Ref: AIIMSM-ADMN/PROC(CPPP)/44/2024 – Procurement AIIMS MG **Date: 22-09-2025**

Call for Objection

Subject: Inviting comments/objection, if any before declaring proprietary article for procurement of "**Automatic Capillary DNA Sequencer and Ancillary Equipment's and Consumables**" for the Department of Clinical Microbiology AIIMS Mangalagiri.

Clinical Microbiology Department, AIIMS Mangalaigiri has to procure "**Automatic Capillary DNA Sequencer and Ancillary Equipment's and Consumables**" through Proprietary Article basis.

The proposal submitted by M/s Thermo Fisher Scientific who are the sole manufacturer and sole provider of the Applied Biosytems™ SeqStudio ™ Flex 24 cap Genetic Analyzer of this item along with Proprietary Article Certificate are attached & uploaded on Institute website.

The above documents are being uploaded for open information to submit objections, comments if any from any manufacturer/supplier before declaring proprietary article of the said equipment/items to be procured, within 10 days (i.e. 02/10/2025) from the date of issuance/uploading of the notification.

The objection should be raised in the technical compliance sheet as enclosed in Annexure -I, if any Firm claiming suitability of their product with respect to specification mentioned.

The comments should be sent to the office of Procurement Cell, Room no: 2151, Logistic block at AIIMS Mangalagiri in a sealed envelope with above reference on or before 02/10/2025 up to 05:00 PM from the date of uploading on institutional website, failing which it will be presumed that any other manufacture/vendor is having no comment to offer and case will be decided on merits.

-Sd-
AAO (Procurement)
AIIMS Mangalagiri

P-3 Form

(To be attached with P-2 form for Proprietary items)

AIIMS, Mangalagiri

PROPRIETORY ARTICLE CERTIFICATE

It is certified that the item **Automatic capillary DNA sequencer** required in the P-2 Form should be purchased from **ThermoFisher Scientific.** To the best of my knowledge, **Labosys Instruments India Private Limited, Smart Avenue Towers, 3rd Floor, Plot No:78, Sy: No 587,588,589, Alwal Hills, Old Alwal, Opp: Chaithnaya School, Secunderabad - 500010,** is exclusive authorized distributor and service provider for Automatic capillary DNA sequencer - **ThermoFisher Scientific** of the sole manufacturer.

No other make/brand will be suitable for our purpose for the following reasons:-

a. The system uses internally uncoated capillaries (an array of 24 capillaries, 50 cm and 36 cm long) with Performance Optimized Polymers, considerably enhancing capillary life and run time. The capillary arrays have a unique built-in frame and retractable slider for easy installation.

b. The system can run "one polymer, one array" for both sequencing and fragment analysis applications, enabling the user to seamlessly switch between them, even on the same plate.

c. Remote monitoring via a mobile or networked device allows for remote monitoring and data visualisation.

These features are important for automated capillary DNA sequencers and, to the best of our knowledge, are not available in any other product.

Debabrata Dash 25/11/24

Signature of Indenter with date and Stamp

Dr. Debabrata Dash,
MBBS, MD(Microbiology), DNB, MNAMS
Assistant Professor
Department of Microbiology
All India Institute of Medical Sciences
Mangalagiri, Andhra Pradesh

Recommendation by HOD:

Dr Sumit Rai MD, PDCC [I.D.]
Professor and Head
Clinical Microbiology AIIMS-MG

Signature of Head of Department /Section

N.B.: The indenter before recording the above certificate should satisfy himself that the article is genuinely proprietary and manufactured under patent laws.

ThermoFisher
SCIENTIFIC
The world leader in serving science

Thermo Fisher Scientific
Life Sciences Solutions Group
180 Oyster Point Boulevard
South San Francisco, CA 94080
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PROPRIETARY CERTIFICATE

This letter is to certify that Applied Biosystems™, a part of Thermo Fisher Scientific, is the sole manufacturer and sole provider of the Applied Biosystems™ SeqStudio™ Flex 24-cap Genetic Analyzer (Part No. A53630, A53631, A56362, and A56534) having US patent number 5171534, 5332666, 5567292, 5821058 has the following proprietary/unique features combined in a single instrument system:

1. The system uses internally uncoated capillaries (an array of 24 capillaries, 50 cm and 36 cm in length) with Performance Optimized Polymers, which enhance the capillary life and run time considerably. The capillary arrays have a unique built-in frame and retractable slider for easy installation.
2. The system has 4-plate capacity, which can accommodate 96-well Standard and Fast plates, 8-tube Standard or Fast strips and 384 well plates, and provides complete walk away automation.
3. The system is capable of continuous plate loading and sample reprioritization.
4. The system is built with a single-line 505 nm, solid-state long-life laser that utilizes a standard power supply and requires no heat removal ducting.
5. The detection system is composed of a spectrograph and a peltier-cooled charged coupled device (CCD) and provides multicolor detection. The system detects and analyzes 6 fluorescent dyes simultaneously.
6. The system is capable of running 5 and 6-dye chemistry for fragment analysis applications and uses the sixth generation BigDye Terminator version 1.1 & 3.1 chemistries and BigDye Terminator Direct chemistry for sequencing applications.
7. Software generated "virtual filters" for fluorescent detection readily accommodate new dyes and applications as they become available without requiring changes in the optical hardware.
8. After initial manual spectral calibration, the system has an autospectral calibration algorithm that updates the dye matrix with every injection, as needed, allowing optimized deconvolution of the dye spectra (some exceptions may apply).
9. The system has an off scale peak recovery algorithm to recover data from saturated pixels for fragment analysis runs (some exceptions may apply).
10. The system is capable of running "one polymer one array" for both sequencing and fragment analysis applications, enabling the user to seamlessly switch between both applications, even in the same plate.
11. The on-board computer and integrated touchscreen enable stand-alone instrument control, data collection, quality control monitoring and auto-analysis of data.
12. The pre-packaged on-instrument consumables and capillary arrays are each designed with an RFID (Radio Frequency Identification) tag integrated into the label to track key consumables data.
13. The integrated barcode reader facilitates tracking of samples using barcoded plates, and auto-links plate files through the barcoded workflow.
14. *(optional)* The Plate Manager software – a desktop or cloud application for creating and sending plate files directly to an instrument.

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15. *(optional)* Security, Audit and Electronic signature features that assist with certain 21 CFR Part 11 requirements.
16. The system generates files in industry standard ABI format for sequencing and FSA format for fragment/HID analysis. Sample files are compatible with secondary analysis applications such as Sequencing Analysis Software, Variant Reporter™ Software, Minor Variant Finder Software, GeneMapper™ Software, SeqScape™ software, and GeneMapper™ ID-X Software version 1.7 (HID analysis) programs. For online analysis ecosystem (RUO use only), sequencing files can be analyzed with the Applied Biosystems™ Analysis Modules powered by Thermo Fisher Cloud, including Quality Check, Variant Analysis and Next-generation Confirmation modules.
17. Remote monitoring via a mobile device or networked device allows for remote monitoring and data visualization.
18. Flexible connectivity flexibility via Local Area Network (LAN), Wi-Fi, USB, and is LIMS compatible.
19. A Digital Support Ecosystem which offers Smart Help and Remote Support features for fast and secure issue resolution in addition to traditional on-site service.

All the features mentioned above are incorporated in SeqStudio™ Flex 24-cap Genetic Analyzer. No Sanger Sequencer (DNA Sequencer) other than SeqStudio™ Flex 24-cap Genetic Analyzer offers all the unique features mentioned above in a single system.

For **Thermo Fisher Scientific.**

Murali Venkat
Director (Product Mgmt), CE Instrument & SW

Dr. Debabrata Dash,
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Dr Sumit Rai MD, PDCC (I.D.)
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1. **Technical specifications for Automatic capillary DNA sequencer: 3500 XL Genetic Analyzer**

Quantity: 01

1. **DNA Sequencing System:**

   A fully automated capillary electrophoresis-based DNA analysis system using the Sanger method with fluorescence-based detection, suitable for DNA sequencing, genotyping and fragment analysis.

2. **Chemistry:**
   A fully automated multi-capillary system that works based on dye-terminator chemistry (Sanger chemistry) and laser-induced fluorescence.

3. **Capillaries:**

   At least 24 capillaries work in parallel to achieve throughput.

4. **Capillary Length compatibility:**

   Minimum 50 cm.

5. **Detectors:**

   The system must be able to detect and analyse at least six or more fluorescent dyes simultaneously to analyse DNA fragments and achieve better multiplexing capabilities. The system software should support to run sequencing and fragment analysis applications on the same plate. The system should have a 505nm solid-state long-life laser.

6. **Sequence output:**

   Should be able to generate read lengths >500 bp per run with QV 20.

7. **Applications and Sample Capacity:**

   The system should be capable of doing Sanger sequencing applications (re-sequencing for confirmation NGS, indels, and heterozygote detection) and fragment analysis applications (microsatellite analysis). The system should facilitate continuous plate loading and sample reprioritization features with walkaway operations for 4, 96/384 plates. Should be able to process a sample volume of 10-20 µL.

8. **Systems and software:**

   A suitable computer system with pre-installed software should be supplied.

   Application Software: Necessary software for sequencing and fragment analysis.

   The system should be enabled with a one-button start-up, autocalibration, and onboard learning centre. Application specialists and trained engineers should provide comprehensive training in operation, handling, maintenance and data analysis during installation. The Vendor/Authorized Representative should have their own trained support team to provide application support as needed during the warranty period. The supplier must have a qualified technical and application support team based in India. All manuals such as operation, service and maintenance with all electronic circuit diagrams must be provided.

9. The system should be enabled with Radio-Frequency identification technology to track key Consumables data without the requirement of an external Barcode reader.

10. The system should be provided with one polymer and one array feature for sequencing and fragment analysis

11. Sequencer Software should provide reference-based analysis of sequencing reactions for mutation detection and analysis, SNP discovery and validation, sequence confirmation.

12. Gene mapping software should be a flexible genotyping software that enables DNA sizing and quality allele calls. This software should specialize in fragment analysis and sequencing applications like multi-application functionality including Amplified Fragment Length Polymorphism (AFLP), Loss of Heterozygosity (LOH), microsatellite, SNP genotyping analysis

13. Variant Reporter Software should be reference-based and non-reference-based analysis of Sequencing reactions for mutation detection and analysis, SNP discovery and validation, and sequence confirmation.

14. The system should be equipped with the latest model of fully compatible computer system.

15. The vendor should supply the reagents for 1000 samples including primer and probes and also machine maintenance reagents for 1 year.
16. The vendor supplying the instrument should have its application support laboratory in India for local & efficient after-sales service support.
17. Instruments should be provided with 5 Year Warranty & 5 Year CMC after the warranty period i.e from the 6th year to the 10th year.
18. The vendor should provide IQ, OQ, and PQ documents.

The below mention specifications are Ancillary equipment necessary for an Automatic capillary DNA sequencer:

2. Technical specifications for -80 Ultra Freezer Refrigerator:

Quantity: 01

1. The freezer capacity should be 549-liter capacity.
2. The freezer must be constructed using 1" thick vacuum panel insulation in conjunction with environmentally friendly water-blown foam.
3. The door gasket must provide 7 independent insulation zones along with 4 points of contact to ensure sample security and a Silicone-Based Gasket Seal with an Electrical Cabinet Perimeter Heater.
4. The freezer shall be painted with high impact, scratch-resistant powder coat finished interior and exterior to ensure long-term viability and enhanced temperature uniformity.
5. To reduce condensation, the perimeter heater shall be on the door side not on the cabinet side to limit heat introduction into the sample storage area.
6. The thermal breaker shall be made of plastic to limit heat leakage into the cabinet.
7. Door latch allows one-handed opening and closing. Handle must include door key lock as well as padlock provision for added security.
8. The freezer shall have 4 internal storage compartments with a minimum of 4 polystyrene-insulated inner doors to ensure sample security. Inner doors should have no latches or external magnets and must be removable for easy cleaning without the

use of tools.

9. The freezer shall have a Maximum Capacity per Shelf: of 165 lbs. (73.4 kg).
10. The freezer shall have an Instrument current rated 6.5amp.
11. The freezer shall have an automatic heated pressure equalization port which allows for rapid re-entry to the cabinet.
12. The freezer shall have Interior Dimensions (H x D x W) 51.2 x 28.3 x 23.1 in. (1300 x 719 x 587 mm).
13. The freezer shall have Exterior dimensions (H x D x W) 78 x 38.5 x 32.5 in. (1981 x 978 x 826 mm).
14. The freezer shall have two-inch access ports as standard.
15. The freezer shall have an RS485 output, dry contacts and 4-20mA output for remote monitoring purposes.
16. The freezer must have the capability of being cloud-connected for remote system monitoring.
17. The freezer door must open at least 180 degrees for easy sampleaccess.

CAPACITY

18. The freezer shall hold 400 - 2 boxes or 40000 -2ml Vials.

CONTROLS

19. The freezer must incorporate an H-Drive Information Center (HIC).
20. The freezer shall incorporate set-point security.
21. The freezer interface shall incorporate icons to advise users of alarm status for warm or cold excursions, door ajar, or power failure.
22. The freezer interface shall have a warm alarm test function.
23. The freezer interface shall include an icon to communicate service warnings.
24. The freezer interface shall have a numerical indication of operating temperature.
25. The freezer interface shall allow the user to adjust the operating and alarm setpoints.
26. The freezer interface shall allow for the use of an offset value to be used for calibration.
27. The freezer shall have the option of either a liquid nitrogen or carbon dioxide backup system.
28. The freezer must recognize if line voltage and frequency do not match the freezer specification and alert the user.
29. The freezer must work online voltage of 208-230V/ 50Hz and have an instrument current rating of no more than 5.3Amps.
30. The power management system shall show incoming line voltage, indicate low or high line voltage, and provide voltage correction of up to +/- 10% of the rating.
31. The freezer shall show all power interruptions and provide audio and visual notifications.
32. The freezer shall have an adjustable power recovery time delay that allows the user to set a time delay between 1 second and 20 minutes after power failure.
33. The freezer shall have an adjustable extreme ambient alarm to protect against unsafe ambient operating conditions. Ambient alarm shall have a visual and audible notification when active.
34. The freezer shall display the temperature in Celsius or Fahrenheit.
35. The freezer shall notify temperature excursions, including actual temperature, warmest temperature, and coldest temperature. This indicator shall be resettable by the user.
36. Freezer shall notify customers to perform preventative maintenance tasks including filter change and backup battery test.

37. The display shall notify the user if a power failure, high-temperature, or low-temperature alarm occurs.
38. The freezer must recognize if line voltage and frequency do not match the freezer specification and alert the user.

THERMAL PERFORMANCE:

39. The freezer of400 2" box capacity shall control the temperature to within an average peak variation from a setpoint of +5.7 / -3.5 at a -80C set point in an empty freezer of 230V/50Hz voltage supply.
40. The freezer should have a pull-down time from ambient 20°C to -80°C to 5.4 hrs.
41. Empty freezer of 400 2" box capacity shall recover from door opening to -75°C set point in under 14 minutes. A supplier must provide test data to verify freezer performance.
42. The empty freezer of 400 2" box capacity should not warm to -50°C from -80°C set point in under 241 minutes during a power failure in a 20°C room

SOUND:

43. Freezers must maintain a sound level no louder than 51db.

REFRIGERATION SYSTEM

44. The freezer shall use only natural, commercially available refrigerants (Hydrocarbon) with no special blends required.
45. Freezer refrigeration should be a two-stage cascade System with an industrial-rated compressor and hermetically sealed.
46. The freezer shall utilize single-speed controls to optimize temperature performance and energy.
47. The freezer refrigeration system shall incorporate a brazed plate heat exchanger. The heat exchanger shall be placed in a thermal box in the deck of the freezer to optimize freezer storage capacity.
48. Induction brazing shall be used on refrigeration connections to minimize leaks.
49. The refrigeration system shall contain a liquid line/suction line heat exchanger to ensure freezer temperature stability.

REGULATORY

50. The freezer must be built to and contain the registration mark for UL, CUL, and CE standards for safety and performance.
51. The system should be provided with 5 Year Warranty & 5 Year CMC after the warranty period i.e from the 6th year to the 10th year.
52. The vendor should provide IQ,OQ, and PQ documents.

3. **Technical specifications for -20 Freezer Refrigerator:**

Quantity: 02

1. The freezer must have a solid single door.
2. The freezer must incorporate water-blown foam.
3. The freezer must have Mercury-free LED interior lighting.
4. The freezer must have an externally mounted internal light switch.
5. The freezer must have a capacity of 600-700L, Freezer must have set-point security.
6. The freezer must have a set of four casters standard installed in the factory.

7. The freezer must have a digital temperature display.
8. The freezer must have a temperature resolution to 0.1°C, Peer variation should be +/- 3 deg C.
9. The freezer should come with an RTD (1000 ohm shielded Platinum RTD) sensor.
10. The freezer should use only green gases- HC-based refrigerants.
11. One minute door opening recovery to -20 deg C should be within 20 mins.
12. The freezer must have adjustable cold and warm alarms.
13. The freezer must have both audible and visual alarms.
14. The freezer must have a keyed on/off power switch and must have a door-ajar alarm and icon.
15. The freezer must have a service alarm and icon, Freezer must have a low battery alarm.
16. The freezer must have a graphic thermometer, Freezer must have (4) internal shelves standard.
17. The freezer must have a standard rear access port.
18. The freezer must have standard remote alarm terminals standard.
19. The freezer must be cULus listed and Energy Star certified.
20. The freezer must be Energy Star-rated and certified to the laboratory refrigeration standard.
21. The freezer must incorporate, variable capacity compressor.
22. The freezer must operate at less than or equal to 53 dba.
23. The freezer must support GMP Clean Room Class A / ISO 6 (ISO EN 14644-1)
24. The service organogram should be attached to the escalation matrix.
25. Instruments should be provided with 5 Year Warranty & 5 Year CMC after the warranty period, i.e. from the 6th year to the 10th year.
26. The vendor should provide IQ, OQ, PQ documents.

4. Technical specifications for Refrigerator 4-8 ° C:

Quantity: 02

1. The refrigerator must have Positive forced-air circulation.
2. Refrigerator must incorporate water-blown foam.
3. The refrigerator must have bright LED interior lighting.
4. The refrigerator must have a capacity of 650-700L.
5. The refrigerator must have a set of four casters standard installed in the factory.
6. The refrigerator must have a digital temperature display.
7. The refrigerator must have a temperature resolution of 0.1°C.
8. Peer variation should be +1.5/-3.0 deg C.
9. One minute door opening recovery to 5deg C should not exceed 5mins.
10. The refrigerator must have adjustable cold and warm alarms.
11. The refrigerator must have a door ajar alarm and icon.
12. The refrigerator must have a low battery alarm.
13. The refrigerator must have (4) internal shelves standard.
14. The refrigerator must have a standard 1” rear access port standard.
15. Refrigerator must have standard remote alarm terminals standard
16. The refrigerator must be cULus listed.
17. The refrigerator must be Energy Star-rated and certified to the laboratory refrigeration standard.
18. Refrigerators must use environmentally friendly HC refrigerants.
19. Refrigerator must operate at less than or equal to 50 dba.
20. The refrigerator must support a standard settable range of +4C to +7C.
21. The refrigerator should have a Heat-free defrost.

22. The refrigerator should have Temperature, door ajar, and power failure alarms.
23. The refrigerator should have a Self-closing door with 90° stop.
24. The refrigerator should be compatible with popular E-lock adapters.
25. The service organogram should be attached to the escalation matrix.
26. Instruments should be provided with a 5-year warranty & 5 Year CMC after the warranty period i.e. from the 6th year to the 10th year.
27. The vendor should provide IQ, OQ, and PQ documents.

5. Technical Specification for Gel Imaging and Documentation Unit:
Quantity:01

1. The system should image and analyze chemiluminescent western blots and stained Protein (Coomassie, silver, sypro, etc), DNA (EtBr, Sybr, etc) gels
2. The system should have a Smart Exposure Technology which rapidly determines optimal exposure time. It should help in minimizing the potential for over- or underexposed images, and the need to repeat exposures to get the desired signal
3. The system should have a sensitive 9.1 megapixel (MP) cooled CCD camera
4. The system should have a Large Intuitive Touch Screen Interface with a 12.1" Multi-Touch, Capacitive LCD screen
5. The system should have a Large Sample Area and should accommodate 4 or more gels/Blots at the same time. The dimensions of the imaging area should be (W) 230mm x (D) 184mm.
6. The system should do Auto Zoom and Auto Focus and Mechanical Zoom is 2X. It also should have aligned the sample automatically whereas the sample tray should have an automatic rotation of +/-10°.
7. The system should utilize a transilluminator based on green LEDs.
8. The system should be upgradable to fluorescence with a capability to hold a 7-position Filter Wheel which can do the imaging for visible to NIR range.
9. The system should have onboard Auto Analysis software for instantaneous lane and band identification and molecular weight marker overlay. Quantitation and densitometry analysis should also be performed directly on the instruments
10. The system should have a mechanical tray to physically rotate a sample aligning it with the camera before image acquisition
11. The system should have cloud connectivity.
12. Instruments should be provided with 5 Year Warranty & 5 Year CMC after the warranty period i.e from the 6th year to the 10th year.
13. The vendor should provide IQ, OQ, and PQ documents.

6. Specifications of automated electrophoresis analysis system:
Quantity:01

1. Walkaway sample processing using ready-to-run gel cartridges: system should use ready- to-run gel cartridges containing 12 separation micro-channels with a built-in gel matrix for fast high-resolution DNA fragment or RNA separation. This should minimize the time required for experiment setup and streamline workflow.

2. Ease of operation, eliminating the need for extensive user training: Operating the system should consist of just a few steps — load the gel cartridge of choice, load the buffers place the sample tubes into the system, and select the process profile to be used. No need for tedious gel preparation or extensive user training, facilitating the integration of the system into your daily routine

3. Flexible throughput options: The system processes up to 96 samples per run. Samples should be accepted in both 12-well strip format as well as 96-well plate format

4. Fast analysis in as little as 3–10 minutes: the system should streamline the workflow in your lab by minimizing analysis time; 96 samples with a fragment size of 15 bp to 3 kb are processed in less than 30 minutes

5. High resolution: Ready-to-use cartridge along with the system should allow the analysis of DNA fragments between 15 bp and 10 kb. Fragments of less than 500 bp in size can be separated with a resolution of 3–5 bp, providing higher confidence in data interpretation compared to conventional high-quality agarose gel electrophoresis

6. Minimal sample consumption: Sample consumption should be less than 0.1 µl per analysis, saving precious sample for further downstream analysis, such as sequencing

7. Robust results with nucleic acid concentrations as low as 5 pg/µl for DNA and 50pg/ul for RNA: With a detection sensitivity of 0.1 ng/µl DNA in undiluted PCR solution, the system should enable generation of more robust results with less sample input material

8. System should have provision to attach external N2 Gas or equivalent required to purge Gel from cartridge to capillaries during the Run and avoid use of chip based consumables

9. Powerful software solution supporting compliance with 21 CFR part11 regulations should be an integral part of the system and should be powerful and intuitive software. The software should provide user-friendly tools for data collection, data analysis, generation of comprehensive reports, and easy data export

10. Guided wizard should simplifies run setup and data analysis:- Software should be user friendly for setting up of the Run and Data Analysis with following features, System should be provided with laptop required for software use

    A. Complete process profiles for performing a run right through to data report and export should enable standardized sample analysis and reduce the amount of user training required

    B. Unauthorized access to the software is prevented by the user management function and a password protected login

    C. The software should provide flexibility to view data in electropherogram and gel-image format

    D. All-in-one analysis for multiple data should set and simplify sample evaluation and a unique software algorithm should allow a variety of peak properties to be calculated, including peak number, peak height and width, as well as the peak area, which are displayed in result tables

    E. Comprehensive data reports can be easily generated or exported to fulfil documentation needs

11. Wide range of applications: - System should offers a broad range of applications. Preprogrammed methods in combination with the suitable gel cartridge allow separation and analysis of single or multiplex PCR fragments, restriction digested DNA or DNA NGS library Analysis , RNA QC check and SSR Markers

12. Warranty & Training: System should be quoted with 5 Year Warranty & 5 Year CMC after warranty period i.e. from 6th year to 10th year, Manufacturer should provide training to 2-3 users post installation of the system.

13. IQ, OQ, PQ documents should be provided by the vendor.

7. **Technical Specification for Water Purification System:**

Quantity:01

1. It should be a standalone single-stage combined system (Type 1 & 2) to produce HPLC, LCMS, ICPMS, Endotoxin and bacteria-free ultrapure water Type 1 and Type 2 directly from the potable water supply.

2. The system should be capable of providing ASTM Type I (18.2 Mega ohm resistivity) Water and have the UF cartridge to cater to biological applications and analytical applications, specifically ICPMS and HPLC Applications.

3. The system should be capable of providing ASTM Type II (1-10 Mega ohm resistivity) Water from potable tap water

4. The system has feed water acceptance level of Conductivity up to 1500 µS/cm or more, Fouling Index (SDI) > 3 and Total Chlorine less than 0.1 ppm or more

5. The system should have an Imported pretreatment kit with a 1µm filter, Harness Stabilizer and Carbon.

6. The system should have an RO Flow rate of 16Ltr/Hour or more

7. Type 1 water flow rate should be equal to more than 1 ltr/Minute

8. The system should have only a single cartridge-based system in addition to RO to reduce the consumables cost.

9. The Reverse Osmosis module is made up of thin film composite polyamide RO membrane with a rejection rate of 94 - 99%

10. The system has fed a water-specific Purification pack before the UV lamp consisting of mixed bed ion exchange resin/ micro filter / activated carbon to ensure better purification and longer life of the cartridges.

11. The system should be based on DI-based technology for good quality Type 2 water.

12. The system should have dual-wavelength 185/254 nm for UV-oxidation to reduce the content of microorganisms and their metabolites to ensure the quality of Type 1 water

13. UF life must be 2 years to give RNAse/DNAse/Pyrogen free water to avoid regular cost.

14. Type 2 water is available from separate imported conical bottom storage tanks. Tank Water should have the recirculation feature to recirculate through a High Purity Cartridge to maintain purity and avoid stagnancy.

15. Imported Reservoir of equal or more than 60 Ltrs conical bottom PE tank with auto cutoff level sensors. The stored water level can be adjusted as the lab needs to change

16. An additional hand dispenser to dispense type 2 water is required.

17. If required system should be compatible with onsite IQ/OQ (Onsite Validation)

18. Production rate of Purified Water @ 16 ltrs/hr or more

19. Chinese makes will not be entertained to keep the quality and longevity maintained.
20. Instruments should be provided with 5 Year Warranty & 5 Year CMC after the warranty period i.e from the 6th year to the 10th year.
21. The vendor should provide IQ, OQ and PQ documents.

Ultra Pure (Type I) water:

Resistivity……18.2 Mega Ohms.cm @ 25 Degree C.
TOC ……..…… < 5ppb
Bacteria …… < 0.01 cfu /ml or better
Particulates(.22 micron)…… < 1 /ml
RNAse……...< 0.003 ng/ml or better
DNAse……< 0.4 pg/ml or better
Endotoxin…….0.001 EU/ml or better
Flow rate ……≥ 1 Ltr/Minute.

Ultra Pure (Type II) water:

Resistivity…… > 1 Mega Ohms.cm @ 25 Degree C.
TOC ……..…… < 30ppb
Production…… ≥ 16Ltr/hr

8. Technical specification for Polymerise chain reaction machine(Real Time): Quantity:02

1. A dedicated multicolour Real-Time PCR system (excitation and emission) with
The latest generation Peltier-based 96-well plate/tube in-built PCR to support:
a. Gene-Expression analysis,
b. Pathogen Quantitation,
c. SNP Genotyping,
d. Plus/Minus Assays that utilize internal positive control,
e. Dissociation Curve Analysis,
f. Multiplexing and complete End-Point Assays.
2. Bright White LED for better excitation
3. Six decoupled filters with minimum 6plex multiplexing (Six targets in one tube).
4. The system should be capable of running 2 to 6 individual programming in the same run with different sets of temperatures.
5. Max block ramp rate should be 6.5°C/sec or better with temp uniformity of 0.4°C and sample ramp rate of 3.5°C/sec or better.
6. CMOS/CCD Camera for detection, I.e. single image capturing. The data collection and instrument control software should provide a multi-component algorithm for the deconvolution of
multiple dyes, enabling the addition of future dyes without changing the hardware.
7. Peltier-based 96 well with 0.2ml block able to run total reaction volume of minimum 10 uL to 100 uL
8. The system should be calibrated with ROX dye required as passive reference dye.
9. The system should be able to run in standalone mode with at least 10 GB onboard memory.
10. The system should run in Fast and standard mode.
11. The vendor should provide the option to remote monitor runs, and easily access your data with the help of the cloud.
12. Application software like dedicated primer and probe design software as well as

relative quantitation analysis software to analyse multiple 96-well-plates of data simultaneously must be included as standard supply in the quoted price.

13. Computer: A business line computer (either notebook or tower)/Laptop should be provided with the system.
14. Dyes should be compatible with FAM/SYBR Green, VIC/JOE/HEX/TET, ABY/NED/TAMRA/Cy3, JUN, ROX/ Texas Red, Mustang Purple TM, Cy5/ LIZTM, Cy5.5
15. A training kit on RT PCR should be provided along with the system.
16. Warranty & Training: The system should be quoted with a 5-year warranty & 5-year CMC after the warranty period i.e. from the 6th year to the 10th year, Manufacturer should provide training to 2-3 users post installation of the system.
17. The vendor should provide IQ, OQ, and PQ documents.

9. Technical Specifications for Polymerization Chain Reaction Machine (Gradient/ multi-block):

Quantity:02

1. The thermal cycler should have multi-block blocks, which allow the user to stop precisely set target temperatures for PCR optimisation.
2. The thermal cycler should have an auto restart feature after the power outrages.
3. The thermal cyclers should support both fast and standard reaction speed
4. The thermal cycler should have a block ramp rate of 6°C/sec.
5. Thermal cycler should have temperature accuracy of ±0.25°C and temperature range of 0°–100.0°C
6. The thermal cycler should simulate the ramp speed of other PCR instruments with pre-programmed thermal simulation modes.
7. The thermal cycler should have a 96-well block form with six separate Peltier blocks to provide an independent temperature zone to run six different assays with varying annealing temperatures simultaneously.
8. Should have a gradient range of 1 to 30°C range across the block, six temperature zones (up to10°Cper zone)
9. Thermal cycler should allow the following three modes of temperature optimisation: 1) Setting specific temperatures in each block to precisely control run conditions, 2) Setting the minimum and maximum temperatures of the block, and 3) Setting the midpoint and applying incremental temperatures across the block.
10. The thermal cycler should support PCR volumes ranging from 10to100µl.
11. Thermal cycler should have a Mouse or stylus-free navigation capability with a VGA color touch screen, allowing for easy, intuitive graphical user interface programming.
12. The thermal cycler should have a Programmable heat lid cover from 37 degrees to 105 degrees centigrade for efficient PCR optimisation.
13. The thermal cyclers should have optional remote management software that allows the end user to remotely manage more than 50 cycles from a PC or internet-enabled mobile.
14. The thermal cycler should have Scalability: the capability to interlink up to 11 PCR systems via a single Ethernet hub.
15. The thermal cycler should have a memory for approximately 1000+PCR methods.
16. The thermal cycler should connect to the cloud-enabled for convenient design and securely upload methods, monitor runs, and check instrument availability from any mobile device or desktop computer.
17. The system should be provided with 5 Year Warranty & 5 Year AMC after the warranty period i.e., from 6th year to 10th year.
18. The vendor should provide IQ, OQ, and PQ documents.

10. Technical specification for micro-volume spectrophotometer:
Quantity:01

1. Low-volume UV-VIS Spectrophotometer with the following specifications
2. Wavelength Range: 190-850 nm or better
3. Minimum Sample Size: 1 µL
4. Pathlength: (auto-ranging 0.03 to 1 nm)
5. Light Source: Xenon flash lamp
6. Detector Type: 2048-element CMOS linear image sensor
7. Wavelength Accuracy: +/- 1 nm
8. Spectral Resolution: <1.8 nm (FWHM @Hg 254 nm)
9. Absorbance Accuracy: ± 3% (at 0.97 absorbance at 302 nm)
10. Absorbance Range: Pedestal-0-550 A (10 mm equivalent)
11. Detection Limit: Pedestal: 2 ng/µL dsDNA, BSA (IgG): 0.06 (0.03) mg/mL
    Cuvette: 0.2 ng/µL dsDNA. BSA (IgG) : 0.006 (0.003) mg/mL (Cuvette)
12. Maximum Concentration: 27,500 ng/µL (dsDNA)
13. Measurement Time: < 8 seconds
14. Stirring for cuvette option: 9 speeds
15. Temperature Control cuvette option: 37 °C
16. Touch Screen: 7-inch 1280 × 800 high-definition colour display, android-based Quad Core ARM Cortex A-9 Processor, Multipoint capacitive touch, Gesture Recognition: Single point, single point hold, swipe and pinch, Compatible with lab gloves, Built-in speaker. The screen must be able to slide to the right or left side of the instrument and adjust as per right hand or left-hand user. The screen must also be tiltable so that the viewing angle can be adjusted to the user's requirement.
17. Connectivity: Three USB-A ports, Ethernet, Bluetooth and Wi-Fi
    PC Software Requirements: Windows® 7 and 10, 64-bit software must be able to control the instrument and acquire the data.
    Accessory Support: Dymo Label Writer 450 printer, Bluetooth keyboard, mouse and barcode reader.
18. Internal Storage: 32 GB flash Memory
19. Audio: Built-in Speaker
20. Operating Voltage: 12 V (D.C.)
21. Power Consumption: Operating: 12 -18W Standby: 5W
22. The warranty should be quoted with 5-year warranty & 5-year CMC after the warranty period, i.e. from the 6th year to the 10th year & IQ, OQ, and PQ documents should be provided.
23. Software: The software should have a feature to identify the contaminants like protein and phenols in samples and report corrected analyte concentration. The system must have an image analyser to detect bubbles and other anomalies in the sample column. Software should provide instant feedback about sample quality with on-demand technical support for guided troubleshooting.
24. Application Support : Nucleic Acid A260, A260/A280, A260/A230 and Labeled Nucleic Acids; Protein A280 and A205, Protein Pierce 660, Protein Bradford, Protein BCA, Protein Lowry, Labeled Proteins, OD600, Kinetics, UV-Vis, and Custom Methods.
25. The system should be provided with 5 Year Warranty & 5 Year AMC after the warranty period i.e., from 6th year to 10th year.
26. The vendor should provide IQ, OQ, and PQ documents

11. Technical specifications for Refrigerated Tabletop centrifuge:

Quantity:02

1. The centrifuge should hold a maximum capacity of 1.6 litres using a single rotor of 4x400ml. Should have the bucket and adapter for holding a maximum capacity of 1.6 litres with an increase in productivity.
2. It should have a brushless induction motor.
3. It should be integrated with a feature to select bucket types to avoid errors.
4. The centrifuge should have safety features like ease in a change of rotors while switching between applications, certified biocontainment lid, and imbalance rotor detection. It should also have a low working height while removing tubes and exchanging rotors.
5. It should provide ease of exchanging rotors in 3-4 seconds, preferably without any complicated tools or keys suitable for a multi-user environment.
6. It should have high levels of insulation around the chamber and the lid, providing optimal thermal and audio insulation, which helps to reduce energy usage and noise in refrigerated models.
7. The rotors of the centrifuge should be designed in such a way that will eliminate the need for lubrication. MOC should be Corrosion-resistant, have high thermal conductivity, and have 304-grade stainless steel.
8. The system should be designed with highly efficient seals around the lid and motor to prevent warm, moist lab air from entering the chamber, reducing energy use and moisture build-up, and eliminating the need for drain tubes, which can be a source of contamination and require regular cleaning.
9. The system should have fuse-less technology to eliminate the hassle of blown fuses.
10. The should have a maximum speed of 15200 RPM with incremental speed of 100 rpm and RCF of 25000xg with fixed angle and temperature ranging from -10˚C to +40˚C. Centrifuge must have a rapid precooling option.
11. Should have microprocessor, direct, brushless induction low profile motor with 9 acceleration and 10 deceleration rates to protect sensitive samples. Maximum time range should be 9h, 59 minutes as well as continues.
12. The instrument should be provided with 5 Year Warranty & 5 Year CMC after the warranty period i.e from the 6th year to the 10th year.

13. Should be supplied below rotors.
    Swinging Bucket: that can spin 16nos of 50ml, 36nos of 15ml, 10/12 mL Blood collection tubes-65nos, 5/7 mL Blood collection tube-84nos and 4 microplates/2 deep well plates RPM: 4500 or more and RCF: 4200 or more
    Fixed angle rotor: 6x100ml rotor that can spin 50/15ml tubes at 10,000 RPM and RCF: 15,000 or high
    Fixed angle rotor: 30x1.5/2ml rotor that can spin at 14000 RPM or above and RCF: 21000 or high
14. Should be UL listed, CSA certified, CE marked, Certified Biosafety, RoHS compliant, WEEE compliant. The system should also comply IEC 61010-1, IEC 61010-2-020, IEC 61010-2-101, 230 V only: EN 61326, EN 55011B as technical standards.
15. Instrument should be provided with 5 Year Warranty & 5 Year CMC after warranty period i.e from 6th year to 10th year.
16. The vendor should provide IQ, OQ, and PQ documents.

12. Technical Specifications for Digital Vortex Mixer

Quantity:04

1. The instrument should have Digital display of Speed and Time.

2. The instrument should have continuous and touch modes.
3. Instrument Speed range should be 200 to 3000 rpm.
4. Precise speed control: ±5% rpm
5. The material should be Rubber, Plastic Platform
6. The instrument should have Quick set up to Max rpm:3 seconds 1500 rpm (Touch), 6 seconds 3000 rpm (Continuous)
7. The instrument should have time set: up to 99 minutes
8. The instrument should have 2 Timer modes.
9. Down-counting for repeat tests
10. Timer: Continuous, Time set as 0
11. Should have option for various accessories for different vessels
12. The instrument should be provided with 5 Year Warranty & 5 Year CMC after warranty period i.e from 6th year to 10th year.
13. IQ,OQ,PQ documents should be provided by the vendor

13. Technical Specifications for Dry bath specifications:

Quantity:02

1. Type: -Dry Bath/Block
2. Digital (LED Lighting) controls and display of time and temperature.
3. Advanced internal temperature sensing probe for outstanding temperature accuracy and control.
4. Precise temperature control with PID (proportional-integral-derivative-control) circuit.
5. Temperature calibration allows the user to offset the temperature to desired value.
6. Timer allows the user to accurately monitor the heating time.
7. Wide range of interchangeable aluminum alloy heat blocks provide versatility and allow for easy cleaning and disinfecting.
8. Powder-coated steel body construction ensures durability.
9. Built-in over-temperature protection device ensures sample and user safety.
10. Temperature deviation adjustment should be provided.
11. Controller Type should be Digital PID.
12. Material should be Powder-coated steel.
13. Relative Humidity must be <80%.
14. Temperature Range (Metric)- Ambient +5° to 130°C (Ambient at 25°C)
15. Heating Rate: - ≤ 20 min. 30° to 130°C
16. Temperature Accuracy: - ≤ + 0.5°C
17. Temperature Uniformity: - ≤± 1°C
18. Timer: - 0 to 99:59 min or continuous
19. 28 x 1.5mL block Capacity should be given that holds 28 x 1.5mL Lighting LED No. of Places 28 along with Instrument.
20. Fuse: - 250V 2.5A
21. Instrument should be provided with 5 Year Warranty & 5 Year CMC after warranty period i.e from 6th year to 10th year.
22. IQ,OQ,PQ documents should be provided by the vendor.

14. Technical Specifications for 4-Foot Class II Type A2 Biosafety Cabinet:

Quantity:01

Dimension & Material of Construction

1. External dimension should be 1300mm (W) X 800mm (D) X 1568mm (H)
2. Internal dimension should be 1200mm (W) X 630mm (D) X 780mm (H)
3. The unit should come with either (i) a manual adjustable height stand, providing work surface height of 760mm to 965mm, adjustable in 55mm increments; or (ii) a fixed height stand with castor, providing a work height of 750mm.
4. The front of the cabinet must be angled at 10º to help minimize glare on the window to the user, and to ensure that the user's posture is comfortable during a working session. Inadequate user ergonomics in a safety cabinet may lead to excessive fatigue, unsafe working habits and harmful consequences to user safety or product contamination.
5. The working sash height must be 254 mm or 10 inches.
6. The exterior housing is made of 19-gauge powder coated cold rolled steel.
7. The interior side wall, comprising the inner side and rear walls of the sample chamber, is made of cold rolled steel with SmartCoat protective layer. SmartCoat is a proprietary, premium fluoropolymer-based resin specifically designed to withstand the NSF/ANSI 49 requirements for chemical and abrasion resistance and UV exposure from the BSCs UV germicidal light.
8. The interior work tray is made of one-piece durable, non-corrosive type 304 stainless steel with a thickness of 1.5mm.
9. The cabinet uses dual side and rear walls with a negatively pressurized interstitial space for greater protection.
10. A 3 inches access port with an inner and outer solid rubber grommet is located on both sides of the cabinet, for accommodation of tubing and cables.
11. The unit should have provisions for 3 service valves on each side wall.
12. The unit should have all metal plenums designed for easy removal at filter change.
13. The unit should use LED bulb for chamber illumination.
14. The sash window in all these models is constructed with multi-layer safety glass 7.5mm thick, with integrated UVC protection in accordance with DIN standard EN 356.
15. The unit should have a proprietary mechanism by operator is given a tactile confirmation when the glass sash has reached exactly its specified working height position.

Airflow Control & Regulation

16. The cabinet should have one exhaust and one downflow H14 HEPA filter by EN1822 standard. The HEPA filter should have an overall filtration efficiency of 99.995% at the most penetrating particle size (MPPS) with no local penetration greater than 0.025%. The filters are tested in the BSC at the time of manufacture to assure there are no leaks greater than 0.01% as required by NSF / ANSI 49. The certificate of testing for each filter is included with the BSC factory test report.
17. The cabinet comes with dual brushless DC motors which monitor and control fan speed in real time. No mechanical damper is required to adjust the exhaust airflow.
18. The cabinet should have a standby mode by which, when the front sash is closed, the motor speed will be automatically reduced. Samples can be maintained in a sterile working environment even the cabinet is not in use.

Airflow Monitoring and Alarm System

19. The cabinet must use two pressure sensors which detect pressure changes across the exhaust and downflow plenums.
20. Audible and visual alarms will be given out when a 20% change in inflow/exhaust or downflow occurs.

User Interface

20. The Cabinet must have a color touchscreen Graphical User Interface (GUI) and must display the downflow air velocity and the inflow air velocity in real-time, to ensure the user knows whether the cabinet is working under safe operating conditions.
21. The cabinet must display performance criteria to ensure the user that they are working under safe conditions.
22. The cabinet must provide a color-coded indicator for its performance to ensure that the user knows when it is time to exchange the HEPA filter, UV light or schedule routine service.

Features for Easy Cleaning

23. The drain pan under the work tray should be made of stainless steel with angled sides. It should have smooth surface for easy cleaning. There should have no horizontal metal bar supporting the weight of the work tray.
24. The unit should come with a 254mm UV light for disinfection. The disinfection time is user programmable from 0 to 23 hours in 15-minute increments.
25. The front sash can be lowered beyond the closing position, creating a gap at the window's upper edge. The upper portion of the sash can be cleaned while operator is protected by inflow.
26. Optional rear cover kit is available to cover the counter-weight balance at the back panel and therefore improve the efficiency of cleaning the cabinet.

Electrical and Energy Consumption

27. The cabinet must come with 2 single receptacles on the rear wall, one on each side.
28. Energy consumption of the cabinet is 200W (at operating set point) and 70W (when at standby mode)
29. The cabinet must be rated at 230V, 50/ 60Hz.

Certification

30. The cabinet must be tested and certified to NSF ANSI/49
31. It should have UL/CE certificate

Warranty

32. System should be quoted with 5 Year Warranty & 5 Year CMC after warranty period i.e from 6th year to 10th year.
33. System should be provided with 5 Year Warranty & 5 Year CMC after warranty period i.e from 6th year to 10th year.
34. IQ,OQ,PQ documents should be provided by the vendor.

15. Technical Specifications for Ice-Flaking machine:

Quantity:01

1. Ice Making Capacity: 250 kg / 24 hr.
2. Ice Storage Capacity: 60 kg.
3. Ice Shape: Small Particle of irregular snow ice.
4. Input Current: 1100 W.
5. Way of Condensation: Air Cooling.

6. Ambient Temperature: 10~35°C.
7. Water Temperature: 2~15°C.
8. Tank Shell: Stainless Steel.
9. Compressor: Panasonic Wanbao.
10. Refrigerant: R290.
11. Standard Accessories: Water Inlet Pipe*1 , Drainage pipe*1,Ice spoon*1Optional Accessories : Filter
12. Power Supply: AC 220V±10% , 50/60 HZ ; 110V±10% , 60 HZ.
13. Net Weight: 80 kg,Gross Weight : 105 kg,External Size (W*D*H)mm : 680*611*1100, Package Size (W*D*H) mm : 730*790*1320.
14. Warranty & Training: System should be quoted with 5 Year Warranty & 5 Year CMC after warranty period i.e. from 6th year to 10th year, Manufacturer should provide training to 2-3 users post installation of the system.
15. IQ,OQ,PQ documents should be provided by the vendor.

16. Technical Specifications for Laminar Airflow Specifications:

Quantity:02

1. Should have Multi-parameter display and alarm function.
2. Should have Front window glass and UV lamp linkage control.
3. Should have Intelligent control humanized design.
4. Should have Filter life monitoring Integral filter.
5. Certification: CE.
6. Dimension: 1500x760x1630mm.
7. Should automatically compensates for normal power line variation, air disruption and filter loading.
8. Motor should consume less energy, reduce heat output and operates more quietly.
9. Illumination lamp should be provided sufficient brightness to the working chamber.
10. Should have Automatic UV timer program saves your time during daily work.
11. The front glass window should be provided for protection from explosion and UV with more comfortable viewing.
12. Standard construction of non-porous type 304 stainless steel should be provided.
13. Cantered and angled down colour-display should be provided for better viewing of safety and performance data.
14. Life HEPA filter should be provided for high separability for particles.
15. Self-compensation for the clogging of filters and life span indicator optimize working condition and minimizes services
16. Velocity of airflow and temperature should be indicated on the control panel.
17. Alert the user if airflow is insufficient.
18. Two standard electrical duplex receptacles, with ground fault interruption and splash covers.
19. Warranty & Training: System should be quoted with 5 Year Warranty & 5 Year CMC after warranty period i.e. from 6th year to 10th year, Manufacturer should provide training to 2-3 users post installation of the system.
20. IQ,OQ,PQ documents should be provided by the vendor.

17. Technical Specifications for Mini Centrifuge:

Quantity:04

1. Max capacity 6 x 2 mL.

2. Max speed 6,000 rpm
3. Max RCF 2,000 x g
4. Noise level 51-53 dBA
5. Certifications CE, CSA, UL
6. Power 100-240 V, 50-60 Hz with 4 interchangeable plug adapters
7. Compact design, Easy to operate with low vibration
8. Tool-free, quick rotor exchange
9. Quick-spin feature.
10. Safety features: unit will not operate without lid for safety purpose.
11. Warranty & Training: System should be quoted with 5 Year Warranty & 5 Year CMC after warranty period i.e. from 6th year to 10th year, Manufacturer should provide training to 2-3 users post installation of the system.
12. IQ,OQ,PQ documents should be provided by the vendor

18. <u>Technical Specifications for Thermal Mixer with Block:</u>

<u>Quantity:01</u>

1. Must have Fast heat-up and cooling times and quick to reach specified mixing speed
2. Temperature control range : 15°C below ambient to 100°C
3. Temperature setting range : +4°C to 100°C
4. Shaking speed : 250 to 1400 rpm, Temperature stability : ±0.1°C
5. Even mixing across the thermo shaker block, should have good uniformity across the block
6. Digital timer with sound alarm: 1 min to 96 hours
7. Temperature calibration function – compensate for differences in the thermal behaviour of different tubes and samples.
8. Choice of 5-6 interchangeable blocks
9. LCD Display should have set and actual time of operation, mixing speed, and temperature
10. Heating/Cooling and mixing functions should run independently of each other
11. Orbit2 mm with Temperature Uniformity ±0.6°C at 4°C, ±0.1°C at 37°C, ±0.3°C at 100°C approximately.
12. Instrument should be quoted with 24 x 1.5mL microtubes Block.
13. Warranty & Training: System should be quoted with 5 Year Warranty & 5 Year CMC after warranty period i.e. from 6th year to 10th year, Manufacturer should provide training to 2-3 users post installation of the system.
14. IQ,OQ,PQ documents should be provided by the vendor

19. <u>Technical Specifications for Magnetic Stands:</u>

<u>Quantity:02</u>

1. Tube Compatibility: Designed to hold up to 16 standard 1.5 mL or 2 mL microcentrifuge tubes.
2. Magnet Type: High-strength neodymium (NdFeB) magnets for rapid and efficient magnetic bead separation.
3. Material: Durable, chemical-resistant plastic body with encased magnets to prevent direct contact.
4. Separation Time: Fast magnetic separation, typically within 30 seconds to 2 minutes depending on the sample.
5. Plate Compatibility: Designed for use with standard 96-well PCR plate formats.
6. Magnetic Positioning: Side placement of magnets to allow easy access to the wells for pipetting and washing steps.
7. Warranty: System should be quoted with 5 Year Warranty & 5 Year CMC after warranty period i.e. from 6th year to 10th year.
8. IQ,OQ,PQ documents should be provided by the vendor

20. **Technical Specifications for Fluorometer:**
Quantity:01

1. Measurement Range for different sample types:
2. DNA: 0.5 pg/µL to 1000 ng/µL
3. RNA: 1 pg/µL to 1000 ng/µL
4. Protein: 12.5 µg/mL to 5 mg/mL
5. Sample Volume: Requires as little as 1 µL of sample for accurate quantification.
6. Detection Method: Uses fluorescence-based assays for highly sensitive and specific quantification of nucleic acids and proteins.
7. User Interface: color touch screen with intuitive graphical user interface for easy navigation and protocol setup.
8. Data Storage and Connectivity: Internal memory capable of storing up to 1000 sample results, with USB port for data export and software updates.
9. Assay Compatibility: Compatible with a broad range of Qubit™ Assay Kits, including those for DNA, RNA, and protein quantification.
10. warranty &: System should be quoted with 5 Year Warranty & 5 Year CMC after warranty period i.e. from 6th year to 10th year.
11. IQ,OQ,PQ documents should be provided by the vendor.

21. **Technical Specifications for Single Channel Pipettes (1 to 10 µL, 2 to 20 µL, 20 to 200 µL, 100 to 1000 µL):**

Quantity: each volume 4

1. Single-channel models: 0.2 µL to 1 mL
2. Accuracy: High precision with accuracy typically within ±0.6% to ±1.5% depending on the volume range.
3. Precision: High reproducibility with precision typically within ±0.2% to ±0.8% depending on the volume range.
4. Ergonomics: Lightweight and ergonomically designed handle to reduce hand fatigue. Adjustable finger rest for comfortable use during prolonged pipetting.
5. Material: Constructed with high-quality, chemical-resistant materials for durability and longevity.

6. Volume Adjustment: Easy-to-use, click-stop digital volume adjustment for precise and reproducible settings. Locking mechanism to prevent accidental volume changes.
7. Tip Ejector: Soft-touch tip ejector for easy and low-force ejection of pipette tips. Compatible with a wide range of universal pipette tips.
8. Calibration: Autoclavable and easy to calibrate for maintaining accuracy and precision. Calibration certificates are provided for traceability.
9. warranty: System should be quoted with 5 Year Warranty & 5 Year CMC after warranty period i.e. from 6th year to 10th year.
10. IQ,OQ,PQ documents should be provided by the vendor.

22. Technical Specifications for E- gel Electrophoresis system:

Quantity:01

1. The system should image and analyze chemiluminescent western blots and stained Protein (Coomassie, silver, sypro, etc), DNA (EtBr, Sybr, etc) gels
2. The system should have a Smart Exposure Technology which rapidly determines optimal exposure time. It should help in minimizing the potential for over- or underexposed images, and the need to repeat exposures to get the desired signal
3. The system should have a sensitive 9.1 megapixel (MP) cooled CCD camera
4. The system should have a Large Intuitive Touch Screen Interface with 12.1" Multi-Touch, Capacitive LCD screen
5. The system should have a Large Sample Area and should accommodate 4 or more gels/Blots at the same time. The dimensions of the imaging area should be (W) 230mm x (D) 184mm.
6. The system should do Auto Zoom and Auto Focus and Mechanical Zoom is 2X. It also should have align the sample automatically whereas the sample tray should have an automatic rotation of +/-10°.
7. The system should utilize a transilluminator based on green LEDs.
8. The system should be upgradable to fluorescence with the capability to hold a 7-position filter wheel which can do the imaging for visible to NIR range.
9. The system should have onboard Auto Analysis software for instantaneous lane and band identification and molecular weight marker overlay. Quantitation and densitometry analysis should also be performed directly on the instruments
10. The system should have a mechanical tray to physically rotate a sample aligning it with the camera before image acquisition
11. The system should have cloud connectivity.
12. warranty: The system should be quoted with a 5-year warranty &5-year CMC after the warranty period i.e. from 6th year to 10th year.
13. IQ, OQ, PQ documents should be provided by the vendor.

23. Technical Specifications for PCR Workstation:

Quantity:02

1. PCR Workstations should be equipped with several features for active and passive decontamination by design
2. should have active decontamination of the working space by two UV tubes that are placed in the hood
3. In workstation operation mode, an additional inactivation of aerosolbound contaminants must be achieved by a shielded UV Air Recirculator
4. PCR Workstation should have the HEPA filter system (H14 standard) with integrated UV. Such that acts as barrier against dust, bacteria and mold.
5. Must features a fresh air input that is decontaminated by a pre-filter, a carbon filter and the HEPA filter in addition to the air recirculatory that cleans the used air from the inside

of the PCR chamber reducing the chance of contamination by air that may blow into the PCR chamber

6. The HEPA air flow speed can be set individually and ranges from 0.3 m/s to 1.2 m/s, leaving the user to choose the intensity.
7. Workstation should have Air Recirculator, filter Pre-filter, Carbon &HEPA filter
8. Workstation should haveAuto-Decontamination Timer&White light sources
9. Four power outlets inside the cabinet allow the user to plug in different tools that will need an individual power connection
10. Workstation should have Dual decontamination routine i.e. UV Air Recirculator and UV for surface decontamination
11. Working Area should be approximately 720 x 540 mm (L x D) large enough to harbor all necessary equipment like pipettes, tip boxes as well as technical equipment to prepare all steps in one enclosed working space avoiding potential contamination.
12. Warranty: The system should be quoted with a 5-year warranty &5-year CMC after the warranty period i.e. from 6th year to 10th year.
13. IQ, OQ, PQ documents should be provided by the vendor.

24. **Technical Specifications for Variable Volume Multichannel Pipettes (1-10ul, 5-50ul, 10-100ul, 30-300ul,100-1200 ul- (8 Channel):**

Quantity: Each volume 2

1. Pipettes should be Fully Autoclavable
2. Number of Channels-8
3. Increments: - 0.02µL
4. Pipettes should be Rugged and Durable i.e. Should have tough Polyvinylidene fluoride components that stand up to harsh chemicals and the damaging effects of UV light. Its rugged design withstands physical use without damage.
5. Decontamination of the pipette should be simple & should not require disassembling for autoclaving, minimizing disruption and downtime
6. Simply detach the tip cone for efficient daily maintenance or decontamination when not using an autoclave.
7. Pipettes should have 150% increase in air boost to ensure efficient delivery of micro-volumes and prevent capillary action in 50µL models and below.
8. Wide Selection of Pipette Tips enabling optimal performance, precision and accuracy.
9. The Pipettes range should cover from 1ul to 300ul, with approximate volume below 1-10ul, 5-50ul, 10-100ul, 30-300ul.

10. warranty: The system should be quoted with a 5-year warranty &5-year CMC after the warranty period i.e. from 6th year to 10th year.

11. IQ, OQ, PQ documents should be provided by the vendor

25. Technical specifications for Horizontal Electrophoresis Unit Specifications:
Quantity: 01

1. Less agarose consumption and less running buffer consumption
2. Multichannel pipette-compatible, Single moulded tank, Safety & Ventilation lid.
3. High-temperature capability up to 130^{o}C, Easy sample loading.
4. Great indications for gel making and running, no tapes, clamps or springs are needed for gel casting.
5. No direct heat impact from the power supply unit.
6. Two tray options should be available and cast 3 pcs of agarose gel at one time.
7. Appearance:- Snow tank & transparent lid.
8. Material:- PC (Polycarbonate).

9. Lid Material:- AS (Acrylonitrile-Styrene Copolymer).
10. Temperature Capacity - 130°C.
11. Gel Dimension (WxL) :- 4.1"x3.3" (105x83mm) 2"x3.3" (50x83mm).
12. Tray:- Should have Black well-visualization strip, Migration distance index line & Agarose level, 0.2" (5mm).
13. Rapid Casting Gel:- Use a gel maker stand.
14. Maximum Gel Thickness:- 0.39" (10mm).
15. Maximum Sample:- 25 samples.
16. Buffer Volume :- 400ml
17. Operating Temperature :- 4 - 40°C.
18. Dimension (WxLxH) 5.4"x7.4"x2.3" (136x188x58mm) approximately.
    Should be provided with power pack with Output Voltage / Inc :- 5 - 300V / 1V, Output Current / Inc :- 1 - 700mA / 1mA, Power Output: 150W :- Input: 200W, Rated Voltage100-240V~; 47-60Hz.
19. Type of Output:
    A). Voltage or Current with automatic crossover
    B). When target constant mode is set, system should automatically adjusts the two other parameter to maximum to allow constant run (later could be changed by user).
20. Program Storage :- 30 programmed files, Program Multi-Step :- Up to 6 steps, Editable Program Function 1.Typical running conditions program, 2.Manual editable program.

21. Display :- 2.4 TFT

    Control :- Microprocessor controller
    Should have Safety features like No Load detection, Leakage detection, Over temperature protection, Overload detection. Sudden load change detection(could be enabled by proper setting). Shrouded plugs and sockets
    Timer Constant: 9999 (min) with alarm/ Continuous
    Program: 999 (min) with alarm/ Continuous
    Crossover :- Yes
    Stackable :-Yes
    Automatic Recovery After Power Failure:- Yes
    Operating Temperature :- 4℃~ 40℃
    Material :- PC housing and flame retardant ABS faceplate.
    Dimension :- Approx. 8.5"x13.2"x4.1" (215 x 335 x 104 mm) Approximately.

22. Warranty: The system should be quoted with a 5-year warranty &5-year CMC after the warranty period i.e. from 6th year to 10th year.

23. IQ, OQ, and PQ documents should be provided by the vendor.

26. <u>Technical specifications for Vertical Electrophoresis Unit Specifications:</u>
<u>Quantity:01</u>

1. Vertical Electrophoresis system must be an injection moulded and safe operation.
2. They should have an SS dual 100 x 100mm plate for application and be capable of handling up to 4 plates.
3. The system should be simple rapid and leak-proof gel casting. Low buffer consumption, single moulded tank.
4. The system should have the provision to run up to 4 gels at one time and Indications for gel making and running.
5. Compatible with all precast gels (100x100mm or 100x80mm)

6. System with Mini dual 100x100mm, 2 sets of glass plates with 1mm thick bonded spacers & with 2x12 sample, 1mm thick combs, cooling pack, dummy plate and casting base
7. Maximum Sample 80 samples, 20 samples per gel, Buffer volume should be (250 - 1200ml)
8. Dimension (WxLxH) Approx. 7.5"x5.1"x5.9" (190x130x150mm)
9. Plate Dimension (WxL) Approx. 3.9" 3.9" (100x100mm)
10. Gel Dimension (WxL) Approx. 3.4"x3.2" (85x80mm)
11. Upon lid removal, power is disconnected from the buffer chamber for electrical safety.
12. Should have wide application for DNA, RNA and protein electrophoresis and blotting.
13. Advanced safety device design with Universal rated voltage for worldwide distributions.
14. Four pairs of output terminals should have a 2.4-inch TFT-LCD coloured screen that shows all parameters during operation.
15. Timer with alarm function & Compact size with stackable case, Constant voltage/ current/ power operation mode should be their.
16. Specifications of power supply unit:
    Output Voltage / Inc.: 5 - 300V / 1V •Output Current / Inc. : 1 - 700mA / 1mA •Power : Output: 150W; Input: 200W •Rated Voltage 100-240V~; 47-60Hz.
    Type Of Output:
    Voltage or Current with automatic crossover.
    When target constant mode is set, the system automatically adjusts the two other parameters to the maximum to allow a constant run (later could be changed by the user)
    Program Storage: 30 Programmed files & Program Multi-Step: Up to 6 steps Editable Program Function: Typical running conditions program, Manual editable program
    Control: Microprocessor controller Safety Device: Leakage detection, Over temperature protection, Overload detection, sudden load change detection (could be enabled by proper setting).Shrouded plugs and sockets should be their, Timer Constant: 9999 (min) with alarm/ Continuous, Program: 999 (min) with alarm/ Continuous, Automatic Recovery After Power Failure should the there, Operating Temperature :- 4℃~ 40℃ Material :- PC housing and flame retardant ABS faceplate Dimension :- Approx. 8.5"x13.2"x4.1" (215 x 335 x 104 mm) Approximately.
17. Warranty: The system should be quoted with a 5-year warranty &5-year CMC after the warranty period i.e. from 6th year to 10th year.
18. IQ, OQ, and PQ documents should be provided by the vendor.

ANNEXURE – I

SPECIFICATIONS

Objection should be submitted in following format:

S. no	Item specification as given	Specification offered by firm	Deviation if any	Remarks