chemistry Parameters The analyzer shall support multi-parameter urine test strips including at least: -Leukocytes (LEU) -Ketones (KET) -Nitrites (NIT) -Urobilinogen (URO) -Bilirubin (BIL) -Protein (PRO) -Glucose (GLU) -Specific Gravity (SG) -Blood (BLD) -pH -Vitamin C (optional) -Microalbumin (MA) -Creatinine (CRE) (optional) -Calcium (CA) (optional) The system shall also provide: Albumin-to-creatinine ratio (ACR) Physical parameters: color, turbidity, specific gravity, osmolality, conductivity 4.2 Sediment Parameters The system shall automatically identify and quantify a wide range of urine formed elements, including but not limited to: -Red blood cells (RBC) and morphological variants -White blood cells (WBC) and related cells -Epithelial cells (squamous and non-squamous) -Casts (hyaline, granular, waxy, cellular, mixed) -Crystals (e.g., calcium oxalate, uric acid, triple phosphate, amorphous forms) -Bacteria (cocci, bacilli) -Yeast cells and fungal elements -Mucus, sperm, lipid droplets, and other particles The system shall support advanced RBC analysis, including: -Mean cell volume (MCV) -Red cell distribution width (RDW) -Abnormal RBC ratio 5. Automation and Intelligent Analysis -The analyzer shall incorporate advanced automated pattern recognition algorithms for particle identification -The system shall enable: vAutomatic image capture and analysis -Reduction of operator subjectivity -Improved diagnostic accuracy and consistency 6. Sample Handling and Capacity -Sample loading capacity shall be: -Minimum 60 samples (standard configuration) -Expandable to ≥200 samples with optional modules -The system shall support continuous loading and random access operation 7. User Interface and Data Management The analyzer shall include: -Digital display interface

				(touchscreen preferred) -Real-time visualization of results and images vThe system shall allow: - Storage and retrieval of patient data -Integration with Laboratory Information Systems (LIS) -Data export and reporting 8. System Integration -The system shall integrate: -Urine chemistry analysis - Sediment microscopy Results from both modules shall be combined into a single comprehensive report 9. Physical and Design Features -The unit shall have a compact, space-saving design suitable for laboratory benches -The system shall be designed for ease of maintenance and cleaning -Noise levels shall be appropriate for laboratory environments 10.Electricaln Requirements -Power supply: 220–240 V AC, 50/60 Hz -The system shall include protection against power fluctuations 11. Applications The system shall be suitable for: Hospital diagnostic laboratories 12. Additional Requirements -The analyzer shall ensure high accuracy, reproducibility, and reliability -The system shall support high-throughput workflow optimization -The equipment shall be delivered complete with all necessary accessories for operation including printer 13. Compliance and Certification CE-IVD certification is mandatory CE and/or FDA approval Manufactured under ISO-certified quality systems Certificate of Origin must be provided 14. Warranty and Support Minimum warranty period: 2 years Availability of local service support Supplier must ensure availability of spare parts and technical service 15. Training Requirements Comprehensive training package for laboratory staff must be provided Training shall include operation, maintenance, troubleshooting, and data analysis The supplier must submit a detailed and itemized list of all required reagents and consumables with pricing
32	Laboratory	Blood grouping / crossmatch setup	1	1. General Description The equipment shall be a fully automated blood typing analyzer designed for use in blood banks, hospitals, and clinical laboratories. The system must support automated processing of blood grouping, compatibility testing, and antibody screening using microcolumn gel technology. The analyzer shall perform all testing steps automatically, including sample identification, reagent handling, incubation, centrifugation, and result interpretation. 2. Scope of Application The system shall be capable of performing: üABO blood grouping üRh typing üIrregular antibody screening üCross-matching tests 3. Methodology Technology: Microcolumn gel agglutination technique Compatibility: 6-well and 8-well microcolumn cards 4. System Features 4.1 Automation üFully automated workflow from sample loading to result interpretation üAutomated sample identification, dilution, reagent dispensing, incubation, centrifugation, and reporting üCapability for continuous loading of samples, reagents, and cards üEmergency sample prioritization 4.2 Throughput Minimum throughput: 300-600 blood grouping tests per hour 100- 288 antibody screening tests per hour 4.3 Sample Handling Continuous rack loading system Support for primary sample tubes Barcode-based sample identification Liquid level detection and clot detection system 4.4 Reagent Management ü14 reagent positions üAutomatic reagent mixing üReal-time reagent level monitoring üBarcode identification of reagents üFlexible reagent container placement 4.5 Card Handling üAutomatic card identification via barcode üPre-centrifugation capability üCard expiry management system üMechanism to prevent cross-contamination 4.6 Processing System üParallel processing of multiple tests üContinuous and cyclic sample processing modes üAbility to run multiple test types

				simultaneously per sample 5. Mechanical and Functional Components - üAt least three independent robotic arms for sample and reagent handling - üMinimum two sampling channels - üIndependent card handling/gripping mechanism - üDedicated puncture module for simultaneous operations - üPermanent sampling probes with clog detection 6. Incubation and Centrifugation - üMinimum 4 independent incubation stations - üTemperature uniformity within $\pm 2^{\circ}\text{C}$ - üAt least 2 independent centrifuges oSpeed range up to 3800 RPM oCapacity: minimum 12 cards per centrifuge 7. Measurement and Accuracy - üSample volume range: 1 μL to 500 μL - üPrecision: o10 μL: $\text{CV} \leq 3\%$ o50 μL: $\text{CV} \leq 2\%$ - üHigh accuracy liquid handling system 8. Result Interpretation - üIntegrated high-resolution imaging system (CCD or equivalent) - üAutomated result interpretation software - üStorage of original test images for traceability - üClear visual and digital result reporting 9. Data Management and Connectivity - üUser-friendly software interface - üAutomatic data archiving and retrieval - üBidirectional communication with Laboratory Information Systems (LIS/HIS) - üBarcode integration for samples, reagents, and cards - üCapability to print labels including reagent details and expiry dates 10. Safety Features - üFully enclosed system design - üAudio-visual alarm system - üDetection of: - oInsufficient reagents - oWaste overflow - oProbe blockage - üContamination prevention mechanisms 11. Physical Specifications - üCompact, space-efficient vertical design - üApproximate dimensions: $\leq 1000 \text{ mm (W)} \times 800 \text{ mm (D)} \times 1900 \text{ mm (H)}$ - üWeight: $\leq 400 \text{ kg}$ 12. Environmental Requirements - üOperating temperature: 15°C to 30°C - üRelative humidity: 30% to 70% 13. Power Requirements Power supply: AC 220V $\pm 10\%$ Frequency: 50 Hz 14. Compliance and Standards Equipment shall comply with relevant international standards for: Medical laboratory equipment safety Electrical safety In vitro diagnostic devices (Certifications such as ISO, CE, or equivalent should be provided where applicable.) 15. Accessories and Deliverables The supplier shall provide: - üComplete system with all required modules - üStarter kit of consumables (cards, reagents, etc.) - üUser manuals and technical documentation - üInstallation and commissioning services - üOn site training for users - üWarranty and after-sales support 16. Warranty and Support - üMinimum 24 months warranty - üAvailability of technical support and spare parts - üPreventive maintenance plan The supplier must submit a detailed and itemized list of all required reagents and consumables with pricing
33	Laboratory	Blood bank refrigerator	1	Purpose-built blood bank refrigerator; capacity $\geq 300 \text{ L}$; controlled temperature $+2^{\circ}\text{C}$ to $+6^{\circ}\text{C}$; forced-air circulation; digital display; independent high/low temperature, power-failure and door-open alarms with battery backup; continuous chart/data logging; lockable door; stainless/aluminium drawers for blood bags; temperature uniformity $\pm 1^{\circ}\text{C}$; 220–240 V, 50 Hz; calibration certificate.
34	Laboratory	Laboratory refrigerator	2	Laboratory refrigerator; capacity $\geq 300 \text{ L}$; $+2^{\circ}\text{C}$ to $+8^{\circ}\text{C}$; forced-air circulation; microprocessor controller and digital display; high/low temperature, door-open and power-failure alarms; min/max memory and USB/data logger; lockable door; adjustable shelves; tropicalized refrigeration; 220–240 V, 50 Hz; calibration certificate.
35	Laboratory	Deep freezer	1	Laboratory deep freezer; upright/chest as appropriate; capacity $\geq 300 \text{ L}$; operating temperature -20°C or lower (adjustable approx. -10 to -30°C); digital controller; high-temperature and power-failure

				alarms; lockable lid/door; baskets/shelves; data-logging port; tropicalized compressor; 220–240 V, 50 Hz; calibration certificate.
36	Laboratory	Micropipette set	2	Calibrated adjustable single-channel micropipette set covering at minimum 0.5–10 µL, 10–100 µL and 100–1000 µL; ISO 8655 calibration certificates; autoclavable lower assemblies; low-force ergonomic design; tip ejectors; universal-tip compatibility; bench stand and starter tips included.
37	Laboratory	Plastic Graduated Cylinder	5	Graduated measuring cylinder, autoclavable polypropylene; Class B or better; molded graduations; stable hexagonal base; chemical-resistant; assorted capacities 100, 250, 500 and 1000 mL; accuracy compliant with ISO 6706 or equivalent.
38	Laundry	Washing and drying machine (70 kg)	2	Industrial barrier/commercial washer-extractor with integrated or paired dryer, nominal dry-linen capacity ≥70 kg per cycle; stainless-steel drum; programmable infection-control wash cycles including ≥60–90°C; automatic chemical dosing interface; high extraction speed; safety door interlock; dryer with temperature/time control and lint filtration; 3-phase 380–415 V, 50 Hz; water/steam/gas requirements stated; installation, commissioning and staff training included.
39	Laundry	Washing machine (70kgs)	1	Industrial washer-extractor, dry-linen capacity ≥70 kg/cycle; stainless-steel inner/outer drum; programmable wash, rinse and thermal-disinfection cycles; automatic detergent/chemical dosing interface; high-speed extraction; door interlock and imbalance protection; hot/cold water connections; 3-phase 380–415 V, 50 Hz; installation, commissioning and operator training included.
40	Laundry	Laundry trolley	6	Surgery – Laundry Trolley – Technical Specifications Type: Mobile hospital laundry/linen trolley. Intended use: Collection and transportation of clean or soiled linen within operating theatres, CSSD, wards, and hospital laundry services. Capacity: 100–250 L. Construction: Heavy-duty 304 stainless steel frame with corrosion-resistant finish. Laundry bag: Removable, waterproof, leak-proof, heavy-duty PVC-coated fabric or washable canvas bag. Bag support: Stainless steel ring/frame with bag-retaining clips or elastic securing system. Lid: Foot-operated or manual hinged lid (preferred) to minimize cross-contamination. Mobility: Four 100–150 mm swivel castors, minimum 2 lockable, non-marking and quiet operation. Load capacity: Minimum 100 kg. Handle: Ergonomic push handle integrated into the frame. Base: Reinforced base with bumper protection to prevent wall damage. Cleaning: Smooth surfaces resistant to hospital disinfectants and easy to clean. Safety: Rounded corners, anti-corrosion construction, stable anti-tip design, and secure bag retention.
41	Laundry	Drying racks / linen handling system	4	Hospital linen drying/handling rack system; SS304 stainless steel or corrosion-resistant coated metal; mobile or fixed modular design; multiple rails/shelves; smooth rounded edges; load ≥100 kg per rack; washable/disinfectable; lockable castors if mobile; dimensions to suit laundry workflow and available space.
42	Advanced Support - Dialysis	Hemodialysis Machine	2	Fully computerized bicarbonate hemodialysis machine; adult/pediatric capability; volumetric balancing system; blood flow rate approximately 0–500 mL/min; dialysate flow 300–800 mL/min; arterial and venous pressure monitoring; air bubble detector; blood leak detector; transmembrane pressure monitoring; conductivity and temperature monitoring; ultrafiltration control; heparin pump; emergency blood-pump stop; self-test and alarm system; single-needle capability preferred;

				adjustable UF rate; online clearance monitoring/Kt/V preferred; compatible with standard bicarbonate and acid concentrates; battery backup; 220–240 V, 50 Hz.
43	Advanced Support - Dialysis	Reverse Osmosis (RO) Water Treatment System	1	Medical-grade dialysis RO system designed for continuous production of dialysis-quality water; capacity sized for 2 dialysis machines plus future expansion; pretreatment with sediment and activated-carbon filtration; water softener; RO membrane system; conductivity/TDS monitoring; pressure gauges; automatic flushing; product-water storage/distribution system where required; alarms for high conductivity, low pressure and system failure; sanitary piping suitable for dialysis; UV or ultrafiltration stage where required; automatic shutdown; preferably compliant with ISO 23500/AAMI water-quality requirements.
44	Advanced Support - Dialysis	Dialysis Chair	2	Heavy-duty electric dialysis/reclining chair; electrically adjustable backrest and leg/foot section; Trendelenburg position; minimum patient capacity approximately 150–200 kg; adjustable height preferred; padded, easy-to-clean, antimicrobial/medical-grade upholstery; removable/adjustable armrests suitable for vascular access; IV pole/accessory mounting; emergency positioning; lockable casters; manual emergency release in case of power failure.
45	Advanced Support - Dialysis	Dialysis Concentrate/Bicarbonate Mixing System	1	System for preparation/mixing of dialysis bicarbonate concentrate; stainless-steel or medical-grade construction; automated or controlled mixing; suitable mixing tank capacity for the intended dialysis workload; accurate water/concentrate ratio; conductivity monitoring; temperature monitoring where applicable; circulation/agitation system; easy cleaning and disinfection; drain connection; level indicator; alarms for incorrect concentration or system fault; compatible with the dialysis machines specified.
46	Advanced Support - Dialysis	Portable/Backup RO System	1	Compact mobile dialysis-water RO system; suitable for emergency/backup operation of dialysis equipment; minimum production capacity sized for the intended machine(s); sediment and carbon prefiltration; softening/pretreatment as required; RO membrane; conductivity/TDS display; pressure monitoring; automatic flushing; high-conductivity alarm; automatic shutdown; wheeled/mobile frame; 220–240 V, 50 Hz; suitable for connection to standard dialysis water distribution.
47	Advanced Support - Dialysis	Patient Scale	1	Medical weighing scale for dialysis patients; capacity at least 150–200 kg; accuracy preferably ± 100 g; digital display; tare function; robust platform; non-slip surface; easy-clean construction; low-battery/overload indication; calibrated for clinical use.
48	Advanced Support - Dialysis	Vital Sign / Patient Monitor	2	Multiparameter monitor with ECG, SpO ₂ , non-invasive BP, pulse rate and temperature; preferably 5- or 6-lead ECG; adult/pediatric capability; adjustable BP intervals; large display; audible/visual alarms; trend storage; rechargeable battery; USB/network connectivity preferred; compatible with dialysis-unit monitoring; 220–240 V, 50 Hz.
49	Advanced Support - Dialysis	Emergency/Crash Trolley	1	Mobile emergency trolley with 4–6 drawers; central locking system; lockable antistatic casters; defibrillator shelf; IV pole; oxygen-cylinder holder; CPR board; adjustable accessory rails; sharps container holder; waste container; organized compartments for emergency drugs and equipment; easy-clean, corrosion-resistant construction.

50	Advanced Support - Dialysis	Syringe Pump	2	Microprocessor-controlled infusion/syringe pump; compatible with common syringe sizes; flow range approximately 0.1–1,200 mL/h depending on syringe; high/low occlusion alarm; air-in-line detection; near-empty/end-of-infusion alarm; anti-bolus function; KVO function; programmable infusion volume/time; rechargeable battery; drug library preferred; pole mounting; 220–240 V, 50 Hz.
51	Advanced Support - Dialysis	Infusion Pump	2	Volumetric infusion pump suitable for IV therapy; flow range approximately 0.1–1,200 mL/h; accuracy preferably $\pm 5\%$ or better; occlusion, air-in-line, door-open and end-of-infusion alarms; anti-free-flow protection; KVO function; programmable volume/time; rechargeable battery; compatible with standard IV sets; pole clamp; event/history memory; 220–240 V, 50 Hz.