

The University of Burdwan



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Tender Notice

Tender Title:

Sealed quotations are invited from the vendors for the following items needed for a DST-FIST, Govt. India sponsored Grant (No./SRFST/LS-I/2018/188 (C), Dept. of Botany, BU.

Tender No: DST-FIST/BOT 2019-20/01

Tender Date: 18.12.2019

Last date of Tender Submission: 03.01.2020

Items:

Item 1. Atomic Absorption Spectrophotometer (AAS) (1 Unit)

Specifications:

Supply, installation and commissioning of an Atomic Absorption Spectrophotometer system

General features:

1. Polarized Zeeman Background Correction method by the DC magnetic field with dual detectors should be available.
2. Improved visibility of atomization unit by means of LED lighting.
3. Available Standby power consumption saving setup function for power saving and water saving.
4. Must have Dual R955 PMT detector, while enable real time background correction.
5. Should have Automatic bumping detection method effective in the factor analysis of fault measurement reproducibility .
6. A variety of safety functions should be incorporated as below
 - Gas leakage check at flame turn-on

- Auxiliary gas pressure monitoring
 - Automatic gas supply shut-off at turn-off of flame
7. Automatic sample chamber switching without shifting of atomization section.
 - Interlock mechanism for burner head
 - Burner drain liquid level monitoring
 - Cooling water flow rate monitoring
 8. Twin injection technology allows larger sample volume at one time, which means detection of lower concentration of sample.
 9. Should have bumping detection of sample
 - Flashback prevention using auxiliary gas buffer tank at power failure
 - Flame sensor error monitoring
 - Valve error monitoring
 10. Standard dust proof cover with illumination.

Technical specifications:

1. **Analytical Method** : Graphite furnace
2. **Measurement mode**: Atomic absorption and photometry
3. **Optics**: Double-beam with Polarized Zeeman method
4. **Background correction**:
DC polarized Zeeman background correction method must be used for furnace methods.
5. **Monochromator**:
 - Mount, diffraction grating: Czerny-Turner mount, 1800 lines/mm, Blazed at 200 nm
 - Wavelength range : 185-900 nm, Automatic spectral peak setting
 - Focal length, reciprocal dispersion – 400 mm, 1.3 nm/mm
 - Slit width: 4 steps (0.2, 0.4, 1.3, 2.6 nm)
 - Detector: dual detection with 2 pieces of PMT (photomultiplier tube X 2 pcs.) or solid state detector (CMOS)
6. **Sensitivity** :
RSD for 0.5mg/L (ppm) Cu detection is 0.49%. The detection limit of Cu in should be 0.004 ppm or better
 - ***Reciprocal Linear Dispersion : 1.3 nm /mm or better or 0.8 nm/mm at 200 nm or better***
7. **Light source**:

Should have minimum 6 lamps turret, 2 Lamps simultaneous lighting
The system should be suitable to detect different elements as followed.
Single hollow cathode lamps for Cr, Hg, Cu, Zn, Ni, Pb, As and Cd to be provided.

8. Graphite furnace analysis:

- Zeeman-effect magnet : 1.0 Tesla permanent magnet
- Temperature control: 50 to 2800°C over current prevention Cleaning stage : 50 to 3000°C
- Heating current control : Optical temperature control, constant current control
- Gas flow rate control : Sheath gas: Ar gas, 3L/min Carrier gas : Ar gas 0, 10, 30, 200 mL/min. (4steps)
- Safety monitoring control: Ar gas pressure monitoring, cooling water flow monitoring, heating furnace temperature monitoring

9. Graphite autosampler:

- Number of sample containers [option] : 60 pcs (1.5 mL container), 96 micro plat
- Auto sampler sample dispensing contiguous : Dispensing by each sample, dispensing
- Sample injection volume : 1 to 100 μ l
- Sample injection speed : Selectable in 5 steps
- Applicable solvent : Aqueous solution, ethanol, methanol, acetone, MIBK
- Carry-over : 10^5 or less (for standard aqueous solution sample)
- Heating injection function : yes
- Sample concentrating (in furnace) : 1 to 25 times
- Sample dilution (in furnace) : 1 to 10 fold

10. Imported Air: Acetylene flame burner and burner head should be provided

11. PC and Data processing

- Computer: Win7/10 OS professional , 64 bit version
- Kinds of signals: Zeeman AA, sample, reference, and emission intensity
- Calibration curve:
 - Standard sample: Up to 10 points, Calibration curve preparation: Least-squares method and Newton method
 - Approximation function: 3 kinds, Sensitivity correction function, standard addition method, sample standard addition method
 - real-time sample absorbance monitoring. Easy to operate and quick feedback once the sample is introduced.
- Sample blank processing, zero correction of calibration curve, Baseline correction,
 - Statistical calculation (mean value, standard deviation, relative standard deviation,determination coefficient), detection limit,measurement time window setting.

12. Quality control function

- Sample check (upper limit, RSD), STD check, Quality Control sample check, calibration curve check, recovery check.
- Parameter / data saving, Help function: Measurement result and measurement signal, instrument status/error information, instruction message for preventing errors, analytical information

13. System should be supplied with following essential items:

- a. Suitable branded computer and licensed software and HP laser jet mono (A4 size) printer
- b. AAS Program Software
- c. Cuvette (Pyro Tube C HR), 2pcs
- d. Cuvette Ring, for attachment of cuvette, 2 pcs
- e. Glass Atomizer Auto-sampler Nozzle, 1pc
- f. One acetylene filled gas cylinder filled with gasses with necessary tubing, connectors and double stage gas regulator.
- g. One argon filled gas cylinder filled with gasses with necessary tubing, connectors and double stage gas regulator.
- h. Nitrous Oxide Filled Gas Cylinder filled with gases with necessary tubing & connectors and double stage gas regulator.
- i. Low Temperature Circulator, CA-1115A
- j. Duct Hose for Graphite Furnace (with damper)
- k. Online 10 KVA UPS with minimum 15 minutes back up or suitable one.
- l. Stainless still Double hood with exhaust fan including necessary fitting and ducting facility - 1 set
- m. Certified Standard solution for AAS (1000 ppm) each bottle of 125 ml for elements corresponding top lamps – 1 set
- n. Bidder should quote for only those equipments for which hardware, software and spare parts support will be available in next minimum 5 years.
- o. It should comply with international safety and quality standards (ISO & EC) and valid documents in support of this must be submitted
- p. Nebulizer chamber: An inert fluoroplastic spray chamber
- q. Suitable chiller to be supplied (No local chiller will be accepted)
- r. Warranty: Two year's comprehensive warranty starting from the date of successful installation and commissioning is essential.
- s. The manufacturer must have a strong service setup in Kolkata and adjoining areas.
- t. List of installation of the offered instrument with performance certificate from the users (at least three users within last five years)

Item 2. Nano-Drop Spectrophotometer (1 Unit)

Specifications

1. Must be equipped with Drop-and-Click analysis for analysis of sample with just drop of sample. The instrument should perform the measurement and wiping automatically.
2. Operation mode must be quick and simple. Blank measurement, sample measurement, output of reports should be stored and available as PDF or CSV files.
3. Instrument should also be equipped with facilities for simple and quick performance of other basic operations
4. The instrument must be equipped with necessary facilities for performing basic operations conveniently by clicking icons in the software or function keys on the instrument itself.
5. The instrument must be equipped with wide wavelength range of 800 nm to 220 nm, respectively.
6. The instrument must be equipped with 3 nm spectral bandwidth over entire wavelength range
7. Wavelength accuracy must be of +1 nm or less.
8. Path length should be between 0.2 mm or 0.7 mm.
9. Photometric range value must be between 0 to 1.5 Abs.
10. Minimum Sample volume must be 1 ul
11. Light source must be Xenon flash lamp
12. The instrument must be equipped with efficient detector with Photo diode array.
13. The instrument must be equipped with monochromator based holographic grating for high energy throughput and high quality monochromatic light.
14. Auto wiping function must be provided.
15. Sample mount function must be automatic.
16. Spectrum measuring time should be 3Sec.
17. Quantitation range (OD, dsDNA concentration) should be of with path length of 0.2 mm, 1 to 75 OD₅₀ to 3,700 ng/μL, path length 0.7 mm, 0.3 to 21 OD 15 to 1,000 ng/μL, respectively.
18. Analysis mode for simple nucleic acid quantitation and labelled nucleic acid quantitation
19. For simple nucleic acid quantitation, nucleic acid concentration measurement must be for RNA, dsDNA, ssDNA, OligoDNA calculation, based on OD ratio (OD₂₆₀ / 280, OD₂₆₀ / 230) calculation, respectively.
20. For labelled nucleic acid quantitation, nucleic acid concentration measurement must be for RNA, dsDNA, ssDNA, OligoDNA, nucleotide concentration calculation based on label concentration, labelling ratio calculation, OD ratio (OD₂₆₀ / 280) calculation, respectively.
21. For label management, instrument should be equipped with label registration (up to 8 new labels) with editing, deletion of default labels (Cy 3, Cy 5, Alexa Fluor 546, Alexa Fluor 647 etc.)

22. The unit must be associated with PC (I No.) and online UPS (I No.).
23. The quotation should include recent installation report from well known research laboratories/Institutions.
23. Warranty: One year's comprehensive warranty starting from the date of successful installation and commissioning is essential.
24. The manufacturer must have a strong service setup in Kolkata and adjoining areas.

Item 3. 2D-PAGE Unit (1 No.)

A. Specification for Isoelectric focusing (IEF) system

1. IEF system should be fast, produce highly reproducible runs and designed to work as stand alone or in conjunction with PC control.
2. High-capacity running platform should accommodate up to twelve numbers of IPG strips (all sizes) simultaneously and accessories required for these should be included.
3. Should have option to rehydrate the IPG strip independently (ALL (sizes) and accessories required for these should be included.
4. Rehydration should be done oil-free
5. Cup loading feature should be available and accessories required for these should be included if any.
6. System should be able to control the current and voltage applied to the IPG strips to prevent overheating.
7. Fully Integrated unit with Internal peltier cooling platform with operating temperature range 15-25 °C
8. Built-in 50- 10000 Volts; Resolution 10 V and current 0-1.5 mA, resolution 1 uA power supply.
9. Programmable parameters: User friendly interface to make and edit the protocol.
Rehydration time, platform temperature, maximum current limit per strip, step voltage, step voltage change pattern and step duration
10. User defined protocol storage capacity at least 9 Nos with multistep
11. Data collection: should have option to connect with PC and control IEF run so as to optimize run parameters by saving and reviewing the IEF run data
12. The unit should be controlled by software in which it should capture/monitor continuous real time volts and current and should display as graphical way.
13. System should be provided with unique flexible lid to protect fluorescent (CyDye) labeled protein samples for DIGE application.
14. System should have inbuilt software which can monitor voltage, current and Vhrs of the run, generate graphical displays as runs proceed and recommend run parameters for entered details of IPG strips
15. Safety features required such automatic voltage cutoff when safety lid is opened
16. System should be compatible for running with light-sensitive protein samples and 2D DIGE applications (Cydye-labelled proteins)

17. All required accessories should be supplied along with system to run all sizes (e.g. 7, 11, 13, 17, 18 or 24 cm) of IPG strip and carry out all the applications.

B. Specification for Vertical Electrophoresis System for second dimension 2D electrophoresis

1. Vertical electrophoresis unit should be capable to run up to two large format second dimension acrylamide gels.
2. The gels should accept the first dimension 11-or 13 cm Immobiline DryStrip gels.
3. The system should have an in-built heat exchanger and should be able to connect external thermostatic circulator for efficient cooling and close temperature control in the electrophoresis unit.

C. Specification for Power Supply

1. Power Supply should cover the wide range of electrophoresis and blotting applications
2. Programmable power supply for 300V / 400mA / 80W with constant Volt / Current /Power
3. Should have Overload/short circuit protection, floating output.
4. Should have single-unit increments in settings and read-outs Voltage: 1 V, Current: 1 mA, Time: 1 min
5. Should have Timed or continuous runs, with end-of-run alarm
6. Automatic parameter limit crossover to prevent overheating and protect experiments and equipment along automatic recovery after power failure feature.
7. Should have two pairs of power outlets for duplicate parallel runs

Specification for 2D Gel Image Analysis Software

1. The software must offer a flexible interface for the comprehensive visualization, exploration and analysis of 2D gel data from both DIGE (Fluorescence Difference Gel Electrophoresis) and non-DIGE technologies and should contains following features:
 - i. Simplified import and visualization of images
 - ii. Reorganized menu structure with icons
 - iii. Custom and context-related toolbars
 - iv. One-click to choose desired layout of sheets and panes
 - v. Single tool to select/edit spots and annotations
 - vi. Dedicated landmark tool
 - vii. 3D view of individual spots
 - viii. Customized report templates
 - ix. Adaptive display of histograms.

Additional requirements

1. The unit must be associated with PC (I No.) and online UPS (I No.).

2. The quotation should include recent installation report from well-known research laboratories/Institutions.
3. Warranty: One year's comprehensive warranty starting from the date of successful installation and commissioning is essential.
4. The manufacturer must have a strong service setup in Kolkata and adjoining areas.

Item 4. RT-PCR (1 No.)

Specifications:

1. Real time PCR with block of 96 x 0.2 ml tubes or plate to run typical 0.2ml tubes, strips, and plates.
2. Should be equipped with gradient capacity with dynamic ramping.
3. Should be equipped with the detection of 2 different fluorescent reporters in the same tube.
4. Should be capable of detecting FAM/Sybr Green, and VIC, HEX, TET, CAL FluorGold 540 etc.
5. Maximum Ramping speed should be 5 deg C per sec with an average ramping rate of 3.3 deg C/Sec. with temperature control facility.
6. The instrument must be equipped with one additional channel dedicated for FRET experiments
7. Should be associated with a mass reduced honeycomb block to offer better sec of settling time.
8. Excitation 6 Channel Emission range should be 450-580 nm.
9. No internal reference dye should be required.
10. True 2 Color Multiplexing facility must be available with the use of 2 different flourophores without the need of addition of any internal reference dye.
11. Must be associated with 3 filtered LEDs as an excitation source with 3 filtered photodiodes for detection.
12. Dynamic range must be of 9 orders.
13. The instrument must be equipped with facilities for using chemistries using TaqMan, Molecular Beacon, SYBR green etc.
14. There should be uniformity of ± 0.4 deg C within 10 sec of arrival at 90 deg C
15. Sample volume is 5-100 ul
16. Necessary Program features - Program overwrite protection, Auto restart facility (after power outages), Edit program during experiment, One-touch incubation
17. Temperature accuracy: $\pm 0.25^{\circ}\text{C}$ (35–99.9 $^{\circ}\text{C}$)
17. Max block ramp rate: 4 $^{\circ}\text{C}/\text{sec}$
18. Temperature range: 0-100.0 $^{\circ}\text{C}$
19. Temperature uniformity: $< 0.5^{\circ}\text{C}$ (30 sec after reaching 95 $^{\circ}\text{C}$).
20. Temperature calibration: Calibrated to standards traceable to the National Institute of Standards and Technology.

21. The unit must be equipped with the facility for QC flags and customer data view assist for quick analysis.
22. The instrument must be capable to perform Automatic allelic discrimination by end point fluorescence or threshold cycle.
23. Should be equipped with the facility to perform Gene expression analysis by relative quantity or normalized expression
24. End point analysis must be for up to 2 fluorophores.
25. The instrument should be associated with the facility for comparison and analysis of Mupetlot c5u0r0v0e C atn vaalyuseiss from different data files should.
26. System should be compatible for HRM applications.
27. Should be associated with the facility and the feature of Email notification with data file after run
28. The system should be equipped with load feature which allows entry of data after experiment.
29. Must have the Licensed for Research & IVD applications.
30. System must comply with the MIQE Guidelines
32. System must provide an additional qbase plus software license which is RDML compliant. The offer must contain the Start Up Consumables (50 Plates, SYBR Green 200 rxn , 100 Sealers).
33. The unit must be associated with PC (I No.) and online UPS (I No.).
34. The quotation should include recent installation report from well-known research laboratories/Institutions.
35. Warranty: One year's comprehensive warranty starting from the date of successful installation and commissioning is essential.
36. The manufacturer must have a strong service setup in Kolkata and adjoining areas.

Item 5. UV-Vis Spectrophotometer (2Nos.)

Specifications

1. Stand-alone operation & complete control through PC with LabSolutions UV Software
2. High visibility color touch panel with stylus
3. Scan speed should be up to 29,000 nm/min for high speed Kinetic studies
4. Inspection items compliant with USP & EP to validation function.
5. True double beam optics with Czerny – Turner mounting for high energy throughput and high quality monochromatic light
6. Wide wavelength range of 1,100 nm to 190 nm
7. High resolution 1 nm spectral bandwidth over entire wavelength range
8. Wavelength accuracy of +0.5nm for D2 spectral line
9. Wavelength reproducibility of + 0.1nm
10. Wide Photometric range of -4 to +4 Abs and 0 to 400 %T
11. High Photometric Accuracy of + 0.002 Abs at 0.5 Abs
12. High Photometric Repeatability of <+0.001 Abs at 0.5 Abs
13. High baseline flatness of +0.0006 Abs over entire wavelength
14. Ultra-low Photometric noise of <0.00003 Abs
15. Should include large sample compartment compatible with wide range of accessories

16. Wavelength accuracy of + 0.1nm for D 2 spectral line
17. Wavelength reproducibility of + 0.1nm
18. Variable wavelength scanning speed of 3,000 nm/min to 2 nm/min
19. Ultra low stray light of < 0.02%T at 220 nm with NaI filter
20. Should be quipped with wide Photometric range of -4 to +4 Abs and 0 to 400 %T
21. Must be equipped with High Photometric Accuracy of + 0.002 Abs at 0.5 Abs
22. High Photometric Repeatability of <+0.001 Abs at 0.5 Abs
23. Very low baseline drift of 0.0003 Abs/hour
24. High baseline flatness of +0.0006 Abs over entire wavelength
17. Ultra low Photometric noise of < 0.00005 Abs
25. Dual source – high intensity Tungsten-Halogen and Deuterium lamp with automatic changeover
26. High sensitivity matched pair Silicon Photodiode detector
27. 5 USB ports for high speed PC and printer connectivity, data storage and transfer through USB pen drive
28. Guaranteed compliance with all Pharmacopoeial requirements
29. Built in validation program, diagnostic and security functions
30. All operational modes must be as standard – Photometric; Spectrum; Quantitation; Kinetics, Time Scan, DNA and Protein Quantitation in stand alone and PC mode. Additionally
31. Multi-Component measurement facility must be available in stand-alone mode.
32. Large sample compartment compatible with wide range of accessories
33. Must supply one pair of 10mm path length Quartz Cuvettes as a standard supply
34. Should include Power Cable for 240 V 2.4m
35. Should include Lab solutions UV-Vis (English)
36. Should include UV 10mm Cell GSKit with 10mm Quartz UV cells, Matched Pair (With transmission certificate) and Micro fiber Cleaning Cloth
37. The unit must be associated with PC (I No.) and online UPS (I No.).
38. The quotation should include recent installation report from well-known research laboratories/Institutions.
39. Warranty: One year's comprehensive warranty starting from the date of successful installation and commissioning is essential.
40. The manufacturer must have a strong service setup in Kolkata and adjoining areas.

Item 6. Plant Growth Chambers (01)
Specifications

1. Outer Dimension (mm): 880W × 806D × 1,875H ; Shelves : 06 (adjustable)
2. Inner Dimension 9mm: 670W × 565D × 1,100H
3. Control System: Step program, built-in clock control (24 hours)/operation should be integrated time 24 steps /5 patterns, maximum 9,999H59min/step, with patern link functions
4. Repeat; 1~99 times or unlimited
5. Control method ; Three-position control method: Refrigerator and humidifier, ON/OFF control; heater, proportional control

6. Temperature: $5 \sim 50^{\circ}\text{C} \pm 1^{\circ}\text{C}$ ($20 \sim 50^{\circ}\text{C}$ when all lights are on)
7. Humidity: $50 \sim 90\% \text{RH} \pm 10\% \text{RH}$ ($+ 15 \sim 45^{\circ}\text{C}$)
8. illumination: $0 \sim 50,000 \text{ lx}$ (controlled by the number of lamps)
9. Photon flux density: $0 \sim 650 \mu\text{molm}^{-2}\text{s}^{-1}$
- 10: Light source: Three-wavelength day white, Hf inverter fluorescent lamps
- 11.No. of lamps (minimum): $16\text{W} \times 6$ lamps (ceiling), $32\text{W} \times 5$ lamps $\times 4$ faces (right, left, front and back)
- 12.Light measurement: Illuminance sensor
- 13.Refrigerator :300W
- 14.Heater:500W
15. Humidifier:80W
- 16; Carbondioxide concentration : Aerial, 3000 ppm
17. Operation current: 22.5A
- 18.power req; Single phase 100V 50/60Hz
19. Stabilizer 5KVA Automatic Voltaze Stabilizer or the Suitable one

Item 7. Green house (Climate Controlled)

Specifications

1. Size: Total GH area including main Culture Room and Buffer Room: should be approximately (L x W x H) : 13ft x 10ft x 9ft, Toral area should be 130 Sq.ft (Approx)
2. Area of Buffer Room or Preentering Room should be approximately 3' x 10' x 9' (L x W X H) and should be equipped with 1 No. air curtain in maim door.
3. Shape: Preferably dome shape
4. Structure: Structure should made up of round pipe or Sq bars fitted with GI clamps, nut bolts and aluminium Channels. Walls should be made up of 10 mm thick double walled Poly Carbonate sheet .
4. Top Height: Approximately 3.2 M (10.5') from the ground level.
5. Anchoring foundation: Columns must be are fitted over ground, "Inserts" and boded for inserting pipes (should be approximately 2.0 mm thick G.I. Pipe) inserted into PCC of 40 mm and fitting of the pit with about 1:2:4 concrete hand mixed with cement.
6. Side walls: Should be made up of brick wall of about 2 ft. height and 5' thick with cement plastering on both side of the wall and should be painted.

7. Inside floors: Should be finished with Ceramic tiles. In addition, cement finished plinth protection of approximately 1.5' should surround the green house.

8. The green house should be structurally associated with double wall UV stabilized polycarbonate thermostable structural sheet of approximately 10 mm.

9. The unit should be associated with microprocessor based photosynthesis monitor panel with light indicator for main light and indicators for heating, cooling and humidity, respectively.

10. Microclimatic Temperature Controller

(i) Real time microprocessor based Controller, 4 digit LED display, displaying settings, soft touch operation, Platinum sensor probe Pt- 100, Display resolution 0.1°C. Accuracy ± 5-7°C, Automatic hysteresis control.

(ii) Wide selectable temperature ranges from 25°C to 48°C by split AC depending on ambient temperature.

(iii) 4.4 KVA load can be directly connected to the powered out put, Input- 200-240 VAC, 50 Hz. Single phase.

11. Microclimatic Humidity Display should be with following specifications:

(i) Microprocessor based, for Humidity display, Hysteresis / Differential 1% - 9%, Delay timer 0-240 sec.

(ii) Direct / Reverse selectable, Lock functions to prevent miss operating, Feather touch operation, Fast response sensor – line resistance < 10Ω, Display Accuracy-indicating value ±9% ±1digit.

12. Plitz / Cyclic Timer for Humidity: Specific for fogging, misting system, controlled by timer. to reduce water logging condition in the Transgenic Green House each with following Specification:

(i) 0-999 Min/sec On, 0-999 Min/sec OFF, automatic cycling. Accuracy quartz,

(ii) Power output can be directly drive misting unit load upto 4.4 KVA, Input 200 V to 240 V.A.C, Phase-Single, 50 Hz, Ambient 4°C to 40°C, RH upto 90%.

13. Cooling System: The unit is fitted with split type 2 ton X 2 No. AC for main culture room with a central controller.

14. Lighting System: Illumination – up to 550µmoles/m²/s.

Type of lighting: Should be through 10 No. Phillips LED Lights hanging from the

ceiling truss for room fitted with automatic 24x7 photo periodic cycle system.

14. Humidity System should be through Micro Humidification to create the 60-90% accuracy ± 5 - 9 % humidity:- Installation with leakage prevention device (LPD) fogger does not drip during the function.

(i) Working pressure: - 4 bar at this pressure, the average droplet size: 50 to 100 µm.

- (ii) Density: - One fogger to 0.3 m – 0.4 m² for propagation.
- (iii) Type of Fogger: - Cross way nozzle ,hanging type.
- (iv) Fogger discharge range:-7.0 LPH
- (v) Pipe Imported: - 16 mm LLDPE (10 kg/cm²) colour BLACK with red strip .
- (vi) Motor:- 1/4 HP monoblock pump (ISI Make) :- 1no.
- (vii) Tank: - 250 lts (ISI Make)

15. Glazing should be done with 10 mm thick double walled Poly Carbonate sheet with UV Protected Std lengths- 2.1 m x 11.8 m.

16. For Polycarbonate Sheet light transmission should be approximately 85% depending upon thickness and color selection. Should be associated with Thermal Insulation: K-Value or U-Value range 3.5 down to 2.4 (Float glass K-Value 5.8).

17. The Unit should be It should be multi-walled impact resistant, and Energy saving. With unbreakable, (Impact resistance up to 200 times that of Glass), weather Resistance: Long lasting (Protection against the damaging effects of UV radiation in sunlight)

18. Safe Fire Performance: Self-extinguishing and difficult to ignite.

19. Light Weight: Weight ranging from 1.3 Kgs/ Sqms for 6 mm.

20. Should be with sound Insulation as per DIN 52210 (dB): 18 dB

21. Roof Screen Specification: 50% Over heading shading arrangement with Green color Material UV resistant material provided with manual rolling system.

22. Air Curtain: Size: 3' wide heavy duty , cabinets of Air curtain are made of cold rolled Mild Steel Sheets. The blowers are made of high quality Aluminum Sheets with ½ HP motor & double blower system, powder coated finish at pre entry point with auto main ON / OFF operation at the time of door opening/ closing. (One No will be provided)

23. Electrification: High quality fittings with copper multi strand twisted Fire Resistant wires stds. of safety with proper M.C.B. with appropriate electrical points of 5/15 Amps combined (Havells/Anchor make)

Submission of Quotations:

General Terms & Conditions:

1. All prices should be quoted in INR only.
2. Prices are to be quoted inclusive of GST and delivery charges, if any. Incomplete items will be rejected.
3. Sealed Envelope containing quotation should be super scribed as “Quotation for Tender No” for DST-FIST Grant, Botany, B. U.”

4. Tender No. should be mentioned on the envelope positively.
5. Warranty One year additional / extended warranty for 2nd year, beyond the 1st year's warranty.
6. Payments terms: Payment will be made after successful installation of the instruments.
7. Delivery schedule: After receipt of the work order the materials should be delivered within one month & if any defect of the supplied items is found, it should be replaced immediately from vendor's side.

Quotations may be submitted to: Prof T.K.Maiti, or office of the Head of the Department, Dept. of Botany, Golapbag, The University of Burdwan, Burdwan, Pin: 713104, WB **on or before 03.01.2019 between 11.00 A.M. and 5.00 P.M.**