भा. कृ. अ. प. -राष्ट्रीय अजैविक स्ट्रैस प्रबंधन संस्थान
मालेगांव, बारामती-413115, पुणे, महाराष्ट्र, भारत
ICAR - National Institute of Abiotic Stress Management
Malegaon, Baramati- 413115, Pune, Maharashtra, India

F.No:4-6/2015-16 **Dated: 14/07/15**

TENDER NOTICE

1. The Director, National Institute of Abiotic Stress Management, Baramati on behalf of the Secretary, Indian Council of Agricultural Research, KrishiBhawan, New Delhi invites sealed tenders in the prescribed tender form (**Two bid system) for supply and installation of lab equipment** from the reputed manufacturers and suppliers. The details are furnished below:

Sl. No.	Equipment Name	Quantity	EMD (Rs)
1.	Chemical Fume Hood	03	35000
2.	PCR Machine (Dual Block)	01	15000
3.	PCR Machine (Dual Block)	01	15000
4.	Homogenizer	01	10000
5.	Tissue Homogenizer	01	3000
6.	Western Blot	01	6000
7.	Deep Freezer -20^0 C	02	16000
8.	Deep Freezer -20^0 C	01	8000
9.	Deep Freezer -20^0 C	01	8000
10.	Deep Freezer -80^0 C	01	16000
11.	Centrifuge	01	6000
12.	Centrifuge	02	12000
13.	Centrifuge	01	10000
14.	Microcentrifuge	01	6000
15.	Refrigerated Incubator Shaker	01	25000
16.	Refrigerated Incubator Shaker	01	25000
17.	Autoclave	01	6000
18.	pH Meter	01	4000
19.	pH Meter	01	4000
20.	Laminar Air Flow Chamber	01	10000
21.	Laminar Air Flow Chamber	01	10000
22.	DSLR Camera	01	5000
23.	Ice Flaker	01	4000
24.	Real Time PCR	01	40000
25.	Gel Electrophoresis Unit (Vertical)	01	8000
26.	Gel Electrophoresis Unit (Vertical)	01	8000
27.	Gel Electrophoresis Unit (Horizontal)	01	10000
28.	Gel Electrophoresis Unit (Horizontal)	01	4000
29.	Plant Growth Chamber	01	45000
30.	Biosafety Cabinet	01	6000
31.	Cabinet Dryer	01	16000
32.	Multiparameter portable water quality kit	01	4000
33.	Glass door refrigerating cabinet	01	10000
34.	Lab washer disinfectors	01	35000
35.	UV/VIS Spectrophotometer	01	15000

36.	Analytical Balance	01	5000
37.	Microscope (Light)	01	10000
38.	Gel Doc System	01	14000
39.	Vortex	01	3000
40.	Vacuum Concentrator	01	9000
41.	Heating Block	01	3000
42.	Viscosity meter	01	4000
43.	Ultra-Sonicator	01	5000
44.	Hot Air Oven	01	9000
45.	Vacuum pump	01	3000
46.	Microscope Fluorescent	01	20000
47.	Magnetic stirrer with hot plate	01	3000
48.	Magnetic stirrer with Temperature Control	01	5000
49.	Probe Ultrasonicator	01	4000
50.	Top Pan Balance	02	8000
51.	Soil thermometers	50	5000
52.	Automatic blood Analyzer	01	10000
53.	CO2 Incubator	01	8000
54.	Nanodrop Single Probe	01	8000
55.	Liquid Nitrogen Storage Vessels	04	10000
56.	Micropipets/Set	One set	3000
57.	Microtome	01	20000
58.	Texture Analyser	01	60000
59.	BOD Incubator	02	10000
60.	Automated Autoclave System	01	30000
61.	Soil temperature and moisture sensor with data logger	01	10000
62.	Reciprocating Shaker	01	3000

2. The prescribed tender forms and other details can be had from this Institute on payment of Rs.1000/- non- refundable by cash or through a crossed demand draft drawn in favour of ''ICARUNIT;NIASM, BARAMATI on any working day from 14-07-2015 between 10:30 hrs to 16:30 hrs. For full details please log on to http//www.niam.res.in. Tender form downloaded will also be accepted provided the tenderer has enclosed the cost of the tender document of Rs. 1000/- by means of DD.
3. The last date for the sale of tender form is 03-08-2015 up to 12.00 noon
4. The last date of receipt of complete sealed tenders is 03-08-2015 up to 01.00 PM
5. The process of opening of the technical bid will be on 03-08-2015 at 2.30 PM

Sd/-
SENIOR ADMINISTRATIVE OFFICER
NIASM; BARAMATI

TENDER SCHEDULE TO DOCUMENT No.4-6/15-16

National Institute of Abiotic Stress Management
Malegaon, Baramati – 413115, Pune, MS

INVITATION OF TENDER FOR **FOR SUPPLY AND INSTALLATION OF LAB EQUIPMENT**.

COST OF THE TENDER DOCUMENT IS RS. 1000/- & E.M.D FOR EACH ITEM AS SPECIFIED AGAINST EACH ITEMS

SALE OF TENDER DOCUMENT FROM 14 -07-2015 FROM 10.30 HRS TO 16.30 HRS ON ALL WORKING DAYS AT THIS INSTITUTE

LAST DATE OF SALE OF TENDER FORM; 03-08-2015 UP TO 12.00 Noon

LAST DATE AND TIME FOR ACCEPTANCE OF SEALED TENDER DOCUMENT IS ON 03-08-2015 UP TO 01.00 PM

DATE OF OPENING OF TECHNICAL BID FOR WILL BE ON 03-08-2015 AT 2.30 PM ONWARDS;

PLACE OF OPENING BIDS IS AT THE CONFERENCE TABLE OF NIASM, MALAGEON, BARAMATI-413115

ADDRESS FOR COMMUNICATION
THE DIRECTOR
NATIONAL INSTITUTE OF ABIOTIC STRESS MANAGEMENT
MALEGAON (KH.)
TAL.- BARAMATI, PUNE- 413115, M.S

Signature of the Bidder
(with firm seal)

TENDER SCHEDULE TO DOCUMENT No.4-6/15-16

National Institute of Abiotic Stress Management
Malegaon, Baramati – 413115, Pune, MS

INVITATION OF TENDER FOR **SUPPLY OF *LABORATORY EQUIPMENTS***
DD NO.
DATE
BANK
AMOUNT

NOTE: The envelope containing the tender as well as all subsequent communications should be addressed/delivered to: DIRECTOR, NIASM, BARAMATI-413115, PUNE, M.S

All the communications must be addressed to the above officer by designation but not by name

To

Dear Sirs

On behalf of the Director, NIASM, Baramati I invite you to submit your sealed tender **for supply and installation of LABORATORY EQUIPMEMTS**. The terms and conditions of the tender are enclosed in the Annexure I. You may please submit our bid to this office in the prescribed bid form Annexure II attaching along with all the relevant photo copies of the documents referred in the Annexure I and EMD amount as specified in the tender notice. The EMD may be paid by means of DD drawn in favour of ICAR UNIT; NIASM, BARAMATI.

The complete set of the tender form including annexure in original may please be submitted to office after signing on all pages by the tenderer.

Yours faithfully,
-sd-
I/C Senior Administrative Officer

Signature of the Bidder
(with firm seal)

Tender Document No.4-6/15-16
National Institute of Abiotic Stress Management
Malegaon, Baramati – 413115, Pune, MS

Terms & Conditions:

1. Tender document

1.1 The non-transferable tender document, in English, may be obtained from the S**AO, National Institute of Abiotic Stress Management, Malegaon, Baramati** on any working day from the day of tender advertisement.

2. Tenders/Quotations

21 Must be sent/submitted in the Office of the **Director, National Institute of Abiotic Stress Management, Malegaon, Baramati**by **03.08.2015 till 01.00 PM.**

2.2 Tenders/Quotations must be written in English. All accompanying technical literature, and correspondence in connection with or arising from a bid shall be in English.

2.3 The price of the item may be quoted in either Indian rupees (FOR NIASM) or foreign currency. If Price is quoted in foreign currency then it will be converted to INR for comparison purpose as per the rate on the day of comparison.

2.4 The tender forms alongwith the specifications/details can be obtained at the cost of **Rs.1000/-** for each item in cash **upto03.08.2015 at 12:00 PM**. (Except those who are National small Industries Corporation (proof should be mandatory enclosed). The tender form can also be downloaded from our website **www.niam.res.in** and submitted alongwith the Earnest money by due-date. Where tender-form is downloaded from website, a demand draft of **Rs 1000/- in favor of ICAR Unit NIASM payble at Baramati** may be enclosed separately as the cost of tender-form.

2.5 Tenders/Quotations must be addressed to:- **The Director,**
ICAR-National Institute of Abiotic Stress Management, Malegaon, Baramati -413115

3. Late Tenders

3.1 Any tender/Quotations received by the Purchaser after the deadline for submission of tender/Quotations will be rejected and returned unopened to the Tenderer.

4. Earnest Money

4.1 Bidders have to furnish Bid Security/earnest money worth as mentioned in tender notice in favour of **ICAR-Unit-NIASMpayable at Baramati**along with the bid(s) from a Nationalized Bank. The Earnest Money is required to protect the Purchaser against the risk of Tenderer's conduct, which would warrant the security's forfeiture.

4.2 The Earnest Money shall be in one of the following forms:

a) A bank guarantee issued by a reputed bank located in the country and valid for 6 (six) months.

b) A Bank Draft/ FDR payable to "ICAR- Unit- NIASM, Baramatil".

4.3 Any tender not accompanied by Earnest Money will be straight way rejected.

4.4 Unsuccessful Tenderer's Earnest Money will be discharged or returned as promptly as possible

4.5 The Earnest Money may be forfeited:

a) If a Tenderer/bidder withdraws its tender during the period of tender validity specified by theTenderer on the Tender Form; or

b) In case of a successful Tenderer/bidder, if they fails to furnish Security Deposit.

5. Performance Security

5.1 Within thirty (30) days, the successful tenderer shall furnish to the purchaser the Security Deposit equivalent to 10% of the purchase value.

5.2 The Security Deposit shall be in one of the following forms: (a) Bank Guarantee, issued by a reputed bank or a FDR/Demand Draft payable to **"ICAR- Unit –NIASM,Baramati".**

5.3 Failure of the successful Tenderer/bidder to sign the contract and/or furnish the Security Deposit shall constitute sufficient grounds for the annulment of the award and forfeiture of the Earnest Money, in which event the Purchaser may make the award to the next lowest evaluated Tenderer or call for new tenders.

5.4 The Security Deposit will be discharged by the purchaser and returned to the Supplier following the date of completion of the Supplier's performance obligations under the contract, including any warranty obligations after receiving agreement letter.

6. Period of Validity of Tenders/quotations

6.1 Validity of Tenders/quotations shall be **180** days after the date of tender opening. A tender valid for a shorter period shall be rejected by the Purchaser as non-responsive.

7. Delivery and Documents

7.1 Delivery and installation of the system/services shall be made by the Supplier within 90 days from the date of placing order which may be extended at the discretion of the competent authority.

7.2 Documents to be submitted by Supplier are specified in technical specifications.

8. Transportation

10.1 The transportation costs etc. to transport the equipment to the consignee's place shall be borne by the tenderer.

9. Incidental Services

11.1 The supplier may be required to provide any or all of the following services, including additional services, as specified in Technical Specifications:

a) Performance or supervision of on-site installation, etc. of the system.

b) Furnishing of tools required for assembly and/or maintenance of the System.

c) Furnishing of detailed operations and maintenance manual for each appropriate unit of system.

10. Warranty

10.1 **Warranty Clause:** Minimum Three Years from the date of installation. However more warranty period will be preferred.

10.2 The supplier warrants that the System and services provided under the contract are based on new, unused, latest, most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the contract. The supplier further warrants that all services/systems supplied under this contract shall have no defect, arising from design, materials, or workmanship except when the design and/or material is required by the purchaser's specifications or from any act or omission of the Supplier, that may develop under normal use of the supplied system in the conditions prevailing in the Board.

10.3 The purchaser shall promptly notify the supplier in writing of any claims arising under this warranty.

10.4 Upon receipt of such notice, the supplier shall immediately repair or replace the defective system without any cost to the purchaser.

10.5 If the supplier, having been notified, fails to remedy the defect (s) within a reasonable period, the

Purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expense and without prejudice to any other rights which the purchaser may have against the supplier under the contract.
After Sale Service: The rates of Annual Maintenance Contract after completion of warranty period may be mentioned for five years.

11. Dispute Resolution Mechanism: If any dispute or difference arises between the purchaser and the supplier relating to any matter connected with the contract, the parties shall make every effort to resolve the same amicably by mutual discussions. However, if the parties fail to resolve the dispute or difference by such mutual discussion within 30 days, either the purchaser or the supplier may give notice to the other party of its intention to refer the same to arbitration. The arbitration shall commence thereafter. The arbitration shall be conducted by a sole arbitrator, who will be appointed by the Secretary, ICAR and the procedure to be followed in this respect will be as per the Indian Arbitration and Conciliation Act, 1996. The venue of the arbitration shall be the place from where the contract is issued.

12. You are also required to fulfill the following conditions and furnish the details as indicated in subsequent paragraphs.

a) At the time of awarding the contract/order, the purchaser reserves the right to increase or decrease the quantity of goods, without any change in the unit price or other terms & conditions.

b) Please indicate if you are currently registered with any Govt. organization and if registered, furnish all relevant details.

c) Please states whether business dealings with you presently stand banned by any Government organization and if so, furnish relevant details.

d) A supplier/ manufacturer shall not submit more than one quotation for the same set of goods.

e) The supplier shall at all times indemnify the purchaser, at no cost to the purchaser, against all third party claims of infringement of patent, trademark or industrial design rights arising from the use of the goods or any part thereof, with respect to the goods quoted by the supplier in its offer.

f) The quotation (s) as well as the contract shall be written in Hindi/English language.

g) The contract shall be governed by the laws of India and interpreted in accordance with such laws.

h) The Director, NIASM, Baramatireserves the right to reject any tender in part or full without assigning any reason thereof.

13. **Contract:**The technically qualified vendor who is awarded the order will have to submit acceptance letter within 15 days of issue of order and will supply material within the stipulated time given in purchase order as per the quoted specifications.

Annexure- I: Technical Specifications

Item No 1: Chemical fume hood

Specifications:

1. Chemical fume hood nominal size: 5ft/1.5 m
2. External dimension [WxDxH (inch)]: 59-60" X 35-36" X 65-68"
3. Internal work area [WxDxH (inch)]: 50-52" X 25-27"X 48-50"
4. Maximum sash opening 25-29", however it should automatically and gently fall back to the safe level of 18-20" level.
5. Face velocity: 0.4-0-5m/s (80-100 fpm) at full sash opening.
6. Exhaust velocity/static pressure required:1390-1400cmh@50Pa; 800-820 cfm@0.20" WG at full sash opening.
7. Exhaust outlet diameter: 12-15"
8. Number of exhaust collar: one
9. Exhaust ducting work and connection accessories should also be quoted.
10. Construction:
    10.1. Tri wall construction for maximum safety and strength.
    10.2. Internal chamber should be constructed from stainless steel of 304 grades.
    10.3. Hood lighting system should be pre-wired, energy efficient; working light intensity should be 1050-1080 lux.
11. Electrical socket outlets: Two of 5/8 Amp
12. Electrical: 220-240 V, AC, 50-60 Hz.
13. A 3KV online UPS with 60 min. backup
14. Certification: ASHRAE and EN14175-3 standards, UL, EFI CE/UL certified.
15. Sash should be clearly labeled with operating instructions and illustrations.
16. Hood should have factory fitted valve and hose with wall mounted outlet for gas inlet, a vacuum inlet, water inlet, and nitrogen.
17. **Base cabinetry, 5 ft/1.5 m, for additional storage:** -
    17.1. Base cabinetry should be partitioned into four vertical cabinets with ventilation arrangement and auto exhaust.
    17.2. Lining of the cabinet internal walls should be made of special chemical resistant material, viz. PRL material with ASTM flame spread index <25.
18. Warranty: Three years after installation.

All vendors are requested to attach original technical literature/ catalogue in support of the mentioned specifications & highlight the above features.

Item No 2: PCR Machine (Dual block)

Specifications:

1. Should be licensed machine with peltier heating and cooling based system.
2. Block number: at least two blocks.
3. Block capacity: 48 x 2 x 0.2 ml tubes or 64 x 0.2 ml tubes + 32 x 0.2 ml tubes or 96 x 2 x 0.2 ml tubes or 32 x 3 x 0.2 ml tubes.
4. Sample volume: 1 to 50 µl
5. Temperature range: 1- 99 ºC
6. Temperature accuracy: ± 0.2 - 0.3ºC
7. Temperature uniformity well-to-well: ± 0.3 - 0.4°C
8. Ramping speed: 4-5ºC/Sec
9. Should have at least two independent gradient enabled blocks suitable for running at least 2 different user programs simultaneously and independently.
10. Gradient temperature differential range: 1-20 ºC
11. Gradient range: 35-99 ºC
12. Gradient accuracy: ± 0.1 - 0.2 ºC
13. Ports: USB ports for unlimited programme storage using USB flash drive.
14. Memory: on-board memory sufficient to store >900 programs with provision of password protection for protocols.
15. Equipment should be compatible with PC and should have Tm Calculator.
16. Display: Touch screen LCD display.
17. Provision of heated lid and auto restart function upon power failure.
18. Electric supply: 230V/ 50-60 Hz.
19. Certifications/compliance: UL/cUL or CE marked.
20. High quality and branded 2 KVA online UPS with at least 60 minutes of power back to be supplied.
21. Following accessories should also be supplied: cDNAsynthesis kit for at least 500 x 20-25µl reactions; thin-wall polypropylene 0.2 ml 8-tube strips for PCR (250 strips); flat 8-cap optically clear strips for 0.2 ml tubes (250 strips).
22. Warranty 2 years from the date of installation.

Vendors should attach original technical literature/ catalogue in support of the mentioned specifications and highlight the above features.

Item No 3: PCR Machine (Dual block)

Specifications:

An independently controllable universal dual block with total of 96 wells PCR machine is required with the following specifications

1. Block should accommodate PCR tube strips and individual tubes of capacity 0.2ml & 0.5 mL
2. It Should be capable of testing temperatures at Denaturation, Annealing & Extension steps
3. Should have 12°C gradient range
4. Gradient technology should ensure identical ramp rates in both gradient and normal operation
5. Gradient temperature should be ranged from 30– 99^{o}C
6. Heating and cooling of block must be peltier technology based
7. It should use Triple Circuit Technology or equivalent to ensure precise control of temperature
8. Block temperature control range must be 4°C to 99°C
9. Fast, Standard and Safe temperature control modes are essential
10. Lid Temperature range: 37 - 110 °C or better
11. Block Temperature Accuracy: ± 0.2°C or better
12. Block Homogeneity: ≤ ±0.3° C (20°C to 72°C); ≤ ± 0.4° C (90°C) or better
13. Ramp speed should be a minimum of 5 ^{O}C /Second including Heating rate: at least 3 °C/s; Cooling rate at least: 2 °C/s or better
14. Lid descent and closing pressure must use Flexlid technology with Thermal sample Protection (TSP) to accommodate PCR tubes with flat or domed caps
15. It should have large display with Graphic programming
16. Should have user login facility with or without PIN for enhancing the security
17. It should assure Inbuilt advance scheduling feature for users convenience
18. Preprogrammed protocol template is needed for the sake of easy selection
19. Should have time or temperature increment with cycles in PCR programme
20. Adjustable ramp rate is must to meet critical amplification conditions
21. It should have customized programming to allow a maximum of 20 steps and 99 cycles
22. It should ensure auto restart facility with user defined time interval when power fails and it should also have automated programme resume facility
23. Instrument should have status-display programme indicating the step, cycle and remaining runtime during the run
24. Should display Runtime in larger font for better view from distance
25. Should have at least two USB ports for Protocol transfer, Self-test, data management, printer / mouse attachment, etc.
26. Should have Log book function for error messages and new calibration
27. E-mail Notification options will be desirable
28. System should have power save standby function to maintain the temperature at 4 ^{O}C up to forever period after completion of PCR.

29. Cooling vents should be at bottom and rear
30. System should be able to connect few additional blocks for future up-gradations
31. Calibration according to NIST (USA), DKD/PTB (Germany) UKAS/NPL (UK), UL/cUL listed
32. Should comply to **restriction of the use of certain hazardous substances in electrical and electronic equipment** for safety of users
33. It should be supplied with minimum of three year warranty with effective from date of installation
34. Should able to store at least 500 protocols
    Supply of the all required accessories including an autoclavable micropipette set (0.1-2.5, 0.5-10, 2-20, 10-100, 20-200 and 100-1000 µL one each) from reputed manufacturer is compulsory.
35. The vendor should provide a specification compilation sheet clearly mentioning for the deviations or better than the indenter`s specifications if any
36. The vendor should submit the entire technical document related to the equipment or model quoted for cross confirmation of specification compilation sheet provided by the vendor.
37. The vendor should ensure at least three years warranty.
38. Supply of all the required tool kits is compulsory

Item No 4: **Homogenizer**

Specifications:

1. Compact, table top model suitable for effective disruption and homogenization of wide range of samples of animal, plant, bacteria and yeast origin allowing consistent DNA, RNA, and protein yield in subsequent purification protocols for molecular biology applications.
2. Should allow simultaneous disruption &homogenisation of minimum 12 samples in short time and should have provision to prevent biomolecules degradation.
3. Should have provision of effective disruption and homogenization of frozen samples.
4. Should have provision for complete isolation and sealing of samples while processing to avoid cross contamination.
5. Should be able to disrupt multiple samples through high-speed shaking in plastic tubes with steel/glass beads.
6. Should have digital display and adjustable time (approx. 30 sec - 90 min) at varied vibration frequencies.
7. Electric supply: 220-230V/ 50-60 Hz.
8. Following accessories should also be supplied: one sets of autoclavable adapter accommodating atleast 12 sample tubes, compatible stainless steel beads (for 500 samples), compatible single bead dispenser, compatible nuclease free sample tubes 2 mL capacity (500 nos.).
9. Suitable high quality online UPS capable of providing at least 30 minutes of power back-up to equipment supplied to avoid protocol interruption upon power failure thereby reducing sample degradation.
10. Warranty 2 years from the date of installation.

Vendors should attach original technical literature/ catalogue in support of the mentioned specifications and highlight the above features.

Item No 5: **Tissue Homogenizer**

Specifications:

1. Processing Range: 0.03mL-120mL
2. Power Rating: 125-150 watt
3. Electrical supply: > 200 V, > 50Hz
4. Speed Control: Variable from 1,000-10,000rpm
5. Dimensions: 16cm(6.5in) height, 5.1cm(2in) diameter
6. Weight: 500- 1000 g
7. Sound Level: it should be minimum < 50-75 db.
8. Warranty: At least two year motor warranty
9. Standards Approval: CSA and CE approved
10. Stainless steel for shaft & propeller
11. Motor Stand Assembly: it should be 5" by 8" stainless steel base plate, 19" tall by 3/8" diameter stainless steel support post, Mounting clamp assembly, Cross Rod Assembly.
12. Warranty should be at least 2 years

Item No 6: **Western Blot**

Specifications:

1. Quality protein transfer in 3 min – transfer 1-4 mini gels or 1-2 gels in a single run
2. Dry blotting instrument with 2 blotting cassettes and blot roller
3. FAST Blotting system with four gel simultaneously,2 different protocol at same time
4. Input power: 100–240 VAC, 276 VA, 50–60 Hz, 175 W max
5. Cooling fan: Yes
6. inbuilt Power Pac supply
7. Preprogrammed methods: Standard SD, 1.5 mm gels, High MW, Low MW, Mixed MW,
8. Programmable methods: Up to 25 user-defined
9. User Interface -- 128 x 64 pixel monochrome display
10. Audible alarm: Yes
11. User notifications like Power fail during run, No-load detection and End of run
12. Consumables – ready to use transfer packs for PVDF membrane sufficient for 40 transfers
13. Transfer packs must include thick blot paper, filer paper and PVDF membrane

Item No 7: **Deep freezer (-20^{o}C)**

Specifications:

1. Net Capacity: 800 liters or more.
2. Temperature range: -20ºC to -30ºC. Freezer should be set to -20ºC at the time of installation.
3. Upright type and solid single door model with self-closing doors. Freezer should have provision of forced air circulation for faster temperature recovery after door opening.
4. Freezers should be suitable for storing laboratory reagents and biological materials.
5. Four internal shelves and should be adjustable.
6. Integrated controller with digital temperature display and high/low temperature alarms, with audible and visible alarms for power failure, system failure.
7. Interior and exterior should be scratch resistant and painted.
8. Environmentally safe refrigerant mixtures CFC-FREE, HCFC-FREE non-flammable refrigerants should be used in freezer.
9. Certifications/compliance: UL and/or CE.
10. Automatic defrost to minimizing frost build-up and enable optimum cooling, alarm silence and automatic reset functions.
11. To prevent unauthorized alterations/changes in freezers settings, there should be key operated set point security system.
12. There should be battery operated backup system for alarm function in case of power failure.
13. Electric supply: 220-230V/ 50 Hz.
14. Suitable high quality voltage stabilizer with time delay function should be provided.
15. Warranty 3 years from the date of installation and free on-site repair services as and when required.

    Vendors should attach original technical literature/ catalogue in support of the mentioned specifications and highlight the above features.

Item No 8: **Deep freezer (-20^{o}C)**

Specifications:

1. Automatic defrost, temperature range -20 to-30°C, 800 liters or more, 230 volt, upright, single door, with four adjustable shelves, interior dimension of 25 x 26 x 54 to 33 x 34 x 62 inch and exterior dimension of 76 x 34 x 30 to 84 x42 x 38 inches.
2. Set point Security: Key-operated triple position switch for main power and alarm; locks in temperature and alarm set points to minimize set point error and prevent tampering
3. Graphic Thermometer for Easy viewing, exhibiting normal, high or low temperature condition, steady green for normal, flashing top bar for over temperature, flashing bulb for under temperature
4. Illuminated when main power is interrupted
5. Increases or Decreases set point values in programming mode using touchpad data entry
6. Interior Light Switch for interior lighting system
7. Automatic Defrost System: Defrost sensor
8. Door Ajar: Illuminated when door is left open
9. Battery Backup for full alarm function in case of power failure
10. Temperature Alarm Test for over temperature and under temperature condition and activates audible and visual alarms; display flashes momentarily when test is complete
11. Forced air circulation for uniform temperature and fast door opening recovery
12. Heat-free defrost for maximum uniformity
13. Solid doors, Four casters with two lockable, Adjustable, epoxy-coated wire shelves and 40 nos. of vessels to store reagents
14. There should be battery operated backup system for alarm function in case of power failure.
15. Electric supply: 220-230V/ 50 Hz
16. Suitable high quality voltage stabilizer should be provided.
17. All vendors are requested to attach original technical literature/catalogue in support of the mentioned specifications and highlight the above features.
18. Refrigerant: Environmentally safe refrigerant mixtures CFC-FREE, HCFC-FREE non-flammable refrigerants
19. Freezer to meet UL and CE standards for safety.
20. Warranty and free service for 5 years .

Item No 9: **Deep freezer (-20^{o}C)**

Specifications:

1. Should have temperature range of -20°C to-30°C
2. Capacity: Above 300 Liters
3. Should have Front mounted display/control panel
4. Temperature display must be present
5. Should have adjustable/Wheel type feet
6. Refrigerant should be HFC (CFC & HCFC Free)
7. Should have Pre-coated metal body to prevent environmental damage
8. (Should not have painted metal body)
9. Compressor should be Hermetic rotary type
10. Alarms: Audible Hi/Lo temp, power failure
11. Lockable door
12. System should have stainless steel coated or rust free interior and tough
13. Freezer should have front/side panel air filter
14. Freezer should have compartments(more than three) with inner doors
15. Instruments should be provided with voltage stabilizer and power back up
16. Freezer should be set to -20°C at the time of installation
17. Warranty- Minimum two years warranty.

Item No 10: **Deep freezer (-80^{o}C)**

Specifications**:**

1. Capacity: 800 litres or more.
2. Temperature range: -50ºC to -85ºC.
3. Upright type.
4. Refrigerant: CFC/HCFC free, environmentally-friendly and non-flammable.
5. Interior: painted stainless steel with minimum three adjustable shelves and four polystyrene insulated inner doors to maintain cabinet temperature when external door is opened.
6. Vacuum insulated panel, high-impact, scratch resistant powder coat finished exterior to ensure long-term durability.
7. Operating temperature: Programmable up to -85°C with 1°C increments at ambient temperature of 30°C.
8. Heated air vent to prevent vacuum formation during door openings and front panel air filter.
9. Alarms: Audible and visible alarms for temperature, power failure, system failure, probe failure, filter clean, door.
10. Touch-screen user interface for providing access to vital freezer information including event log, settings and user profiles.
11. Built-in USB port for downloading freezer log report and freezer settings from one freezer to another.
12. Provision of on-board computer to store temperature and event data up to 10 years.
13. Heated outer door gasket should provide state of the art security and protection and eliminating frost build-up.
14. Certification/compliance/Regulatory approval: Machine should be cULus and CE certified/ listed.
15. There should be provision for easy to remove and washable filters.
16. Single outer door and single hand ergonomic door handle operation with integrated key lock and padlock compatible.
17. Power management system should protect a wide range of voltage variation and should be easily accessible through the touch-screen display.

18. Freezer should not warm to -50°C from -80°C set point in under 200-240 minutes during a power failure at ambient temperature of 25°-30°C.
19. Electric supply: 220-230V/50 Hz.
20. Should have provision for optional CO_2 or LN_2 safety back-up system for additional protection in the event of a power or mechanical failure.
21. Following accessories should also be supplied: Sliding drawer racks for 2 inch boxes, holding capacity 22-25 boxes/rack (six racks); Sliding drawer racks for 3 inch boxes, holding capacity 12-15 boxes/rack (six racks); High quality, water repellent 2 inch boxes (with at least 81 places) sufficient for six racks; High quality, water repellent 3 inch boxes (with at least 64-81 places) sufficient for six racks; High quality stainless steel drawer racks should be supplied; Cryo Gloves- medium size (two pairs).
22. Suitable high quality voltage stabilizer with time delay function should be provided.
23. Warranty 3 years from the date of installation and free on-site repair services as and when required.

    Vendors should attach original technical literature/ catalogue in support of the mentioned specifications and highlight the above features.

Item No 11: **Centrifuge**

Specifications**:**

1. Microprocessor controlled, drive system be with brushless induction and spindle driven, digital display refrigerated centrifuge with
2. Temperature range of -10 to +40°C.
3. Should have Timer facility
4. Maximum RPM more than or equal to 17,500
5. Maximum RCF more than 30,000 g
6. Rotors for micro centrifuge tubes 24*1.5/2 ml 17800 rpm or more
7. Fixed angle rotor for conical falcon tubes 6*50 ml rotor with 15ml adapter 9400 rpm or more
8. Swing out rotor for 50ml and 15ml conical tubes 8x50/15ml 4500rpm or more with bio containment lid
9. 4*96 well micro plate rotor 4300rpm or more
10. The Centrifuge should have a feature to install and remove rotor without any additional tool with just a push of a button for quick and easy change of rotors for different applications.
11. Should have multiple programs upto 95 or more
12. Warranty and free service for 2 years.

Item No 12: **Centrifuge**

Specifications**:**

Max. Speed (rpm)	15000-20000
Max. RCF (g)	16600-20000
Max. Tube Size (ml)	5-8
Max. Capacity (ml)	40-50
Min. Temperature (°C)	-20
Dimensions WxDxH (mm)	450-500x 550-600 x 500-550
Votlage Stabilizers	Required
Supply	220-240 Volts 50 Hz single Phase
Rotors	10 ml, 20, 50 ml size rotors
Warranty	2-3 Years

Item No 13: **Centrifuge**

Specifications**:**

1. Centrifuge should attain maximum speed of 15000-17500 rpm
2. Centrifuge should be non-refrigerated
3. Centrifuge with fixed angle rotors for 24/30 X 1.5/2 ml with adaptors for 0.25 ml PCR tubes, 0.25 ml and 0.50 ml micro tubes, Rotors for 8 X 50 ml and6X100 ml with adaptors for 12-16 ml, 25-30 ml, 50 ml, 3-5 ml and 5-7 ml.
4. Centrifuge with swing bucket rotors for 4X100 ml conical tubes/flat bottom, 4X250 ml with adaptors for 12-15 ml, 25-30 ml, 50 ml and 100 ml and microplate/microtube carrier
5. Rotor lids should have a Quick Lock-system for secure lid closing and opening
6. The centrifuge must be CE/ CSA/ UL certified and IVD Compliant with international standard
7. The centrifuge should be with bright advanced LCD display for speed, time, temperature, acceleration, and deceleration.
8. Electric supply: 220-230V/50 Hz
9. Warranty two years from the date of installation

Vendors should attach original technical literature/ catalogue in support of the mentioned specifications & highlight the above features

Item No 14: **Micro Centrifuge**

Specifications**:**

1. Operating temperature range: -8°C to +40°C with 1°C increment.
2. Maximum speed: 14,000 rpm or more.
3. Maximum RCF: 20,000g or more.
4. Time setting range: 1 min - 90 min with 1 min increments and hold function.
5. Centrifuge capacity: 24 × 1.5/2 mL or more
6. Display: Large, digital backlit/brightly lit display for easy viewing.
7. Control panel: Key pad or soft touch button.
8. Maximum noise level: ≤ 55dBA
9. Certifications/compliance: CE marked, in-vitro diagnostics (IVD) compliance.
10. Following rotors to be provided:
    - Rotor accommodating at least 24 x 1.5/2.0 mL tubes.
    - Rotor accommodating at least 8 x 8 tube PCR strips.
    - Suitable adapters for 0.5/0.6 ml tubes and 0.2 ml PCR tubes to be provided (minimum 24 adapters of each type).
    - Original rotors with covering lids to be provided.
11. The system should be suited to Indian system of electrical inputs (220-240V/ 50/60Hz).
12. Suitable high quality voltage stabilizer with time delay function should be provided.
13. Warranty 3 years from the date of installation and free on-site repair services as and when required.

Item No 15: **Refrigerated Incubator Shaker**

Specifications**:**

1. Shaking speed: 20 (±5) –500 (±100) rpm with control (± 1 rpm).
2. Shaking load capacity: At least upto 18-25 kg. Universal platform with dimensions of 745-800mm X 420-460mm. Platform should be easily removable for cleaning. Pull out/slide out platform/tray.
3. Temperature range: 15°C (±5°C) below ambient to60-80°C (±20°C). Cooling option.
4. Internalillumination/lighting: Halogen or fluorescent lighting.
5. Stainless steel interior with single door.
6. Large, clear view port or window on door.
7. Microprocessor based programmable controller for multiple set point changes to temperature,speed.
8. System should of illumination feature for photosynthesis to grow plant cells.
9. Audible and visible alarm.
10. With a universal platform, flask clamps, spring wire rack and test tube racks. Holders/clamps:12 X 125/150 ml flask, 24 X 250 ml flask, 12 X 500 ml flasks, 12 X 1000 ml flasks, 6 X 2000 ml flask and two test tube racks each for 10-13ml or 12-15 mm, 15-18/20 ml,and 18-21 mm or 21-25 mltubes.
11. Shakersshould be stackable.
12. Machine should stop shaking if door is opened.
13. Should have UV light or HEPA filter.
14. In-built Over Voltage Protection and the machine should be switched of automatically in case of any fault.
15. CE certification.ISO 9001 manufacturer certificate.
16. Power supply: 220-240 VAC, 50/60 Hz
17. Voltage stabilizer supplied: 5 KVA
18. Original company literature from Principal company / Manufacturer must be supplied, clearly verifying all specifications.
19. Warranty: 2 years after installation.

Item No 16: **Refrigerated Incubator Shaker**

Specifications:

1. The construction should be Tripled walled
2. Temperature range should be from 0°C to 60°C
3. It should have versatile platforms for culture flasks, flasks etc.
4. Temperature Accuracy should be ±0.1°C at 37°C
5. Air heaters should have dual stage interlocking facility. It should also have air circulating fan for temperature uniformity inside the chamber
6. Refrigeration: Hermetically sealed compressor uses CFC free refrigerant
7. Heaters: Low watt-density, resistance heaters with high temperature safety thermostat cut off
8. Shaking range should be at least from 50 to 250 rpm with 1" (2.54cm) orbit
9. Shaking Control: ± 1 rpm
10. Drive mechanism should be eccentric counterbalance drive with permanently lubricated ball bearings
11. It should have fibermolded door assembly
12. Timer and Parameter control measures should be available
13. It should have inbuilt Speed and temperature control panels
14. It should have on-board firmware program for photosynthetic lightning and UV decontamination
15. Touch screen Color Display should be at least 5-7 inch
16. Control panel should consists of main switch along with the indicating lamp, control switch etc having LAN based operation facility for fault detection and Web based technology for remote access
17. Alarm should be provided along with to Indicate temperature more than 5°C from set points, and when timer operation has expired (emergency condition)
18. It should have an emergency switch at rear end to avoid accidents
19. The unit should have stacking up facility up to at least three units for growing numerous cultures
20. Instrument should be supplied with platform and clamps.
21. The clamps required are 10 ml – 10 qty,25 ml – 20 qty, 50 ml – 10 qty, 125 ml -10 qty, 250 ml – 10 qty, 500 ml – 10 qty, 1L – 5 qty, 2L- 2 qty
22. Small medium and large test tube rack should be supplied.
23. The vendor should provide a specification compilation sheet clearly mentioning for the deviations or better than the indenter`s specifications if any
24. The vendor should submit the entire technical document related to the equipment or model quoted for cross confirmation of specification compilation sheet provided by the vendor.
25. The vendor should ensure at least three year warranty.

Item No 17: **Autoclave**

Specifications:

Operating temperature range	Sterilizing	105 ~ 135°C(0.019 ~ 0.212MPa)
	Heating	45 ~ 104°C(0 ~ 0.015MPa)
	Warming	45 ~ 95°C
Maximum operating pressure		0.25 Mpa to 0.263MPa
Temperature Display		Digital
Display range		0 ~ 0.4MPa
Heat source		1.5 to 3 KW electric heater
Safety device		Water level sensor, • Current leakage breaker, • Lid interlock, • Over-heat prevention, • Over-pressure prevention, • Open temperature sensor detection, • Safety valve
Time	Display	Digital
Display Range	Sterilizing	0:00 - 9:59, 0 - 99hours, 0 - 999min.(0:00 - 9:59,10 – 99hours changeable)
	Heating	
	Warming	Variable: 0 - 99hours
Chamber dimensions		φ325 x 553mm to φ370 x 774mm
Chamber capacity		Volume 35 to 75 L Internal Volume 44 to 80 L
Chamber Dimension		410W x 477D x 790Hmm to 470W x 528D x 1003Hmm
Weight		40 to 60 Kg
Rated Voltage		120 V to 230 V
Power Input		13 A/120 V to 17A/ 120V
Required power supply		120 v
Power consumption (calorific value)		1.5 kw-3.0 KW
Accessories		Stainless baskets (φ300 x 182mm)to Chamber bottom Plate 1, • Caster stoppers
Warranty	At least three years	

Item No 18: **pH Meter**

Specifications**:**

1. pH measuring range: 0.00- 14.00
2. pH accuracy: ± 0.05 or better
3. pH resolution: 0.01 or better
4. Conductivity accuracy: ± 0.05% or better
5. Conductivity resolution: 0.001 µS/cm to 2000 ms/cm or better
6. Temperature range: 0- 100ºC or better
7. Temperature accuracy: ± 0.1 or better
8. Salinity range: 0.00 to 50.00 ppt or better
9. Digital display
10. Calibration: Up to 3 points
11. The equipment should be equipped with the facility for the measurement of ion concentration
12. The equipment should be equipped with the facility for the measurement of dissolved oxygen
13. A good quality instrument cover should be provided
14. A minimal quantities of essential buffers, standards and electrolytes should be provided
15. Power 220-240 VAC ± 10%, 50 Hz AC
16. A standard factory calibration certificate should be provided.
17. The necessary operation manual should be provided along with the machine.
18. The firm shall submit necessary catalogues and product data sheets along with the offer.
19. The manufacturer must have a management system certified to ISO 9001.
20. Warranty: at least for two year from the date of installation

Item No 19: **pH Meter**

Specifications**:**

1. A high end pH meter is needed loaded with PC Software able to support Seven Excellence, Seven Compact, SevenMulti, SevenEasy, SevenGo pro and Seven Go Duo pro.
2. It should have Freely definable report format and Excel import of data
3. It should Support multi-result download from portable equipment and should have Graphical evaluation of measurement data

Item No 20: Laminar Airflow Chamber

Specifications:

Laminar-flow cabinet (with vertical flow) which should able to clean the air for microbiological, biotechnological, and biochemical research. The cabinet should ensure sterile conditions for the protection of processed material from external impurities

1. Auto-mode : Automatically performs all activities in order to properly prepare for operation ("blowing through", setting the flow, switching on the additional lamp)
2. Manual mode – the user may at any time freely control the cabinet functions (flow, fluorescent lamp, UV lamp)
3. It should have HEPA EN 1800 or equivalent filtration efficiency min. 99.997% for particles of 0.3 microns (HEPA filter should have life at least 3000h)
4. The cabinet should have a digital hour meter and an internal surveillance system indicating operation errors.
5. It should have Pre-filters made of high grade nylon Net fixed in S.S. frame for first Stage air purification, through blower system.
6. An additional lamp above the workspace is required
7. UV germicidal lamp with high durability to sterilized the work bench is required
8. Power socket on the cabinet housing is must
9. Provision of hour timer of the cabinet and UV lamp operation is must
10. The worktop is compulsorily made of stainless steel of international grade specifically used for laminar flows or biosafety cabinets
11. HEPA filter monitoring system should be equipped with the automatic indication system for filter change alarming
12. Working area (4X2 ft.) of Laminar Airflow Cabinets should be illuminated by fluorescent light
13. Single Phase 50Hz. AC Supply. Fitted with UV Germicidal lamp for sterilization is must.
14. It should be Fitted with Cock for Gas Connection and provision of electric sterilization of transfer loops is compulsory
15. The vendor should provide a specification compilation sheet clearly mentioning for the deviations or better than the indenter`s specifications if any
16. The vendor should submit the entire technical document related tothe equipment or model quoted for cross confirmation of specification compilation sheet provided by the vendor.
17. The vendor should ensure at least three year warranty

Item No 21: Laminar Airflow Chamber

Specifications:

- Horizontal air flow chamber, Stainless Steel 304 working bench.
- Working Area: dimensions of minimum 4ft x 2ft
- Filter efficiency: HEPA filter, the Main filter: 99.99% at 0.3 micron**;** pre-filter: arrestance of 90% at 10 micronsand above.
- Average air velocity should be 90-100 fpm
- Fitted with UV germicidal light (30 watt-3 ft length) and white/ fluorescent light illumination (36 watt- 2nos.).
- White light Illumination intensity of more than 1000 Lux.
- Fitted with acrylic front door of double folding type
- Supplied with manometer, electrical controls, gas port and gas burner/stand.
- Noise level: less than 65 dBA
- Electrically operated with 230V, Single Phase 50Hz AC Supply
- Minimum of Two years warranty from the date of installation

Item No 22: DSLR Camera

Specifications:

A high end DSLR camera for quality photography and recording is required with following specifications

1. Camera should be Digital, single-lens reflex, AF / AE camera with built-in flash. It should have Recording media of CF cards (Type I, UDMA 7 supported) SD / SDHC / SDXC memory cards UHS-I cards compatible.
2. The camera should have Approx. 22.4 x 15.0mm Image sensor size. It should have EF lenses (including EF-S lenses) Excluding EF-M lenses (35mm-equivalent focal length is approx. 1.6 times the focal length indicated on the lens Compatible lenses.
3. Camera should have CMOS sensor Image Sensor. It should have Approx. 20.20 megapixels
   Effective pixels which may be Rounded off to the nearest $10,000^{th}$
4. It should able to save Images in the form of JPEG, RAW (14-bitoriginal), RAW+JPEG simultaneous recording possible
5. Camera should able to record in the format of Standard, Auto switch card, Record separately, Record to multiple
6. **Image Processing: It should able to give** Auto, Standard, Portrait, Landscape, Neutral, Faithful, Monochrome, User Defined 1 – 3, Auto, Preset (Daylight, Shade, Cloudy, Tungsten light, White fluorescent light, Flash), Custom, Color temperature setting (approx. 2500-10000 K), White balance correction, and White balance bracketing, Flash color temperature information transmission possible, Applicable to long exposures and high ISO speed shots, Auto Lighting Optimizer provided, Peripheral illumination correction, Chromatic aberration correction, Distortion correction.
7. **Other functions should be available like,** Auto focusing , HRD Shooting, Multiple Exposures, Shutter, Drive systems, Flash, Live View Shooting, Live View functions, Movie shooting options, LCD monitor, Play Back functions, Post processing for image, Direct printing, Image transfer options, Loaded with GPS function, Customization functions, Interface, Battery Packs, rechargeable (one spare), Battery Chargers, camera mounting stand, Data transfer cables etc. are required
8. Camera should have inbuilt GPS function for recording latitude and longitude of the photographic location
9. All the accessories including data transfer, battery charger (LED) and one spare battery, memory card, camera positioning stands etc.
10. It should supplied with water proof camera storage bag
11. Camera should have multimode of recording and capturing of photographs.
12. supply of all the technical documents in support of specification compilation sheet
13. Vendor should ensure at least three year warranty *w.e.f.* date of installation.

Item No 23: Ice Flaker

Specifications:

An ice flaker is required for rapid ice preparation for routine molecular biology experiments

1. It should be able to produce ice 150 kg/day or more
2. Temperature range should be -5 to -10^0C
3. The construction material must be high-quality Corrosion resistant stainless Steel
4. It should have adjustable feet between 110 mm – 150 mm
5. It should have collection bin capacity of at least 40 Kg
6. It should have refrigerant R22A / R 404A or equivalent; with PU foam insulation
7. The cooling system must be forced air – type
8. The collection bin capacity should be at least 40 Kg
9. It should be able to operate with full automation
10. Ice flake thickness must be from 2.0 to 4.0 mm
11. The instrument must have CE/ equivalent certification
12. It should have standard drain for melting water
13. Noise level should be less than 45 dB
14. It should have warranty period of at least 36 months

Item No 24: Real Time PCR

Specifications:

1. Peltier based thermal cycling for real time amplification of DNA/ RNA from samples
2. Licensed for real time PCR
3. Maximum ramp rate of 5°C/sec
4. Average ramp rate of 3-3.3C/sec
5. Accuracy +/- 0.2^{o}C of programmed target at 90°C
6. Uniformity ±0.4 well-to-well within 10 sec of arrival at 90°C
7. Sample loading capacity- 96 well format. Should support 96 well plates, strips and tubes from multiple manufacturers.
8. Open system should support all common chemistries including SYBR green and TaqMan.
9. Should have provision to run regular PCR, preferably gradient.
10. Optical system should include excitation by minimum 6 filtered LED system and detection by minimum 6 filtered Photodiodes
11. High Resolution Melting (HRM) analysis.
12. At least five excitation and five detection filters.
13. Heating rate - 4°C/sec. or better.
14. Reaction volume 10-30 µl or more
15. Should be able to detect Cy5, FAM, VIC SYBR Green
16. Capable of multiplexing at least 5 dyes /well
17. Full compatibility with any standard or fast-cycling 384- or 96-well plates and reagents.
18. PC workstation, Monitor, Pre-installed windows and software for real-time analysis
19. Electrical approvals of IEC and CE
20. A compatible 2 KVA UPS with 60 minutes backup should be provided
21. The vendor should provide comprehensive onsite training on the operation of the instrument, chemistry options and software. This training should be provided free of cost.
22. System should be provided with at least 100 plates, 200 sealers and SYBR reagent sufficient for 2000 reactions of 30 υl volume reaction
23. Warranty: At least 3 years warranty.

Item No 25: Gel Electrophoresis Unit- Vertical

Specifications:

Vertical electrophoresis unit for separation of protein using an electric current applied to SDS-Page gel matrix.

The system should include following components: Buffer tanks and lids with power cables, combs, gel releasers, spacer plates, short plates, casting frames, casting stands, electrode assembly, companion running module and a power pack.

1. Number of gels: Up to 4 gels
2. Gel trays should be UV transparent with safety lids.
3. System should compatible with pre-cast or hand cast gels.
4. Glass plate size (W x L): plate size- 10 X 7 (± 0.5) cm. twenty glass plated should be supplied additionally.
5. Twenty casting frames should be supplied additionally. Two casting stands should be supplied in spare.
6. Spacer plates: 10 X 8 (±0.5) cm. Twelve spacer plates should be supplied additionally.
7. Castings stand gaskets. 10 additional rubber gaskets should be provided
8. Combs of0.75 mm, 1.0 mm and 1.5 mm thickness. Ten combs of each should be supplied additionally.
9. IEC 1010/EN 61010 and CE electrical safety certification.
10. Vertical electrophoresis unit should also include a high voltage power pack of following specifications:
    - Output: 5-250 V, 0.01-3 A, and 1-300 W.
    - Output range: 5-250 V and should be adjustable with 1 V increments. Adjustable 0.01-3 A with 0.01 increment. Adjustable 1-300 W with 1 W increment. Voltage, current and power should be constant.
    - Timer: 1 min-99 hr
    - Display: 16 character x 2-line LCD
    - Output jacks: 4 sets in parallel
    - Input voltage: 220-240 VAC.
11. Four additional power pack adaptors of 2 mm and 4 mm banana plugs should be provided.
12. Warranty: Two years from date of installation.

Item No 26: Gel Electrophoresis Unit (Vertical)

Specifications:

Electrophoresis system includes electrophoresis cell (buffer tank, lid with power cables) suitable for precast/hand cast gels and all accessories (comb, spacer etc), staining trays with lids.
Gel capacity: 1-4 (ready and pre cast gel). Glass plate size:(W x L) 8 X 7 (± 0.5)cm. Comb :0.7 mm and 1 mm (minimum 4 each), Buffer tank capacity: 1000ml
Glass plates and combs should be labeled with thickness and number of wells for instant identification. Leak proof casting gasket.

Eight glass plate, four casting frames, two casting stands, four rubber gasket, should be supplied in spare.

PowerPac Supply:
Programmable power supply that fits broadest range of application & should be capable to operate four units simultaneously. The output range should be 0- 300 V, 0-2500 mA, 1-500 W in 1 Watt steps. Constant voltage, current or power or constant temperature.Automatic Power up after Power failure.Timer 1-999min.
Safety features: No-load detection, sudden load change detection, ground leak detection.
CE compliance

Item No 27: Gel Electrophoresis Unit (Horizontal)

Specifications:

Horizontal electrophoresis unit for separation of DNA and RNA using an electric current applied to a gel matrix.
The unit should include following components:

1. Buffer tanks, single molding casted, for gel trays of different sizes.
2. Gel trays should be UV transparent with safety lids.
3. UV transparent gel trays of sizes (W X L): 7 X 7-8 cm, 7 x 10-12 cm, 15 X 7-8 cm, 15 X10-12 cm, 15 X 20-22 cm, and 15 X 25-30 cm.
4. Electrophoresis unit should be having universal gel caster, movable wall, fixed wall gel caster and casting gates and multiple options for hand casting gels of different sizes.
5. Combs of fixed height. 8, 10, 15 and 20wells comb of 0.75 and 1.5 mm sizes. 30 wells comb of 1.5 mm size.
6. Electrophoresis unit should also include a high voltage Power pack of following specifications:
    - Output: 5-250 V, 0.01-3 A, and 1-300 W.
    - Output range: 5-250 V and should be adjustable with 1 V increments. Adjustable 0.01-3 A with 0.01 increment. Adjustable 1-300 W with 1 W increment. Voltage, current and power should be constant.
    - Timer: 1 min-99 hr
    - Display: 16 character x 2-line LCD
    - Output jacks: 4 sets in parallel
    - Four additional power pack adaptors of 2 mm and 4 mm banana plugs should be provided.
    - Input voltage: 220-240 VAC.
    - Warranty: Two years from date of installation
    - EN 61010 and CE electrical safety certification.
7. Electrophoresis assembly should be color coded with labeled electrodes and bases for correct positioning of the lid on to the base.
8. Warranty: Two years from date of installation

Item No 28: Gel Electrophoresis Unit (Horizontal)

Specifications:

1. Use for single cell comet assay, DNA and protein separation
2. Removable buffer circulation cassettes
3. Inbuilt leveling mechanism
4. Buffer requirement:900-1000 mL
5. Lid
6. Tank with two dual male connectors per electrode and a levelling arrangement
7. Two trays with slot to lift slides (each of size 20-22 (w) × 8.5-10 (L) cm for 8 slides and made of breakage resistant plastic)
8. Two buffer distribution cassettes withdrawal and Deliver with attached tubing connectors

Additional items, accessories and modifications:

1. UV-opaque trays of different widths and lengths that compatible with comet assay
2. UV-transparent tray with gel gripping design, with different widths and lengths
3. Extra comb stands and combs to cast gel with multiple combs.
4. Fixed height combs (To be used without the comb stand. These require slotted trays)
5. Gel-casting options for tape free casting
    a. Gel-casting stand
    b. Gel-casting blocks for casting gels of variable lengths
    c. Gel-casting dams for casting gels in the tank (requires modified tank)
    d. Trays with silicone gaskets at the ends to cast gels in the tank
    e. Trays with slots to fit plastic dams with silicone gaskets
6. Combs of varying thickness (1 mm, 1.5 mm, 2 mm or 3 mm)
7. Penta-legged levelling table with spirit-level
8. Warranty should be at least 2 years

Power supply

1. Output range upto 220V, 500 mA
2. Dual mode (CV and CC) with auto crossover
3. Two outputs (independently monitored)
4. Independent digital displays for mA and volts (resolution 1 mA, 1 V)
5. Can be set to any desired value within range
6. Special MOSFET load sharing circuitry
7. Protection of outputs against short-circuitry
8. Over-voltage trip circuit to limit electronic component damage
9. Protection of outputs against short circuiting.
10. Over voltage tripping circuit to limit electronic component damage
11. Spike guard
12. Warranty should be at least 2 year

Peristaltic Pump:

1. Peristaltic pump with variable speed and silicon tubing
2. 2. Bi-directional continuous operation
3. 3. LED display and timer
4. 4. Flow rate : 420-470ml/min silicon tubing with 7 mm diameter

Item No 29: Plant Growth Chamber

Specifications:

A state of art fully automated plant growth chamber is required with illumination to achieve homogeneous light distribution with natural illumination of working area 3X3X5 fits

- The door should have a glass / acrylic peeking window to allow inspection of samples without disturbing the temperature of cabinet.
- It should have User - oriented design of shelves with appropriate adjustability
- It should supply with SS water reservoir with inbuilt RO water inflow facility with immersion type heaters at the bottom to provide 40% to 95% humidity.
- The Illumination should be based on fluorescent lamps/tubes for artificial daylight conditions
- It should have 5 levels light control of 0%, 25%, 50%, 75% and 100%)
- It should have on board firmware to program photosynthetic lightning and UV decontamination
- The control panel should consist of main switch along with the indicating lamp, control switch etc having LAN based operation facility for fault detection and Web gate technology for remote access.
- It should have air heaters with dual stage interlocking facility and air circulating fan for temperature uniformity inside the chamber.
- The cooling must be done by a hermetically sealed CFC FREE eco-friendly compressor with interlocking applied for zero downtime facility.
- It should have thermal gradient controlled mechanism
- It should be electronically controlled preheating chamber for assuring the temperature accuracy and reproducible results
- It should have temperature range from 0 °C to 50°C (with and without humidity and illumination)
- It should have 3 variable positioned illumination cassettes with at least 5 daylight illumination tubes; each should be switchable to achieve the desired lighting as per requirement.
- The illumination system should able to assure an unique homogeneous light distribution throughout the chamber
- It should have user specific locking system to enhance the security
- System should have capacitive humidity sensor to control the humidification and dehumidification system with independent adjustable temperature safety device for providing the full proof protection against chamber over-temperature via a visual and audible temperature alarm
- It should have Inner glass door for observing the pots withut distrubibg the internal conditions.
- System should supply with all safety connection kit for water supply and drainage, including suitable water hose
- The system should have wheels for easy transfer from one place to another
- Vendor should ensure at least 36 months of warranty and two years AMC w.e.f date of installation
- Supply of all of the technical documents in support of specification compilation sheet provided by the vendor is must.

Item No 30: Biosafety Cabinet

Specifications:

1. Cabinet should be class II type A2
2. Front Glass Opening: 7 - 10 inch.
3. Internal Dimensions (W x H x D): 5 ft x 2.5 ft x 2 ft approx.
4. Filter: MPPS >99.99%, H14 HEPA EN 1822.
5. Certifications/Compliance: CE listed, NSF/ANSI 49 certified for Class II, Type A2 conditions.
6. Noise should not exceed 65 dBA.
7. Interior and Work tray: made of single piece stainless steel.
8. Front: Ergonomically sloped with UV absorbing/UV protective glass.
9. Provision of service valves for gas, air and vacuum.
10. Cabinet to be provided with stand and detachable arms rest.
11. UV lamp: factory installed with programmable UV light, germicidal.
12. Visual and audible alarm for indicating improper front window working position, and airflow restrictions.
13. Provision for reduced speed operation when front window is closed.
14. Provision of interior lighting and at least one 230V plugs/receptacles on interior side.
15. Provision of independent pressure sensors to detect changes in inflow/exhaust or down flow with alarm signals.
16. Electric supply: 230V/ 50-60 Hz.
17. Warranty 2 years from the date of installation.
18. Suitable high quality online UPS capable of providing at least 30 minutes of power back-up for biosafety cabinet to be supplied.

Vendors should attach original technical literature/catalogue in support of the mentioned specifications and highlight the above features.

Item No 31: Cabinet dryer

Specifications:

1. Drying of grain, fruits and vegetables in batch operation
2. Dryer should have stainless steel drying trays
3. Provision of dehumidification and heating of moist air
4. Temperature (-5 to 100°C), humidity (15-95%) and airflow/velocity controller with specified interval
5. Digital display with separate data logger for data analysis
6. Dryer with advance specification will be preferred
7. Warranty and free service for one year after installation.

Item No 32: Multi Parameter portable water quality kit

Specifications:

Multiparameter water proof portable pH /mV /Ion /Conductivity/ TDS/ Resistivity/ Salinity/ Dissolved Oxygen handheld meter with pH electrode, 4 cell Conductivity probe, Dissolved Oxygen probe, DAS software, power adapter & carrying kit set (all probes have 3 m cable length). Simultaneously measures and displays four parameters. View individual parameter details at the press of a button. Measure accuracy of up to ±0.002 pH and resolution of up to 3-decimal points, 2-cell and 4-cell Conductivity probe, enabling it to measure a wide conductivity range of up to 500 mS/cm – meter even measures pure water, Ion measurement capabilities with 3 digit resolution and 8 calibration points, Measure 90.00 mg/L in DO concentration and 600 % in DO saturation – one of the widest Dissolved Oxygen measurement ranges offered in the handheld market, Rugged and waterproof for applications in harsh environments, Step-by-step prompts that guide users through set-up, calibration and trouble-shooting, High/low alarm limits, Meter automatically logs up to 500 readings with time and date in GLP-compliant format, RS 232 through LED , USB / IrDA Interface Adapter, Non-volatile memory protects information and meter settings, even when batteries run out, Password protection to prevent tampering, Warranty 3 years on meter against manufacturing defect and 6 months for electrode. Consumable for pH standards and DO (membrane), and conductivity probes.

Item No 33: Glass door refrigerating cabinet

Specifications:

1. Temperature range: +01 to +11 ºC
2. Capacity: 1300-1500 Liters
3. Door: Double glass door with good insulationwith door locks
4. Shelves: At least six
5. Integrated controller with digital display and high and low temperature alarms
6. Refrigerant: Environmentally safe refrigerant mixtures CFC-FREE, HCFC-FREE non-flammable refrigerants
7. Certifications/compliance: CE marked.
8. Automatic defrost.
9. Forced air circulation.
10. Fluorescent lighting for interior illumination
11. Electric supply: 220-230V/50 Hz
12. Suitable high quality voltage stabilizer should beprovided.
13. Warranty two years from the date of installation.

All vendors should attach original technical literature/catalogue in support of the mentioned specifications and highlight the above features.

Item No 34: Lab washer disinfector

Specifications:

Lab washer disinfector should have built in washing, disinfecting and drying system with following features:

1. Front-loading unit with bottom-hinged door
2. Electronic door lock/automatic door lock
3. Hot air drying system for disinfection purpose
4. Microprocessor based programme: up to15-30 or more programmes. System should also equipped with communication card.
5. Forced hot air drying system with HEPA/ULPA air filter 99% or better
6. Integrated dispenser/dosage pumps for detergent and neutralizer.
7. System should have built in detergent cabinet.
8. Detergent dispenser pump should be equipped with level sensor.
9. System should have steam condenser.
10. Internal dimensions (L/W x D x H): 520-600 mm X 470-650 mm X 500-850 mm).
11. Water supply connection for hot and de-mineralized water
12. Monitoring required for conductivity, spray pressure and spray arm rotation
13. Water pre-heating system should be in the machine.
14. Buzzer, acoustic signal at end of programme
15. Programmed recontinuation in event of power Outage
16. Water proof system
17. Certification/conformity: CEE or VDE, VDE-EMC, CE 0366, IP 20 certification

A. System should be equipped with two spraying/injection levels. Spraying level should have sprayers to hold various supports for beakers, test tubes and flasks. Injection level should have injection trolly with at least 40 positions

B. System should also be equipped with one spraying/injection level to wash-dry narrow-necked glassware up to 500 mm in height.

C. System should also equipped with one and two injection level.

D. Support for Beakers/Flasks

1. Spring support for Beakers/Flasks of 250-1000 ml, at least 25-30 positions
2. Spring support for Beakers/Flasks/bottles of 50-100 ml, 100-150 positions
3. Made of stainless steel

E. Support for Cylinders and Funnels

1. Support for cylinders of 100-250 ml and Funnels and at least 20-30 position
2. Made of stainless steel

F. Upper support for petri dishes

1. Support for 70-120 mm petri dishes, at least 35-40 pieces
2. Made of stainless steel

G. Lower support for petri dishes

3. Support for 70-120 mm petri dishes, at least 40-50 pieces
4. Made of stainless steel

H. Support for 250 ml, 500 ml and 1000 ml narrow naked bottles.

I. Upper trolley with sprayer

5. Suitable for holding of support and Baskets

6. Made of stainless steel

J. Lower trolley

7. Suitable for holding of support and Baskets
8. Made of stainless steel

K. Test tube support/ basket

9. Capacity:80-170 standard test tubes
10. Equipped with removable compartments with lid
11. Made of stainless steel

L. Basket (at least 4 baskets) with stainless steel handles for medium sized instruments.

M. Injection trolley/carriages with at least 40 spigots and drying system connection for flasks/glasswares of 490 mm in height.

N. Injection trolley/carriages with at least 40 spigots and drying system connection for flasks/glasswares of 225 mm in height.

O. Stainless steel trolley for injection washing of bottles with drying system connection. Suitable for washing at least 25 narrow- or wide-necked bottles of 250-1000 ml, fitted with spigots positioned on 2 levels.

P. Trolley with drying system connection for washing of tapered and cylindrical test tubes by internal injection. It should be of at least 100 test tubes. Positioning on the upper or lower washing level.

Q. Stainless steel pipette washing trolley with drying system connection for washing and drying of at least 100 pipettes with a capacity of 1 to 20 ml and a height up to 450 mm.

R. Cartridges for providing DI water to machine should be supplied with refill container

S. Water purification system

Water purification system should able to produce Type II and Type I grade water. Two sets of additional cartridges/ultra filtration unit should also be provided in spare.

1. **System should have following features to produce Type II grade water:**
   - Pre-treatment module: Activated Granulated Carbon or pre-filter 1 mm filter.
   - Booster Pump, RO Module (at least 10 lit / hr) and Deionization module.
   - Conductivity Measurement after RO and Type II water.
   - Production rate at least 10 Litre/hour into the tank. Produced water conductivity 0.060 to 0.2µS/cm and bacterial load should be reduced to more than 99%.
   - Two additional Cartridges should be provided
2. **System should have following features to produce Type I grade water:**
   - Booster Pump, UV-Oxidator and Ultra Filtration module
   - Conductivity measurement for Type I Water
   - Production rate at least 1.5 litre/min. Produced water conductivity 0.055 to 0.2µS/cm and bacterial count < 1 cfu/ml and endotoxin level < 0.001 EU/ml. Produced water should be DNase, and RNase free.
3. Two additional Cartridges should be provided

T. Optional items: Booster pump and storage tanks of 100-150 liters

1. Booster pump for non-pressure de-mineralized water.
2. Machine should allow water supply with de-mineralized water from a non-pressure tank at a minimum height from the floor at 80-100 cm.

U. Electrical power supply: 3/N/PE 400V ~ 50Hz 7.0 kW

V. Warranty: Two years after installation

Item No 35: UV/VIS spectrophotometer

Specifications:

1. That can measure the concentration and purity of nucleic acids, tissue sample, protein samples and the density of bacterial cell cultures at a broad range of sample volumes.
2. It should be pre-programmed with a range of standard methods for the convenient quantification of proteins, nucleic acids, and bacterial cell cultures.
3. In addition, there has to be the flexibility to design and store methods
4. Double beam optical system
5. Wavelength range 190-1100 nm
6. Wavelength calibration automatic upon switch on
7. Spectral bandwidth 1 nm
8. Wavelength accuracy ± 0.1 nm
9. Wavelength reproducibility ± 0.15 nm
10. Light source of Xenon lamp/ halogen-deuterium lamp
11. Detector with CCD Array/ PMT/ photodiode
12. Good company computer should be provide
13. Option for data transfer to PC
14. Weight should be 25-35 kg
15. Power requirements 100–240 V (± 10%), 50/60 Hz
16. Supplied with set of quartz curettes for sample volume of 500 µl - 2 ml
17. Warranty should be at least 2-3 years

Item No 36: Analytical balance

Specifications:

An analytical balance for precision weighing of chemicals to prepare the microbiological media is required with the following specifications

1. The balance should have a weighing capacity from 1.00 mg to 200 grams/ 0.0001-200 grams.
2. It should have Built-in function for balance leveling. The built-in Level Control function should able to issues a warning when the balance is not level and provides on screen guidance to help the user level the balance correctly within seconds.
3. The balance should have large color touch screen for comfortable operation and should have warning functions for valid and invalid weighing results.
4. It should display digits turn red if the net sample is below a pre-programmed minimum value.
5. The balance should have Passcodes to protect balance settings.
6. It should have password protected access
7. It should have Easy-cleaning features to save time and effort
8. It should have movable walled fibre or glass protection for minimizing the external errors during weighing
9. It should have tare function for reducing the time for weighing separate samples
10. It should have weigh mode switch function for selection of preferred weighing unit (mg/gm).
11. Warranty for 3 years

Item No 37: Microscope (Light)

Specifications:

A Research Microscope automated stand for Biology for transmitted light LED illumination, with 6-fold automated nosepiece, automatic adjustment of light intensity, with height adjustability of focus knobs, integrated LED and stage carrier, with Centre-able condenser holder for vertical adjustment, right- and left-hand operation and clamp screw, with adjustable height stop, Mains 100-250V, commutable 50-60 Hz is required for microbiological research

- It should be Infinity Corrected & Harmonic Compensated (HC) Optical System
- It should have 3-step focus drive for coarse, medium and fine focusing, focus torque adjustment and adjustable focus stop, with focus knobs coarse
- The Objective nosepiece should be automated for 6 objectives
- It should be ergo stage with vernier reading, travel range 76x25mm with stage plate for ergo stages with ultra-hard ceramic surface, Slide holder for ergo stages for one hand slide exchange; X/Y stage control removable rubber covers are required for left or right hand adaptation
- The transmitted light filter magazine is required for 3 filters with Daylight filter, Green filter panchromatic & Neutral density Filter
- It should have Magnification changer
- The DIC objective slot should be available with microscope
- The trinocular tube, with 30° viewing angle, with interpupillary adjustment 55-75mm, with constant focus and automatic adjustment. Beam splitter positions vis/phot should be: 0/100%.
- Full metal Fluorescence Illuminator is required - to accommodate up to 5 fluorescence filter cubes - real zero pixel shift technology
- The Fluorescence Filters should be all Band pads filters for DAPI, FITC & TRITC. Filter turret should move both clockwise & anti clockwise. The Filters should be corrected to prevent image and pixel shift while observing or capturing images using different filters
- Automated condenser Achr. apl. A 0.9 with automated switchable condenser top, with color coding, for BF, DF, PH, Pol. & DIC.
- The systeme should be high resolution and anti-fungus treated Fluotar / Neo Fluor Objectives 5x/0.12, 10x/0.25 , 20x/0.40 ,40x/0.65 and 100x/1.25 (OIL)
- Camera & Software details
- Scientific (dedicated for microscopy) **Digital Colour HD CMOS** or better Camera with High definition & Resolution 5mp, with a provision for software interpolation, 1/2.3" scan with software kit, color filter RGB, and live image full display. Firewire or USB connection to PC. Should be upgradable to other s/w modules in future. Preview images on an HD monitor, Projector, Saving should be directly on SD card & SD card to be provided.
  The camera and microscope should be controllable through single software.
- It should have deriving versatile calibrated measurement parameters with annotations.
- A suitable branded PC work station is to be provided for operating the camera system.
- The vendor should provide a specification compilation sheet clearly mentioning for the deviations or better than the indenter`s specifications if any
- The vendor should submit the entire technical document related tothe equipment or model quoted for cross confirmation of specification compilation sheet provided by the vendor.
- The vendor should ensure at least three years warranty

Item No 38: Gel Doc System

Specifications:

1. A Gel-Doc system with imaging software able to provide automated and reproducible results for image acquisitions and analysis
2. It should able to autofocus at any required zoom levels to get quality image
3. It is able to provide publication ready image without any further manipulation
4. Software should have options for image analysis
5. It should able to image protein and DNA gel imaging for stain free and dyed gels
6. It should have option for colony counting
7. It should able to image film and 2-D protein gel and their analysis.
8. System should supply with DNA gel electrophoresis units with power pack from reputed manufacturer
9. All of the accessories related to user safety must be supplied with the system
10. The vendor should provide a specification compilation sheet clearly mentioning for the deviations or better than the indenter`s specifications if any
11. The vendor should submit the entire technical document related tothe equipment or model quoted for cross confirmation of specification compilation sheet provided by the vendor.
12. The vendor should ensure at least three years warranty

Item No 39: Vortex

Specifications:

A vortex is required for suspending bacterial pellets, DNA, PCR setup, viscous fluids mixing, etc. the instrument should have following specifications:

1. Mixing frequency: 300 – 3,000 rpm
2. Mixing and vortexing radius: -1.5mm
3. Touch vortex frequency 3500 rpm or more
4. Timer: 15 sec – 99 h, continuous or better
5. Interfaces: USB interface
6. System should stable on work bench even at the maximum speed with minimum noise levels.
7. Instrument must have CE or equivalent Certification.
8. Set of compatible blocks must be provided with the main unit.
9. Vendor should ensure at least 36 month warranty w.e.f. date of installation.

All the required technical document in support of specification compilation sheet should supplied.

Item No 40: Vacuum concentrator

Specifications:

1. A Vacuum concentrator able to fast, efficient and moderate vacuum concentration of biological and DNA/RNA, nucleotides, proteins, liquid or wet samples is required. The system should have facility for vacuum concentration at low temperature (chilling) should be available.
2. The system should be a complete with integrated solvent resistant, maintenance and oil free pump and condensation trap.
3. System and pump should be made of noncorrosive material and should be highly resistant for mineral acids and organic solvents like acetonitrile, DMSO, and Chloroform etc.
4. System should have at least three operational modes for Aqueous, Alcohol and Highly Volatile solvents.
5. System should possess at least four temperature selections (room temperature, 30 °C, 45° C, and 60 °C) to allow safe and efficient concentration of biological samples and additionally $4^{o}C$ for concentrating the samples at low temperature is required.
6. System should support Centrifugation and Desiccator function
7. It should have a rotational Speed of 1,400 rpm or more.
8. System should have imbalance detection.
9. System should support multiple lab ware formats (0.2 ml. 0.5ml, 1.5ml, 2 ml, 15ml conical tubes, 50 ml conical tubes, 96 well PCR plates, MTP and Deep well plates) with different rotors. Supply of all required rotors able to fix all above mentioned wares are compulsory.
10. System should able to concentrate samples up to a capacity of 300 ml or more.
11. All the rotors and adapters must be autoclavable.
12. Vacuum generated should be a minimum of 20 hPa (20 mbar)
13. System should have an emission condenser to purify outlet air.
14. The system should be supplied with a suitable cold trap
15. Rotors required: - Rotor for 1.5/2ml with 48 positions should be supplied. The Rotor for 0.2 ml, 0.5ml, 1.5 ml, 2 ml, 15ml conical tubes, 50 ml conical tubes, 96 well PCR plates, MTP and Deep well plates 15 ml and 50 ml falcon tubes should be supplied.
16. The vendor should provide a specification compilation sheet clearly mentioning for the deviations or better than the indenter`s specifications if any
17. The vendor should submit the entire technical document related to the equipment or model quoted for cross confirmation of specification compilation sheet provided by the vendor.
18. The vendor should ensure at least three years warranty.
19. Supply of all the required tool kits (spanner for changing and tightening of rotors) is compulsory

Item No 41: Heating Block

Specifications:

A heating block is required for thawing and cooling of biological samples, pre-heating of biological media etc. The equipment should have following specifications.

1. It should support the heating and cooling of versatile vessels including PCR tubes to 50 ml vessels
2. Temperature control should be from -10 to 100^0C or more with an accuracy of ± 0.5^0C or less.
3. Heating rate maximum 6.5 ^{0}C or better
4. Interfaces: USB interface
5. Instrument must have CE or equivalent Certification
6. Set of compatible blocks must be provided with the main unit
7. The system should be supplied with appropriate sets of compatible blocks able to occupy 0.5 ml, 2.0 ml, 15 ml, 50 ml and glass test tubes and 96 well plates, etc.
8. Vendor should ensure at least 36 months warranty w.e.f. date of installation.
9. All the required technical document in support of specification compilation sheet should supplied

Item No 42: Viscosity Meter

Specifications:

A viscosity meter is required for viscosity measurement of microbiological samples at different shear rates. The equipment should have following options

1. It should utilize very small amount of sample (less than 1 mL)
2. The temperature range should be from -20 or less to 100^0C or more (Peltier-type temperature control required)
3. It should be compatible with highly corrosive samples
4. It should be supplied with appropriate software for automated determination of molar mass, intrinsic viscosity, relative viscosity and other polymer-specific parameters
5. The speed range, in case of spindles should be from 5rpm or less to 1000rpm or more
6. Viscosity range should be from 0.2 poise or less to 15000 poise or more
7. The range of shear rate Sec^{-1} should be 10 or less to 13000 or more
8. It should be mercury free
9. It should be supplied with the set of necessary accessories e.g. spindles/piston, etc.
10. It should have CE/ISO/ equivalent certification
11. It should have at least 36 months warranty.

Item No 43: Ultra Sonicator

Specifications:

A high end digital cell ultra-sonicating probe based machine is required for disrupting the microbial cell and degassing the solvents with the following specification

1. The system should have different probes to be used for degassing of solvents and disruption of microbial cells
2. It should be fully microprocessor controlled and completely programmable
3. It should have temperature indicator and controller ,time setting provisions
4. It should be supplied with Integrated Sound reduction chamber to reduce cavitational sound produced during processing
5. It should have digital parameter entry for precise, easy setup
6. It should have inbuilt auto tuning for optimum control in any application.
7. It should have both continuous and pulsed operation.
8. It should have a LED readout displays parameter settings during setup and operation for easy and user friendly reference and monitoring
9. It should able to adjust a total processing time ranges from 1 second to 99 hours
10. It should Supplied with tooling which may ideal for Falcon style vessels
11. All the probes from low to high sonication power to sonicate small and large volume of the samples
12. Vendor should ensure at least 36 months warranty w.e.f. date of installation.
13. Vendor should supply all of the technical documents for cross confirmation of specification compilation sheet provided by them.

Item No 44: Laboratory oven (Hot air oven)

Specifications:

A tripled walled hot air oven is needed for routine drying and sterilization of glassware at high temperature (250 °C). It should have gravity convection; thermal processes to ensure the efficient heating. The oven should ensure fast, uniform drying of glass wares and other laboratory materials.

1. It should have temperature range: Ambient + 5 °C to 250°C
2. It should have a temperature accuracy: ±1°C
3. Capacity/Size: 250 Litres.
4. The oven should have uniform circulation even under full load with the help of Air heaters with Dual stage interlocking facility and the Air circulating fan for temperature uniformity inside the chamber and Homogeneous temperature conditions throughout loaded material
5. Thermal gradient controlled mechanism.
6. Maximum occupational safety Easy loading and unloading of specimen material and should have very tight door closure. It must have thick insulation for low heat dissipation and rack should be with tilt protection.
7. It should not have permanent fixtures to facilitated the easy cleaning
8. It should have at least 7 inch Touch screen Colour Display
9. It should made up of high-quality materials and Fiber molded door unit
10. Safety features: It should have over temperature protection and power fluctuation protection.
11. Control panel should consists of main switch along with the indicating lamp, control switch etc. It should have LAN based operation facility for fault detection & Web gate technology for remote access. Timer & Parameter control, Alarm : Indicate temperature more than 5°C from set points, and when timer operation has expired (emergency condition), Emergency switch at rear end to avoid accidents
12. It should have option to stacked Units up to two no. for growing numerous applications
13. It must have warranty period of at least 36 months

Vendor should submit all the technical documents in support of specifications compilation sheet provided by the vendor.

Item No 45: Vacuum pump

Specifications:

A vacuum pump is required for routine laboratory protocols involving filtration, aspiration, desiccation, vacuum drying, water aspiration, etc. The equipment should have following options

1. It should support at least 6 funnels for the activities like filtration, aspiration, vaccum drying, etc.
2. It should have flash holder and round bottom flask for generating the vacuum
3. It should able to generate 7-9 mbar vacuum or more to generate vacuum for 6 flasks at a time attached in sequence.
4. It should have intake catch jar, exhaust catch jar, adjustable vacuum/gas ballast, a knob for vacuum and pressure adjustment, vacuum gauge, etc.
5. It should have inlet water trap facility for protection of the pump from accidental ingestion of water
6. It must be made up of corrosion – free material and compatible for materials used in the life science laboratory
7. It should have inbuilt pressure gauge for fixing the required vacuum
8. All the accessories viz, hose pipe, rubber and steel clips and locks etc. must be supplied
9. Weight should not be more than 15 Kg
10. It must have warranty period of at least 36 months

Vendor should submit all the technical documents in support of specifications compilation sheet provided.

Item No 46: Microscope Fluorescent

Specifications:

1. Research fluorescent upright microscope with transmitted white light LED of at least 5W illumination with long life of more than 1, 00,000 hours.
2. 3-step focus drive coarse, medium and fine adjustment with focus torque adjustment
3. Objective nosepiece for 6/7 or better objectives. Quadruple or better resolving nosepiece
4. DIC turret to be available with empty DIC slots. Combination of DIC and fluorescence with DIC turret.
5. Infinity corrected optical system
6. Ergo stage with Vernier reading, Ergo stage should be made up of ultra-hard ceramic surface with slide holder for ergo stages for one hand slide exchange
7. Universal condenser 0.90/1.25 oil, colour coded with condenser lens and accommodation for DIC prism, phase rings with rotatable polarizer and analyzer. Interchangeable condenser heads with phase contrast accessories.
8. X/Y mechanical stage either for right hand operation or for left hand operation. Universal holding frame should accommodate petri dishes and slides
9. Trinocular phototube with viewing angle at least 45^0 and beam splitter positions vis/phot: 3 switching positions: 100% visual & 100% photo.
10. System should have provision to adapt two cameras simultaneously.
11. Eyepiece pair 10x/22 or better – focusable and adjustable and provision for eyepiece 16x/14B, 25x & 40x adjustable
12. Immersion oil – 100 ml
13. Infinity corrected objectives suitable for DIC, phase and fluorescence: Fluorite / Semi Apo, Plan/Neo Fluor 4x, 10x, 20X, 40x and 100x (oil). objectives should be with fluorescence capability or better
14. Dust cover for the complete set
15. Ultra high pressure Hg-Lamp, HG 100W, fluorescence filter turret should be at least 5-positions or more. Fluorescence intensity should be incorporated into the microscope. All filters should be band pass filters optimized for DAPI, FITC and TRITC.
16. Neutral density filters to control fluorescence intensity to incorporate into the microscope.
17. Fluorescence zero pixel shift free filters for DAPI, FITC and TRITC with band pass.
18. Compatibility with comet assay procedure
19. High sensitive and high speed Monochromatic cooled CCD camera should be provided with system and it should be compatible with comet system. The camera should be controllable from software.
20. Software with dongle should meet wide variety of multidimensional imaging requirements like multi-channel acquisition, time lapse imaging, basic analysis to capture uneven surface, feature like annotations and labeling, distance measurement, area, and perimeter.
21. A latest configured computer system with 2TB hard drive, Core i7 processor, frequency 3.6 GHz or better, at least 8 GB RAM memory and Monitor 27" should be provided.
22. Warranty should be at least 3 years after installation.

Item No 47: Magnetic Stirrer with hot plate

Specifications:

1. Speed: 100-1500 rpm
2. Maximum stirring volume (liquid): 2-5 litres
3. Plate temperature regulation range: 30^0C to 200^0C
4. Working plate heating time till 200^0C: 15-20 minutes
5. Diameter of working plate: 150-160 mm
6. Working surface material: Aluminium alloy/rust free material
7. Length of magnetic stirring elememt: 10-15 mm
8. Fault indication: Audible sound signal/automatic turn off
9. Nominal operation voltage: 230 V or 120 V and 50/60 Hz
10. Two years warranty after installation

Item No 48: Stirrer (Magnetic Stirrer with temperature control)

Specifications:

1. Speed range: 0-1000 rpm or better
2. Temperature range: at least up to 350 degree C
3. Capacity: greater than 15 kg
4. Ceramic platform with minimum 180 $inch^2$ usable dimension
5. Digital display and timer
6. Should be operated with power 220-240 VAC ± 10%, 50-60 Hz
7. Supplied with stir bars
8. A standard factory calibration certificate should be provided.
9. The firm shall submit necessary catalogues and product data sheets along with the offer.
10. The manufacturer should have a management system certified to ISO 9001.
11. Warranty: minimum 2 years

Item No 49: Probe Ultrasonicator

Specifications:

1. Operating temperature should be in between 5-50 degree celcius.
2. Sonicator should have operating frequency 20 KHz or more.
3. Operation should be automatic and digital display timer.
4. Optional titanium probe: 2 mm, 3 mm, 6 mm, 18 mm, 20 mm, 25 mm.
5. Capacity: 0.5 ml to 1500 ml.
6. Maximum power output: 400 W or below.
7. Clamp/stand should be included with instrument.
8. Option for amplitude and pulse adjustment.
9. Electronic supply: 220/110/±5%
10. Should be applicable for dispersing agglomerated particles, ultrasonic cell extraction and disintegration.
11. Availability of sound protection facility is better.
12. Warranty should be at least 2 years warranty period.

Item No 50: Top Pan Balance

Specifications:

- Large LCD display with backlight.
- Function buttons/icons should be present and clear.
- Top pan balance should have capacity of 100-500 g.
- Automatic calibration should be available despite of temperature variations.
- It should display capacity tracker during weighing.
- Readability should be 0.001 g.
- Keypad should be easy to use.
- Pan should have diameter between 80 to 180 mm.
- Instrument should have at least 2 years warranty period.

Item No 51: Soil Thermometers

Specifications:

1. The soil thermometers should be as per IS 5681-1970.
2. It should be suitable to measure soil temperature at 5 cm soil depth.
3. Accuracy: ± 1° C or better
4. All the thermometers should be tested and calibrated at recognized government department/institutions, and a standard factory calibration certificate should be provided.
5. The firm shall submit necessary catalogues and product data sheets along with the offer.
6. The manufacturer must have a management system certified to ISO 9001.
7. Suitable carrying case
8. Warranty: minimum 2 years

Item No 52: Automatic blood Analyzer

Specifications:

1. Convenient and safe to use: Fully automatic integrated self-cleaning system for minimum maintenance. Cyanide free reagents to avoid environmental risks.
2. Compact size requiring small bench space. Large colour LCD display features intuitive communication Built-in thermal printer.
3. High reliability and accuracy: Independent counting system for each species to ensure high accuracy.
4. Fully integrated calibration and quality control programs for at least following parameters: WBC, RBC, HGB, HCT, MCV, MCH, MCHC, RDW, PLT, MPV, PDW, PCT
5. Multispecies additional parameters for Dog, cattle, Horse, Sheep, Goat, Mouse, Rat and rabbit or other species also.
6. Histograms for WBC, RBC and PLT
7. Principles should include electrical impedance method for counting and cyanide free method for Hemoglobin.
8. Sample Volume: Pre-diluted$\leq$ 20µl, Whole Blood $\leq$ 15 µl
9. Throughput: at least 25 samples per hour
10. Display: Colour LCD/LED display
11. Resolution : 640 X 480
12. Carryover: WBC,RBC,HGB $\leq$ 0.5%, PLT $\leq$ 1%
13. Input /Output: RS232 X 2, 1parallel printer, 1 barcode scanner, 1 keyboard and their interface.
14. Printer: Thermal recorder, 50mm or more width paper, various printout formats along with printer.
15. Operating environment: Temperature: 15^0 C-40^0 C
16. Humidity 30%-80%
17. Power Requirement : 100-240V ~ 50/60 Hz
18. Dimension: 320 ± 50 (W) X 440 ± 50 (H) X 390 ± 50 (D)
19. There should be a warranty period of two years for repair and maintenance.
20. The machine should accompany UPS (for at least 1 hr) in case of power interruptions.

Item No 53: CO2 Incubator

Specifications:

1. Total capacity of the incubator must be between: **150-200ltrs**.
2. The incubator should be constructed using **corrosion free resistant stainless steel** and should have appropriate design to facilitate cleaning and avoid contamination.
3. The type of the incubator should be of bench top type.
4. The chamber should have the following dimensions (W x D x H): Internal (cm) - 50-60 x 40-50 x 65-75;External (cm) - 65-75 x 65-75 x 80-90.
5. The chamber should be provided with sealed inner glass door facility with appropriate closing system to minimize loss of gases.
6. Shelf material should be perforated and made up of stainless steel which can be easily removed/ reassembled for routine cleaning/sterilization.
7. The chamber should have **4-6 numbers**
8. Provision of temperature range in the incubator: $22^{o}C$ – 50°C
9. Temperature uniformity should not fluctuate beyond ± 0.3 °C
10. The incubator to be equipped with highly stable long lasting appropriate type of gas sensor.
11. Provision of CO2 range 0.2 – 20 % should be provided
12. CO2 uniformity should not fluctuate beyond ± 0.1%
13. Provision of user interface parameter display board made up of LCD/LED. It should be bright and easy to read simplifying daily operation for researchers with improved access to incubator functions and information.
14. The display should provide information specific to performance, should do data and error logging, provide convenient on-screen operational prompts, and provide user specific electronic security.
15. All control and measurement probes and sensors should be located directly inside the culture chamber to provide true and accurate process data and foster faster parameter recovery times.
16. Incubator should be equipped with programmable tracking alarms for critical temperature and CO_2 control parameters, which can be custom configured to meet the needs of changing research requirements.
17. The chamber should accompany **two (2) CO_2 Cylinders, in-line two stage CO_2 gas regulators** with auto-change over controllers and online HEPA filters.
18. The chamber to have electrical requirements: 200-250V, 50/60 Hz.
19. The incubator should have the facility for security system from over temperature cut off. It should also have automatic re-setting of the pre-set parameters in case of power failure.
20. The CO2 incubator should accompany **appropriate UPS to keep functional (for minimum 2hrs)** in case of power failure.
21. To prevent unauthorized alterations/changes in freezers settings, there should be key operated set point security system.
22. Suitable high quality **voltage stabilizer withtime delay function** should be provided.
23. **Qualified installation and service maintenance** assistance to be included along with the instrument.
24. Warranty **3 years** from the date of installation and on-site repair services as and when required.

25. Vendors should attach **original technical literature/ catalogu**e in support of the mentioned specifications and highlight the above features.
26. **Indian users list** for equipment should be provided as essential requirement.

Item No 54: Nanodrop Single Probe
Specifications:

1. Minimum sample volume for analysis should not be more than 2.0 µl.
2. Single probe reader to be provided.
3. Path length for measurement should range from 1 mm to 10 mm.
4. Wavelength Range of 190 - 700 nm to be provided
5. Wavelength Accuracy must vary by only ± 1nm
6. Absorbance Precision should be 0.002 to 0.005 (1 mm path)
7. Absorbance Range to be included : 0.04 - 200 (10 mm equivalent)
8. Detection Limit for measured samples to be less than 3 ng/µl (dsDNA) and less than 0.20mg/mL (BSA)
9. Detection Range of the quantity measured to be 3-14,000ng/µL (dsDNA) , 0.20 - 300mg/mL (BSA)
10. Should accompany compatible operating softwares for the machine.
11. Machine and systems soft wares should enable applications for nucleic acid quantification (DNA and RNA) and protein quantification
12. Measurement Time should not be more than 10 seconds.
13. As an interface to run the Nano Drop operation softwares, dedicated personnel computer or laptop with 64 bit OS, intel core i5 processor, 4-5 GB RAM with suitable operating system should be provided.
14. Two year warranty period for any operational repairs/ maintenance of the machine
15. Electric supply requirements: 220-230V/ 50-60 Hz.
16. Suitable high quality online UPS capable of providing at least 30 minutes of power back-up to be supplied.

Vendors should attach original technical literature/catalogue in support of the mentioned specifications and highlight the above features.

Item No 55: Liquid Nitrogen Storage Vessels

Specifications:

1. **Liquid Nitrogen Capacity:** Liquid nitrogen vessels should be of 1 liter, 2 liters, 5-6 liters (two quantities each) and 20-30 liters (two quantities) LN2 storage capacity.
2. **Neck diameter**:5-6 cm for 5-6 liters and 20-30 liters LN2 vessel; 10-15 cm for 1 and 2 liters containers.
3. **Static evaporation rate**: 0.15-0.18L/Day for 5-6 liters vessel and 0.18L-0.20/Day for 20-30 liters vessels.
4. **Withdrawal device**: 20-30 liters vessels should be with withdrawal device
5. **Wheeled Accessory Cart**: 20-30 liters vessels should be with wheeled accessory cart.
6. **Dipper:** Liquid nitrogen vessels should come with 10-15 ml dipper.
7. **Warranty**: Two years from the date of installation.
8. All vendors should attach original technical literature/catalogue in support of the mentioned specifications and highlight the above features.

Item No 56: Micropipettes/set

Specifications:

A high accuracy micropipette set is required for precise reagent pipetting during routine laboratory protocols. The set should include -

1. Highly precise autoclavable micropipette set with the micropipettes having capacity ranging from minimum 0.1µL to 1000 µL (.1-2.5, 2-20,10-100,100-1000 µL) and 1-10 ml
2. The micropipettes should have the tip cone design compatible with the tips from multiple brands
3. The micropipettes should have second-push longer enough for highly efficient dispensing
4. The micropipettes should have user-friendly, in-house calibration system without any special tools
5. The micropipettes should tolerate autoclaving temperature and should be resistant to UV
6. The micropipettes should have special provisions for appropriate protection against physical and chemical corrosion
7. The volume display should be visible during pipetting
8. The micropipettes should have easy identification color-coding system
9. There should be provision of shelf mounting stand for proper storage and handling
10. There should be individual quality certificate (QC) along with the calibration report for individual pipette following ISO 8655 with CE/IVD or equivalent compliance

Item No 57: Microtome

Specifications:

1. Rotary Microtome designed for all applications of paraffin and hard specimens in research.
2. Consistent sectioning speed
3. Sectioning of super mega cassettes and should supports safer specimen changing
4. Knife holder accepts either high or low profile disposable blades.
5. Calibrated controls for precise specimen orientation.
6. Disposable Blade carrier universal cassette clamp
7. Sectioning range: 0.5 to 100µm trim
8. Trimming increment: 10u, 50u or more
9. Section resolution 5 to 500 µm
10. Electrical requirements 115V 60 Hz
11. Digital display to monitor a range of functions including cutting speed section count section thickness and advance distance.
12. There should be a warranty period of two years for repair and maintenance.

Item No 58: Texture Analyzer

Specifications:

1. Force (load cell capacity)- 1 to 700 kg with 0.1 to 15 g resolution and 0- 0.030% accuracy
2. Load cells; ranged between (1 to 700 kg) e.g. ±1, 5, 30, 50, 100, 250, 500 kg etc.
3. Speed: 0.01 to 20 mm/sec with better accuracy (up to 0.1%)
4. Operating modes: Tension or Compression (measurement of force and distance)
5. Display: simultaneous speed, force plots etc.
6. Position setting: 0.1- 500 mm at 0.001 mm resolution and 1-28000 repeat cycles
7. Library with wide range of programme (TPA, adhesive, fatigue cycling and stress relaxation)
8. Data input and output ports for data transfer (Min 500 Hz)
9. Operating temperature range: 0- 45ºC
10. Dimensions size: minimum 950 x 480 x 330 mm
11. Wight: 25 -50 kg
12. Power supply 220-240v (AC)
13. Data logger with suitable software package (Texture Export Exceed software programs for data analysis) etc.
14. Warranty and free service for 2 years.

Item No 59: BOD Incubator

Specifications:

A Tripled walled constructed incubator for bacteriological research, highly suitable to culture the bacteria and fungi the Incubation temperature ranges from 4 - 50 ^{O}C is required. It should be supplied with following specifications

1. Chamber volume 450 litres or above
2. Door should have a glass / acrylic peeking window to allow inspection of samples without disturbing the internal temperature of cabinet.
3. Temperature Sensitivity ±0.1 °C
4. Safety features should be available for over temperature protection and over electric power protection.
5. On board firmware for UV decontamination should be provided
6. Control panel should consists of main switch along with the indicator lamp, control switches, etc. having LAN based operation facility for fault detection and Web gate technology for remote access
7. Air heaters with Dual stage interlocking and air circulating fan for temperature uniformity inside the chamber must be available
8. The cooling should be through hermetically sealed CFC FREE eco-friendly compressor with interlocking applied for zero downtime facility
9. It should have thermal gradient controlled mechanism
10. It should have at least 5-7 inch Touch screen Colour Display
11. Alarm : Indicate temperature more than 5^{o}C from set points, and when timer operation has expired (emergency condition)
12. Emergency switch at rear end to avoid accidents should be available
13. Shelves Number to be Supplied : minimum 6
14. Should have high and low temperature protection
15. Gasket door with key lock for safety and security
16. Easy-to-clean, corrosion-resistant construction
17. A suitable stabilizer should be supplied to control the power fluctuations during the operation
18. The vendor should provide a specification compilation sheet clearly mentioning for the deviations or better than the indenter`s specifications if any
19. The vendor should submit the entire technical document related to the equipment or model quoted for cross confirmation of specification compilation sheet provided by the vendor.
20. The vendor should ensure at least three year warranty

It should be highly suitable for any application **(Particularly for incubation of microbial plate to culture the bacteria and fungi at required suitable temperature)** that requires a temperature setting at or below the ambient temperature of the laboratory. The unit is microprocessor controlled and features push button temperature set-point selection, high and low temperature protection, and an easy to read digital display.

Item No 60: Automated Autoclave System

Specifications:

1. Fully automatic horizontal autoclave system should have four walled construction with 350-400 liter chamber volume.
2. Autoclave should have water level indicator with low water level automatic cut-off.
3. Hydraulically tested at 40 psi and electrically tested for safety.
4. System should be with pressure gauge, safety valve and steam release cock.
5. Chamber Working Pressure- 1.2 Kg/Cm^2, Jacket Working Pressure- 1.5 Kg/Cm^2
6. The Inner chamber, back plate, door should be made up of SS 316 grade.
7. The unit should have radial locking system with automatic pressure dependent door locking system to prevent opening of the door while steam is inside the chamber.
8. The outer covering and jacket should be made up of SS 304 grade.
9. The steam generator, heater plate, pipelines, stand should be made up of SS 304.
10. System should have feature of automatic steam injection into main chamber through valve.
11. The stainless steel steam generator unit should be fitted along with RO plant.
12. The steam generator should be fabricated from S.S. 304 sheet with industrial immersion heaters with automatic pressure control and other safety features like low water cut off to safe guard heaters, safety valve gauge glass etc.
13. The control panel and stand should be made up of S.S.304 quality.
14. The shell and tube type steam condenser should be fabricated from S.S.304 quality fitted in the exhaust/Vacuum line to condense the steam before entering the Vacuum Pump.
15. The unit should be with high performance, low power 8-bit microcontroller based system.
16. Autoclave system should be with touch screen panel and there should be features of password protection, inbuilt real time clock with date and time function and computer interface for data recording and monitoring.
17. Automatic vacuum breaker should be provided to break the vacuum in case of formation of vacuum due to steam condensation.
18. Should have 121ºC sterilizing temperature at 15 to 20 psi
19. A provision for controlling overheating and over sterilization should be available.
20. Baffle system for effective distribution of steam throughout in the chamber to avoid the entering steam from directly hitting onto the load.
21. Carriage should be fabricated from S.S.316 steel and floor trolley should be fabricated from sturdy S.S 304.
22. Should be ISI certified.
23. Electric supply: 400 to 440 V AC, 50 Hz.
24. All vendors are requested to attach original technical literature/ catalogue in support of the mentioned specifications & highlight the above features
25. Warranty three years from the date of installation

Item No 61: Soil Temperature and moisture sensor with data logger

Specifications:

1 Sensor based system for measurement of *in situ* soil moisture and temperature at different soil depth
2 Soil temperature measurement range at least up to 50 °C with minimum 0.1^0C resolution
3 System should be suitable to measure soil moisture content ranging from 0 to 100 % with high percent accuracy
4 Operating temperature: up to 50 °C
5 Portable data logger/data acquisition system with:
- Battery charger compatible with Indian system;
- USB serial port for data transfer to PC;
- User friendly software compatible with Windows 8 and above;
- More than 1000 data/observations per one charging

6 System should be provided with probe cable of minimum 2 m length
7 System should be supplied with at least 100 numbers of suitable access tubes and accessories.
8 Motorized soil auger equipment kit with accessories for fixing access tubes in soil up to 1 m depth
9 System should have suitable carrying case
10 Power 220-240 VAC ± 10%, 50-60 Hz AC
11 A standard factory calibration certificate should be provided.
12 The necessary operation manual should be provided along with the machine.
13 The firm shall submit necessary catalogues and product data sheets along with the offer.
14 The manufacturer must have a management system certified to ISO 9001
15 Warranty : minimum one year from date of installation

Item No 62: Reciprocating Shaker

Specifications:

1. Reciprocal type shaker could be used with bottles or conical flasks of different sizes can be shaken by adjusting the compartments provided on the shaking rack.
2. Speed range is from 140 rpm to 250 rpm.
3. Fitted with PMDC heavy duty geared motor for continuous rating.
4. To work on 220/230 Volts A.C. supply.
5. It should have the provision of timer/time setting for shaking of the samples.
6. It should have capacity to hold 20 sample of one litre conical flask in a single time.
7. It can able run in the open environment with warranty of two years.

Annexure- II:

PRICE SCHEDULE FOR DOMESTIC GOODS OR GOODS OF FOREIGN ORIGIN LOCATED WITHIN INDIA

1	2	3 a	4 b	5 c	6 d	7 e	8 f	9	10	11
Item Description Country of origin	Accounting unit & quantity	Exfactory/ exware-House/ex-showroom off the shelf	Exice duty if any	Packing and forwarding	Inland transportation	Insurance other duties and taxes, if any(other than sales tax and incidental costs) (e)	Incidental services (including supervision)	Overall unit price [a+b+c+d+e+f]	Total price 2X9	Sales tax payble if contract is awarded

Total bid price in Rupees : (in figures) .....
(in words) .....

Place : Signature of bidder

Date: Name

Business address

Note :

I. In case of discrepancy between unit price and total price, the unit price shall prevail.

PRICE SCHEDULE FOR GOODS TO BE IMPORTED FROM ABROAD

1	2	3 a	4 b	5 c	6 d	7	8	9	10
Item Description Country of origin	Accounting unit &quanty	Unit price FOB port of lading or loading which is correct	Unit price CIF at port of entry	Inland transportation charges, insurance and other local cost incidental to delivery, if specified	Incidental services including supervision	Overall unit price [b+c+d or a+c+d]	Total price 2X7	Indian agent name	Indian agent commission as a% of FOB price included in the quoted price