

**OFFICE OF THE DEAN, COLLEGE OF AGRICULTURE,
R.V.S. KRISHI VISHWA VIDYALAYA GWALIOR 474002, M.P.**

**E-TENDER NOTICE FOR THE PURCHASE OF LABORATORY EQUIPMENTS/
STRUCTURES**

(IPRO/BTC/2019-20/112 Dt.09.07.2020)

Following laboratory equipment's/instruments/structures are to be procured at College of Agriculture, RVSKV, Gwalior for the establishment of Biotechnology Centre and Gene bank at Biotechnology Centre, RVSKVV, Gwalior. This procurement will be carried out through the e-procurement system of www.mptenders.gov.in. On-line bids, under Open Tender Enquiry, following the two bids systems are invited for supply of these equipment's/instruments/structures. Tender documents with specifications can be purchased from this site by paying the stipulated cost as mentioned below:

Item #	Name of the Equipment/ Item/Structure	Document Cost	EMD
<i>Third Call</i>			
1.	Bench Top Lyophilizer (Freez Dryer)	₹ 1000	₹20000
<i>Second Call</i>			
2.	DNA Sequencer (NGS)	₹ 5,000	₹600000
3.	Fragment analyzer (Advanced Capillary Electrophoresis System)	₹ 3000	₹ 80000
4.	Cryotome	₹ 2000	₹ 40000
5.	Bioreactor System	₹ 3000	₹ 80000
6.	Flow Cytometer	₹ 3000	₹ 70000
7.	Horizontal Laminar Air Flow Cabinet	₹ 1000	₹ 6000
8.	Genomics Softwares	₹ 1000	₹ 2000
<i>First Call</i>			
9.	Ultra Pure Water Purification System	₹ 3000	₹ 50000
10.	Cold Room for Short- Term Storage Units for Germplasm/Biological Materials Storage	₹ 5000	₹200000
11.	Gel Documentation System	₹ 2000	₹ 30000
12.	BOD Incubator	₹ 1000	₹ 3000
13.	Gradient Thermal Cyclor	₹ 1000	₹ 10000
14.	Hot Air Oven	₹ 1000	₹ 3000
15.	Automated System for Protein, Nucleic Acid Extraction and Cell Separation (Automatic DNA extraction System)	₹ 2000	₹ 40000
16.	Tissue Lyser cum Homogenizer	₹ 1000	₹ 15000
17.	Manual Cup filler to pack soil in bag	₹ 1000	₹ 10000
18.	Tissue culture media mixing, automatic filling and capping equipment	₹ 1000	₹ 25000
19.	Herbarium storage racks/cabinet	₹ 1000	₹ 15000

20.	Seed germinator	₹ 1000	₹ 10000
21.	BOD (walk-in type)	₹ 1000	₹ 25000
22.	Seed packing machine	₹ 1000	₹ 10000
23.	Liquid nitrogen generator	₹ 5,000	₹500000
24.	Micropipettes	₹ 1,000	₹10000
25.	Attachment for existing Multimode (Synergy HTX) Reader for Nano sample reading	₹ 1,000	₹5000
26.	Empanelment for running tissue culture laboratory, green house/polyhouses facilities at biotechnology centre under Rajmata Vijayaraje Scindia Agricultural University, Gwalior (M.P) for production, marketing and sale of plants for revenue generation	₹ 2,000	₹25000

Please read and follow the instructions carefully to avoid the rejection of the tender. You may also send your representatives, duly authorized in writing to attend the Technical Evaluation and clarification regarding bids which is scheduled at 3:00 PM on 17th August, 2020.

Dean, College of Agriculture Gwalior

**OFFICE OF THE DEAN, COLLEGE OF AGRICULTURE,
R.V.S. KRISHI VISHWA VIDYALAYA, GWALIOR 474002, M.P.**

E-Tender Document

CRITICAL DATES

S. No.	Item	Date	Time
a)	Publishing Date	9 July, 2020	16 ⁰⁰
b)	Document Purchase Start Date	9 July, 2020	10 ³⁰
c)	e-Bid Submission End Date	11 August 2020	17 ⁰⁰
d)	Physical bid document Submission end date in the Office	14 August 2020	15 ⁰⁰
e)	Opening of the Technical Bid at RVSKVV	17 August 2020	15 ³⁰
f)	Technical Evaluation of Bids	17 August 2020	16 ⁰⁰
g)	Financial/Price Bid e-Opening Date	28 August 2020	14 ⁰⁰

DEPOSITING THE BIDS:

The bids will be submitted through on-line mode of www.mptenders.gov.in. However, certain documents would be required to be submitted physically to our office. Details are as follows:

(A) On-line Submission:

(i) Cover-I: Will contain the Technical Bids with the following documents:

- Detailed technical write-up highlighting the model Name/Number, features of the equipment offered and / or Technical literature/manuals.
- Certificate for acceptance of terms and conditions of tender enquiry on firm's letterhead.
- Original equipment manufacturer (OEM) certificate or authorized dealership/distributorship certificate as applicable.
- Manufacturing Registration No.
- Company Printed Price List (If available)
- Last 3 (three) years Income Tax Return.
- Audited Balance Sheet for Last 3 (Three) years.
- TIN number/PAN Number/Certificate/GST number
- Business Registration Certificate.
- Supplier should have at least average annual turnover of Rs one Core for major equipment's and 50 lakh for minor items for last 3 years.
- Scanned Copy of EMD (or exemption proof, if exempted) as shown against each item.
- Compliance Certificate. Certificate of clause by clause compliance of specifications as mentioned in tender.

(B) Physical Submission:

Following documents to be submitted in hard copy physically in a sealed envelope by **Speed Post/Registered post** so as to reach prior to bid submission closing date & time. The responsibility to ensure this lies with the Bidder.

Please do not submit the hard copy of “Commercial/Price bid”.

- All the documents submitted on-line in Cover I.
- EMD as shown against each item (in original) or proof of exemption **(NIS Certificate against exemption from deposition of EMD should be strictly for only indigenous manufactured items not for items of foreign origin/manufactured in foreign countries other than India. Moreover tendered item should strictly be matched with the list of NIS for which any firm has claimed for exemption from EMD. Otherwise claim is not valid and tender will not be accepted.**
- Tender fee receipt copy (as applicable).
- Tender conditions Acceptance Certificate in form of downloaded Tender documents duly stamped and signed.
- Client list/ List of users on manufacturers’ letter head duly stamped and signed.
- User Certificate with Phone No. and E mail address.
- Guarantee/warranty on manufacturers’ letterhead.
- The supplier is bounded to supply spare parts of equipments for the at least next 10 years.

GENERAL TERMS AND CONDITIONS:

1.*Only the manufactures and/or their authorized dealer/distributors/sole agents/ need to submit their tender. The authorized firms should furnish a certificate from the manufacturer for their dealership/distributorship **in original** with the physical bid otherwise the offer will not be considered.

2.No person or firm shall submit more than one Tender for the same item. No offer should have more than one model quoted; in case of more than one alternate offer only the first option will be considered.

3. It is mandatory to provide all the relevant information in ***Annexure -I***.

4. Broad-based specifications of equipment/items/systems/works *etc.* are given in ***Annexure- II*** of purchased tender. The tenderer should also take note of the remarks, if any, given there in.

5. a. Last date for submission of e-Tender is 11.08.2020 up to 5:00 PM on www.mpeproc.gov.in.

b. Tender must be submitted in sealed cover to the Dean, College of Agriculture, RVSKVV, Gwalior **474002** by **Registered/Speed Post**, so as to reach on or before dated 14-08-2020, 3:00 PM.

c. Belated tender due to postal or any other delay will be rejected.

d. The tender for each item should be sent separately. The duly sealed envelope should super scribe

TENDER FOR THE ITEM No _____ (NAME OF THE EQUIPMENT) DUE ON 14th August 2020 with reference number.

- e. If offers for more than one item are clubbed together, tender will be rejected.
- f. The tender offers should have a validity of 180 days or more from the due date. The tenders will be valid for 6 months from the date of opening and may be asked for extension by taking written concern of the firms.
- g. Price bid will be opened online at www.mptenders.gov.in on 28-08-2020 from 2:00 P.M. to 5.00 PM. If date of opening of price bid will changed due to any circumstances. That will be informed to bidders.**
- h. R.V.S. Krishi Vishwa Vidyalaya (RVSKVV) reserves the right to extend the opening due date and or the date of opening the tenders.
- i. All the leaflets in the offer should be marked with signature and seal of authorized person.
- 6. a.** The rates quoted should preferably in Indian Rupees (₹) for a **single complete unit** with F.O.R. delivery at RVSKV, Gwalior. The rates quoted should be inclusive of packing and forwarding charges/loading/unloading/handling charges/freight/full risk coverage/insurance, *etc.* In case of imported goods all the expenses towards custom duty, clearing charges and transportation with insurance will be borne by the firm/tenderer and they must quote the rates inclusive of all FOR, RVSKV, Gwalior.
- b. Excise duty/Sales Tax/GST/Custom duty (with and without concession certificate) and other levies, if any should be shown separately and the **total price** of each item should be worked out incorporating the same.
- c. The institute will provide the custom duty exemption certificate if necessary for the imported instrument.
- d. Any other charges, such as technical service charges, cost of training, installation charges, TA/DA of tenderer's staff *etc.* if any, should be shown separately for each item and each sub-item and the total price of each item should be worked out incorporating the same.
- 7.** All losses during transit will have to be made good by the tenderers at his cost within a period of 15 days.
- 8.** The tenderers must provide guarantee/warranty on **manufacturers' letterhead** of satisfactory functioning of the equipment/system and free service including free replacement of parts for a period of at least **3 years** from the successful and satisfactory installation of the equipment/system. Original to be deposited by the successful bidder at the time of supply.
- 9. Performance Guarantee:** The Successful bidder/supplier will be required to furnish a Performance Guarantee in the form of FDR from a public sector bank or a private sector bank authorized to

conduct government business for a sum equal to **10%** of the Supply Order value within 30 days of signing of the Supply Order. Performance Bank Guarantee will be valid up to 60 days beyond the date of guarantee/warranty.

10. Offer must be accompanied by **Earnest Money** as stated against each item must be submitted **on-line**. Without the deposition of earnest money, the offers will be rejected.

11. The standard terms and conditions of payment is in full only after the installation is affected to the satisfaction of RVSKVV authorities. In specific cases, Letter of Credit (LC) may be opened in any of the Nationalized Bank.

12. In case of equipment to be imported, import license NMI/CDE certificates, as applicable will be arranged by RVSKV, as per the Government procedures.

13. Please quote maximum discounted price, as no further negotiations will be made.

14. Complimentary items/gifts offered will not be given any preference and will not be taken into account for calculating the cost of the item.

15.*The offer must mention make, model all the specifications of the item clearly. The company must enclose printed literature/catalogue/manufacturer's web-site showing detailed technical specifications required. A folder showing many instruments without detailed technical specification, or tailor made literature mentioning "yes" or "as per your specifications" for the specifications asked for, will not be considered. Specifications given in the offer must match to the website and/or printed technical literature otherwise the offers shall be rejected.

16. Technical specifications of the equipment / items have been very clearly formulated by the users/experts of the field as per the requirement of the work to be conducted. It will be sole discretion of the bidder whether to quote or not for an equipment with particular specifications.

17.*Firm must provide a compliance statement vis-à-vis specifications in a following "tabular form" clearly stating the compliance, supported by technical literature with clear reference. This statement must be signed, with the company seal, by the Tenderer for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification of the offer.

Name of Equipment:		
Technical Specification	Compliance (Y/N)	Deviation, If any

18.*Offer must be accompanied with a comprehensive list of users on manufacturers' letterhead, wherever possible bidders may also provide certificates for satisfactory working of the equipment from users of universities and institutions of repute.

19. a. If so desired by RVSKVV, the bidders shall have to enter in to an agreement.

b. Any wrong information about item, any forged document and any deviation, variation of non-compliance of the terms and conditions by the tenderers shall be considered as a breach of contract and RVSKVV reserves the right to forfeit the amount of earnest money and/or security deposit in full and take action as per legal arrangement.

20. Should there arise any dispute, the Hon'ble Vice Chancellor, RVSKVV, Gwalior shall be the sole Arbitrator whose decision in the matter shall be final and binding. Each and every judiciary transaction shall be subjected to Gwalior only.

21.*Tender will not be considered if the firm does not supply a copy of the TIN/ GST& PAN allotted to it. PAN of the owner or any other persons will not be accepted.

22.This tender is being issued with no financial commitment and the Buyer reserves the right to change or vary any part thereof at any stage. Buyer also reserves the right to withdraw the tender, should it become necessary at any stage.

23.RVSKVV reserves the right to accept or reject any or all offers in full or in part without assigning any reason (s) thereof. It also reserves the right to place an order wholly or in part with one or more than one firm as it may be convenient to RVSKVV, Gwalior.

24.The tenderer shall have to give an undertaking that the terms and conditions as mentioned above of this tender are acceptable to the tenderers in form of downloaded Tender documents duly stamped and signed.

25. If firm wishes, they can send their representatives, duly authorized in writing, to attend the Technical Evaluation and clarification regarding bids which is scheduled at 3:30 PM on 17th August 2020.

26. In case, if single manufacturer of the any item and having propriety rights. Items may be purchased with the permission of concerned higher authority.

27. The 75% payment will be made after successful installation of the equipment/structure and remaining 25% after six months of satisfactory smooth working.

Dated:08-07-2020

Dean, College of Agriculture, Gwalior

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SUPPLEMENT / CHECK-LIST TO BE PROVIDED WITH TECHNICAL BID

ITEM No. _____ NAME _____

S.No.	Information required	Proposed
1.	Make of main item	
2.	Model of main item	
3.	Name of manufacturer of Main Item	
4.	Country of origin of main item	
5.	Name, Make and model of sub item I (if any)	
6.	Name, Make and model of sub-item II (if any)	
7.	Name, Make and model of sub-item III (if any)	
8.	Delivery within (days)	
9.	Rate of Excise duty (%) with surcharge, if applicable (item-wise if different ED is applicable)	
10.	Rate of GST (%) livable. If no, state basis and terms of the exemption.	
11.	Is Service Tax extra? If yes, rate of Service Tax livable (%)	
12.	Is Custom Duty Exemption (CDE) required? If yes, Rate of Customs Duty (%) payable.	
13.	Any other Taxes / Duties / Octroi / Entry taxes <i>etc.</i> in %	
14.	Order to be placed on	
15.	Guarantee/Warrantee (3 years)	
16.	Validity (at least 180 days)	
17.	FOR:RVSKVV, Gwalior?	
18.	List of current users (Attach, if any)	
19.	Certification of satisfactory working of the equipment (Attach, if any)	
20.	Compliance of equipment with current directives of ISI / CE / EEC / US / EU or equivalent standards	
21.	Whether manufacturer / authorized distributor/sole agent? (Attach original certificate)	
22.	Technical literature (Attach, if any)	
23.	Earnest money (EMD) deposited on line and proof has been enclosed	

24.	Situations of Authorized service centers/ service personals <i>etc.</i> (Provide complete address)	
25.	Relevant documents such as ITCC, ST registration shop Act. establishment certificate, factory registration <i>etc.</i> (enlist and attach)	
26.	TIN and PAN allotted (Attach a copy)	
27.	GST number	
28.	Any other relevant information	

DECLARATION

The terms and conditions as mentioned in the tender are acceptable to us.

Authorized Signatory

(Seal of the Firm)

SPECIFICATIONS

ITEM No. 1 BENCH TOP LYOPHILIZER (FREEZE DRYER) (THIRD CALL)

- System should be compact bench mounted table top unit with condensation capacity 5-6 liters/24 Hrs.
- CFC-free refrigeration system to cool collector to - 80°C (or lower) by two compressors in cascade.
- System should have two different process oriented control system both PLC based and can adapt the unit of every requirement.
- System should have built in facility for pre-freezing.
- It should have automatic pressure control and shelves temperature control.
- Moisture sensor to prevent vacuum start up when moisture is detected in the collector chamber area.
- Vacuum control to maintain set point vacuum level.
- Control panel should be touch screen that display system operation parameters and alarm message.
- Pressure control should be manual or automatic for faster freeze drying.
- It should have side mounted vacuum and drain connection with valve.
- LCD that displays system operating parameters, set-up parameters and alarm messages.
- System should have heated shelves for fast freeze drying.
- It should have defrosting functions and condenser design should allow easy and quick cleaning and defrosting.
- Should have pre- freezing option.
- System should be provided with one cylindrical chamber 3 shelves for lyophilisation in bulk.
- With Hybrid vacuum pump.
- With side mounted vacuum and drain connections with valves.
- With facility to connect with PC and software.
- Separate graphical and wave display to indicate that conditions are right to add samples.
- With display of total number of hours of refrigeration operation and the total number of hours of vacuum pump operation.
- Vacuum break valve.
- Freeze dryer should restart and the refrigeration and vacuum system should resume operation once power is restored for a short duration power failure.
- Port to transmit data to computer.
- Acrylic clear drying manifold with 8 ports to connect flasks of different sizes complete with adaptors/ valves *etc.*
- Must be offer 3 tier product shelves for tray drying which is fitted in drying manifold.
- Rotary Vane Vacuum Pump with minimum displacement capacity of 90 L/min.
- Must be two stage, oil sealed. Pump must include vacuum oil (extra one liter), Exhaust filter, oil filter, odour filter and all necessary tubing's.
- Other important accessories such as flasks, ampoules, three way ampoule connector, three tier heated product shelves for tray drying *etc.* to be quoted in the optional.

- With 8 No. Flask and Adapter to accommodate various capacity flasks.

ITEM NO. 2 DNA SEQUENCER (NGS) (SECOND CALL)

- The next-generation sequencing (NGS) system should be a bench top model with minimal foot print and should be based on ion semi-conductor technology or SMRT sequencing technology or sequencing by synthesis technology.
- The system should support a broad range of applications including metagenomics, amplicon sequencing, resequencing, smaller genome sequencing, target region enrichment and sequencing, transcriptomics/RNA/targeted RNA sequencing, small RNA sequencing *etc.*
- Instrument should perform template amplification, sequencing and data analysis (base calling, alignment variant calling and reporting).
- Both shorter and longer reads should be possible i.e., the system should offer a range of read lengths with different outputs so as to be amenable for a range of applications.
- The instrument must yield both single and paired end reads.
- System should offer data output of 10-15 Gb@ read length of 200 bp or more with paired end reads.
- The sequencing technology should offer accurate sequencing of homopolymers and repetitive regions in the genome of at least 15 bases and highest read quality score of Q30 for greater than 80% bases at the maximum possible read length.
- System should be able to sequence multiple samples at a time with option of using barcodes for sample multiplexing (up to 96; preferably 384).
- The system should have a reasonable runtime to perform integrated massively parallel sequencing of DNA/RNA libraries loaded directly on the system.
- The particular machine should be positioned with global dominance in NGS. It should produce high quality and accurate with minimum processing time.
- The system should also include an option to integrate with the genomic computing environment, an easy, secure and cost-effective way to store, analyze and share genomic data.
- The necessary accessories/ equipment required for library preparation (such as sonicator, Bioanalyzer) and sequencing shall be supplied along so that installation and further functionality of the equipment are not hampered.
- The system should have a minimum warranty of two years from the date of installation.
- Information on CMC charges from year 3-5 should also be provided along.
- The entire set of necessary test kits, reagents and other consumables needed for the test runs during the installations should be provided by the supplier at no extra cost.
- The system should have proven its worth in the scientific community with publications in high impact factor and refereed journals.
- **Suitable server at least with 256 Gb RAM, appropriate processing speed, core and internal memory should be supplied along with equipment to perform following analysis:**
 - Reference based alignment for eukaryotic genomes.
 - *De novo* assembly for eukaryotic genomes.
 - Quality check for NGS reads.

- Complete software (analysis pipeline) suite for Transcriptome, RNA or targeted RNA sequencing analysis.
- Complete software suite for metagenomic analysis.
- Complete software suit for variant calling analysis.
- Bacterial whole genome analysis.
- Library preparation and sequencing reagents for 24 samples should be provided.

ITEM NO. 3 FRAGMENT ANALYZER (ADVANCED CAPILLARY ELECTROPHORESIS SYSTEM) (SECOND CALL)

Array format: 12 capillary variable length arrays.

Unattended sample capacity : Permissible up to 270 samples.

Sample injection : Electro kinetic injection technology.

Resolution : ≤ 3 bp.

Sizing accuracy : $\leq 5\%$.

Detection sensitivity : ≤ 5 pg/ μ l for fragments and 40-50 pg/ μ l for a smear.

Light source: LED.

Detector : Charged coupled device Camera; 500-600 nm emission.

Software : Controller software to manage the queue, RFLP analysis, CRISPR plugin, cfDNA analysis, Single-guide RNA quality assessment, Genomic DNA quality check.

Data Export Format : CSV, PDF, Flexible numerical or binary output options.

Marker Range detection: 1 base pair to 50 kilo base pairs.

Data Storage Devices: To be accompanied with dedicated desktop.

ITEM NO.4 CRYOTOME (SECOND CALL)

Cryostat

High performance routine **Cryostat** with intuitive software, touch screen option for simple, efficient operation. To be supplied with high and low profile disposable blade holder and high and low profile disposable blades (pack of 50 blades), OCT/Cryo compound, glass antiroll guide with following specifications:

Cryo-chamber Features:

- Spacious stainless steel chamber for workflow.
- Chamber temperature should be -35 deg C or less.
- Cryochamber temperature setting range 0°C to -35 °C ($\pm 2^\circ\text{C}$).
- System should be 25-30 numbers cryobar storage positions including 4 quick freeze/peltier location.
- Integrated peltier fast freezing device rapidly cools to -55°C or less should be available. Programmable and immediate defrost options should be available.
- Defrosting automatic hot gas defrosting, automatic defrost cycle should be provided.
- Automatic cut-out of defrosting should be provided.

Microtome

- Section thickness should be from 1 μm to 500 μm or more.

- Precise stepping motor blade advance for minimal vibration when sectioning.
- Vertical stroke length should be 60 to 70 mm.
- Horizontal feed range should be 25-30 mm.
- Automatic specimen retraction on return stroke should be available.
- XY specimen orientation with 360° Z axis rotation should be available.
- Ozone free automatic UVC Disinfection: Disinfection time: 30-200 min with, disinfection indicator.
- With Minimum distance from cabinet to wall from all sides, supplied with suitable compressor oil and refrigerant.
- Quick-freeze shelf nominal frequency 50 Hz
- Power input 1440 VA
- Max.start-up current. 40-50 A.
- With Automatic mains fuse.
- Overvoltage installation category ambient temperature range 18-35 °C/air.
- Relative humidity < 60 %,.
- Vibration free on floor.
- Quoted model should be ISO, CE and US FDA approved.

ITEM NO.5 BIOREACTOR SYSTEM (SECOND CALL)

- Bench top Glass bioreactor for cultivation of plant cell and tissue cultures with autoclavable glass assemblies of different sizes 2.0, 5.0 and 10.0 L.
- Working volume 70%.
- Touch screen electronic control interface with user customizable display.
- Digital Control scheme for pH, DO₂ and temperature with online control devices.
- Feed control through peristaltic pump for adding material.
- Antifoam control.
- Intake control Air /Manual/Auto digital remote pressure.
- Pressure detection device. Provision of off-site.
- Top of Assembly should be made up of SS lid suitable for inoculation of plant cell and organ cultures.
- Design and fabrication of lid should be supplied as per guidelines given by concerned scientist for plant organ cultures.
- Bottom to station the assembly be made up of SS.
- Agitation both Airlift and low shear impellar mounted on head plate.
- Built in draft tube for gas mixing and low and high oxygenation.
- Equipment should be supplied with anti-vibration table for stationing of the equipment.
- To be supplied with oil-free air compressor with pre-filters for continuous supply of air to bioreactor

ITEM No.6 FLOW CYTOMETER (SECOND CALL)

- High throughput sensitive bench top flow cytometer for application in plant materials for measuring ploidy level of starting material and tissue cultures, purity of seeds, to screen haploids, diploids, triploids and endopoliploidy for detection of chimeras after artificial

polyploidation. Nuclear genome size determination in absolute values, specific detection of pathogenic strains and tissue specific gene expression.

- The instrument should equip with Blue & Red LASER /UV source suitable to Ploidy applications. Instruments provided Laminar sample transport with/without sheath fluid for fluorescence light detection. Linear data acquisition with real-time display.
- Minimum 2 Optical parameters, acquisition with photomultiplier tubes (PMT)/CCD and must a filter for Propidium Iodide (PI). System should be able to detect particle size of 0.2 micron or smaller.
- **Flow system:** Flow Cell for Laminar sample transport and hydrodynamic focusing sample port with bio-safety cleaning function and adjustable flow rates minimum from 1 – 70 $\mu\text{L}/\text{m}$ fluid and waste reservoirs with fluid level sensors.
- **Electronics and signal processing:** Selectable linear or 4-decade logarithmic scale 16-bit analogue-to-digital converters, selectable trigger parameter and individual threshold level settings.
- Operating system: Microsoft Windows™ operating software for real-time data acquisition, display, analysis and reporting.
- Data format: Flow cytometry standard (FCS). To be supplied with additional data analysis software like Flow Jo or FCS Express. Computer system: The Instrument should be supplied with PC latest configuration and generation Integrated Microsoft Windows with Microsoft Office®. with monitor (Latest version) and Laser color printer.
- The instrument should be supplied with the reagent of 750 Test for Plant DNA analysis, Starter kits and reagents which includes sheath fluids, tubes, tracking beads and cleaning, compensation kits and consumables reagents *etc.*
- To be supplied with suitable/compatible online UPS (battery backup of minimum 30 min.) to support the system and PC.
- Complete Application Training for system and software should provided by company peoples at the /time of installation and demonstration.

ITEM NO. 7 HORIZONTAL LAMINAR AIR FLOW CABINET (*SECOND CALL*)

Dimension: 1200x 600x 600 mm (4'x2'x2')

- Cabinet lighting located away from Laminar Air Flow Area.
- Ultraviolet lamp to sterilize and decontaminate work zone and cabinet contents between operating periods.
- Optional Night Door/Cover to protect cabinet interior when blowers are off. Contains UV radiation when UV activated.
- Disposable polyester fibber pre filter with 85% arrestance.
- Long-life Camfil-Farr ULPA main filter with efficiency of 99.999% at particle sizes between 0.1 to 0.3 μm .
- Side window that allows ambient illumination into the chamber and provides users with an unobstructed view of its contents from three sides.
- GFCI outlet to power equipment in cabinet.

- Appropriate external rotor blower.
- Control panel On/Off switch for fan, lighting, GFCI outlets, Mini-helic ULPA pressure gauge to measure filter performance, UV lamp key switch.
- Fan speed control.
- Base Stand: Optional mobile cart with locking casters, includes a convenient lower shelf.
- Stainless steel Work Surface with ULPA filter spill-retention lip on HLF units.
- Ergonomically angled front improves reach and comfort.
- Appropriate antimicrobial coating on all painted metal surfaces minimizes contamination – white colour.
- Protected work zone environment created for optimum product performance.
- Optional IV Bar with "S" hooks.
- Optional petcock service fixture (Maximum 4 per unit).
- Large, easy-to-read LED display presents a menu of functional readouts.
- A pre-filter traps large particles to extend the life of the ULPA filter.
- Alarms programmed to warn of ULPA Filter when it is blocked.
- Quiet, variable speed internal blower provides step less air velocity control.
- Glare-free fluorescent lamp/UV lamp for illumination and disinfection purposes.
- Non-glare stainless steel work surface for easy cleaning.
- UV lamp with Night door/cover Ultraviolet lamp for contamination of interior surfaces.
- Includes a timer, and key switch UV operation must comply with local codes and facility safety practices.

Filter Specifications

Pre-Filter	Disposable polyester fibers with 85% arrestance
Main Filter (2)	ULPA, 99.999% efficient at particle sizes between 0.1 to 0.3µm
Size	Full size of Work Zone
Clamping	Spring loaded, adjustable tension adjusts for gasket aging
Cabinet Lighting	Compact Fluorescent Bulb Removed from Air Stream
UV Lamp (3)	Compulsory
Noise,	dBA, 1 meter <65

Side Windows

Construction	Tempered Glass
Visible Opacity	Transparent
UV Opacity	UV Absorbing
Colour	Colourless

Construction

Colour	Epoxy coated steel frame
Working Surface	Stainless Steel
GFCI outlet	Standard
Finishing	Standard Anti-microbial Powder Coat
Monitoring	Mini helic ULPA pressure gauge

ITEM NO.8 GENOMICS SOFTWARES (SECOND CALL)

Rate of an advance and latest versions of following genomic softwares are invited:

1. **Mol Quest:** For gene prediction.
2. **DNASTAR:** For Assembly and data analysis.
3. **Join Map:** For Linkage map construction.
4. **Multi QTL:** For QTL identification.
5. **Turnitin:** For plagiarism checking.
6. **CLC Genomics Workbench:** For Genome assembly.
7. **Omics Box/ BioBam:** For genomics, transcriptomics and metagenomics data analysis.
8. **SAS :** For statistical data analysis.

Note: Please quote pooled cost of all softwares

ITEM NO.9. ULTRA PURE WATER PURIFICATION SYSTEM (FIRST CALL)

(A) Flow rate Capacity ≥ 10 ltr/Hr (FIRST CALL)

Pre-treatment:	Suitable 3 stage pre-treatment including 10, 5 and 1 μ filters and Activated carbon cartridge and suitable RO for added advantage over contaminated water quality and also enabling replacement “on demand” to save recurring cost.
First Stage (Type II):	<p>A microprocessor controlled system to produce Laboratory grade ASTM Type II water suitable for General Lab applications including buffer and dilution preparations and feed to Type I system with a production rate of at least 10ltr/hr. It should have RO and DI/EDI as standard technologies. It should be able to take a potable tap water according to International norms as a feed. The system should be with tank and informative display. The system should be GLP compliant.</p> <p>The system should be capable of validation of quality. System should have recirculation pump to re-circulate water through tank.</p> <p>The product water quality should be as follows: Resistivity: Clearly 5-15 MΩ.cm TOC: <30ppb or reduction of 95% Bacteria removal: 99% Particle : 99%</p>
Second stage (storage):	The water should be stored in 100 liters compatible tank. The tank should be cylindrical, square, rectangular or bag type exclusively manufacture by the same company. Air vent should have filter to avoid contaminants. Tank water should go as a feed into microprocessor controlled Type I system.
Third stage (ultrapure):	System should be able to give at least 200Ltr/day of Type I water. It should have volumetric dispensing system. The system should be equipped <u>with inbuilt high capacity ultra-filtration cartridge</u> in order to avoid frequent replacements or if external ultra-filter cartridge are to be used the System

	<p>should be provided with <u>10 (Ten) Nos extra Ultra filter cartridges of at least 3 months validity each.</u></p> <p>It should have a provision of monitoring feed water quality and conductivity. It should have a suitable sensor/alarm to monitor UV intensity. The systems should be GLP compliant and can be validated. System should have high capacity deionization of longer life and a UV cartridge. The final water quality should be as follows:</p> <p>Resistivity: 18.2 MΩ.cm TOC: 1-5 ppb Bacteria: <0.01 cfu/ml Particles :<1/ml (0.22 micron) Endotoxins: 0.001 EU/ml DNase: <0.05 pg/μl RNase: <0.01pg/ml Flow Rate: up to 2 lit/min</p>
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(B) Flow Rate Capacity ≥ 40 ltr/Hr (*SECOND CALL*)

Pre-treatment:

Suitable 3 stage pre-treatment including 10, 5 and 1 μ filters and Activated carbon cartridge and suitable RO for added advantage over contaminated water quality and also enabling replacement “on demand” to save recurring cost.

First Stage:

A microprocessor controlled system to produce Laboratory grade ASTM Type II water suitable for General Lab applications including buffer and dilution preparations and feed to Type I system with a production rate of **at least 40ltr/hr**. It should have RO, DI and UV as standard technologies. It should be able to take a potable tap water according to International norms as a feed. System should be upgradeable to higher flow rates.

The system should be capable of bench/wall mounting installation with tank and clear backlit display with modes and reservoir fill-level status. The system should be GLP compliant and should be able to automatically collect data with RS 232/USB port in accordance with international guideline.

The system should be capable of validation. System should have recirculation pump to recirculate water through tank.

The product water quality should be as follows:

Resistivity: Clearly 10-15 MΩ.cm

TOC: <30ppb

Bacteria removal: 99%

Particle: 99%

Second stage (storage)

The water should be stored in a 100 liters compatible tank which should be made up of pigment free polyethylene. The tank should be cylindrical to minimize surface area. It should be supplied with a vent filter to avoid air borne contaminations. This water should go as a feed into microprocessor controlled Type I system which should be able to produce water for Molecular Biology applications.

Third stage (ultrapure)

System should be able to give at least 200Ltr/day of Type I water. It should have remote and volumetric dispensing system from 0.01-60 ltr. The system should be equipped with inbuilt high capacity ultra-filtration cartridge in order to avoid frequent replacements. System should use Ultrafiltration and 0.22u filter simultaneously. It should have a provision of monitoring feed water quality and conductivity for accurate measurement enabling elongated consumable life. Conductivity should be displayed. It should have a suitable sensor/alarm to monitor UV intensity. It should be able to quickly replace a cartridge without wasting time and water avoiding air purging etc. **The systems should be GLP compliance and can be validated. System should have high capacity double bowl deionization cartridge for longer life.** The final water quality should be as follows:

Resistivity : 18.2 MΩ.cm

TOC: 1-5 ppb

Bacteria: <0.01 cfu/ml

Particles :<1/ml (0.22 micron)

Endotoxins: 0.001 EU/ml

DNase: <0.5 pg/μl

RNase: <0.1pg/ml

Flow Rate : up to 2 lit/min

Note: Please quote the rates for each capacity (A&B) separately.

ITEM NO.10 COLD ROOM FOR SHORT-TERM STORAGE UNITS FOR GERMPLASM/BIOLOGICAL MATERIALS STORAGE (FIRST CALL)

Total Size - 53' X 17'11" X 9' (L X W X H) with two individual Chamber which is divided into two parts.

(a) Size 22' x 17.5' x 9' (LXWXH) Temperature Range and Humidity range - 4 °C to ± 1° C and humidity range RH 20 % to 60%.

(b) Size 22' x 17.5' x 9' (LXWXH) Temperature Range and Humidity range - 20 °C to ± 1° C and humidity range RH 20 % to 60 %.

With entry room and electrical zone size 4.5 ft x 8 ft and 4.5 ft x 9.5 ft. Both chamber.

- The room shall be constructed using Pre-fabricated Rigid Polyurethane Foam (RPUF) insulated panels laminated with Pre-Painted Galvanized Steel (PPGS) lamination on outside and inside with serrations for the walls & ceiling. The lamination colour should be appropriate. The wall to wall & ceiling to ceiling shall have profiled edges and the joinery shall be with Tongue and groove type arrangement. The wall to ceiling joinery shall be held using flashing from inside & outside. All the resulting panel joinery should be applied with silicon sealant.

- The floor insulation should be constructed using RPUF insulated panels laminated with 250 micron thick polythene sheet lamination acting as vapour barrier on both sides. Final floor finish above the insulated floor like PCC *etc* should be under taken by the end user.
- The doors should be swing face mounted type in the rooms. The door frame and leaf should be provided with heaters for avoiding condensation as a resultant of moist air touching the cold surface. Door should be provided with internal safety release mechanism so that people when accidentally locked inside can come out even when the door is locked from outside.
- The refrigeration system should be Freon based split type of suitable capacity with Air Cooled Condensing Units located outside the room and the Evaporator Units located inside the room. The condensing unit should house suitable capacity hermetic compressor for the positive rooms and Semi Hermetic Compressor for Negative room condenser coil and fans.
- The evaporator and the condenser casing should be constructed using powder coated GI. The heat exchanger should be with copper tubes and Al fins. The evaporator should be provided with suitable fin spacing to allow sufficient frost build up to enable longer operation hrs between defrost. Defrost should be automatic.
- The compressor on/off based on the load shall be controlled by a micro-processor based digital temperature controller which shall also control the defrost cycle, on/off of fans, fault indications *etc*, thereby controlling the entire refrigeration system.

Technical Specification of Cold Room for Short Term Storage (-4°C) and (-20°C) to facilitate short term storage of germplasm/biological materials

- **Acclimatization chamber A** :-4 °C ±1°C and RH 20% ± 5% (Cooling and humidity in four steps to mention desired temperature inside the chamber.
- **Acclimatization chamber B** : -20 °C±1°C and RH 20% ± 5% (Cooling and humidity in four steps to mention desired temperature inside the chamber.
- Internal Dimensions 53' x 17'11" x 9' (W x D x H). This unit is divided into 2 areas by partition 125mm mm puff wall. Puff Panel Thickness 125 mm. PUFF minimum 0.5 mm/PPGS sheets on & Finish (All walls & both sides with galvanization to 180 Ceiling). Insulated Door: Door dimension 1200 mm x 2000 mm, flush with panels with automatic door closing mechanism and posiseal closure should be part of the door fixtures. The door should match the thickness of panel, with two window size - 35cm x 35 cm. Floor Insulation Cemented floor, Aluminum floor plate RPUF with polythene sheet as vapour barrier. Power supply 415/3/50 HZ .Racks and shields bottles should be provided. Rack facility made of SS non-magnetic 316 grade food grade. Number of racks size 4 ft x2 ft x 7 ft complete facility for whole chamber. **Controlling systems: Intelligent Climate Control System : It is a customized climate control system for complete lab which monitors and control temperature Humidity and Light with recording facility.**
- 7" Touch Screen Display (HMI 12 Inputs/ Outputs PLC DTC (Temperature Controls Card) Relay Card ten step controlling facility SMPS 24 VEhernet Port on HMI Light Controller Through PLC Control Panel with manual operating switchgears (all pushbuttons, Indicators).Standard Size PLC Control Panel Web Interface Data Logging (Temperature & Humidity). Manual Controlling (All connected Equipment). Auto Control Mode with complete installation.

Power backup system (AUTO DG SET) (80 KVA) :

- Dissel engine rated at 1500 rpm, Air Cooled, Four Stroke Electric Star Diesel Engine with capacity of 10% over loading for one hour in every twelve hours duration having following accessories at scope supply. Rated Speed 1500 rpm rated out put 79.6 rpm based microprocessor with auto on / of facility.

Refrigeration Piping, Fittings & Valves (Installation Standards General):

- The piping should be of refrigeration quality seamless copper tubes and the valves should be bras somatic / standard make. The piping should be include accessories such as filter, drier, sight glass, heat exchanger, sucti online accumulator *etc.* Adequate number of supports should be included for pipe installation, pipe should be insulated with preformed sections of pipe insulating material.
- The suction air discharge lines should be designed for a maximum pressure drop corresponding to 1.1 °C drop in saturated evaporating and condensing temperatures.
- The liquid line should be designed for maximum pressure drop corresponding to a drop 0.5 to 1 °C instauration temperature.
- The piping should be designed with proper shape in the direction of Refrigerant flow and proper oil. Return to the compressor and should be installed with adequate supports to avoid undue vibration.
- The piping should be thoroughly cleaned as per standard practice prior to installation.
- Suction line in solution with 50 mm thick EPS covered with 0.6 mm thick aluminum cladding/25mm thick EPDM insulation/XLPE with proper sealing of joints and factory backed aluminum foil as per standard practice.
- Water piping complete with fittings, valves as necessary for supply from a common point near machine room.
- Drain piping with rigid PVC pipe from A.C. units to outside the machine rooms complete with 'U' Traps and supports.

Insulated Panel Structure:

- This would cover supply of PUF insulated sandwich panels only with CFC free Polyurethane insulation of $40 \pm 2 \text{Kg/m}^3$ density with internal metal skin of SS Steel with plastic coating and external metal skin of galvanized. Steel should duly painted with corrosion resistance paint. The panel should be approx. 1180 mm width and have required lengths to suit height of the seed storage unit.
- The joints should have metal /HIP cam lock or tongue & groove joint arrangement. The scope of work should be cover all other ancillary material such as angles, metal sections, flashing, sealant, vapor barrier, adhesive and all other hardware for fixing the panels with the civil structure and pressure balancing ports as per requirement. The ceiling panels should be supported on the panel walls and have additional support as necessary from the trusses/purlins of the main roof. In case the ceiling panels have joints, it have supporting member below of the joints. The wall and ceiling insulation thickness should be with 80 mm PUF.

Door Specifications:

- Door should be of standard dimension of W 1200 x H 2000 mm and be fitted on panel opening. Automatic door closing mechanism and positive seal closure should be part of the door fixtures. The door should match with the thickness of the wall panel. The door panel

should be hinged to door frame and line panel rise while opening to prevent bottom gasket from scraping on floor.

Miscellaneous Items:

- (a) Vibration isolators for condensing units *etc.*
- (b) Minor structural openings in walls/panels *etc.* for piping, cabling *etc.* and finishing.
 - Electrical work for Refrigeration System:
 - Electrical control panel cubical type, dust and vermin proof copper bus bars and suitable for 400 /440 Volts, 3 phase, 50 C/s A.C. Supply and in cooperating the following:
 - (a) Incoming MCCB 160 A.
 - (b) Earth leakage current ELR and suitable ELCB.
 - (c) MCBs and starters for condensing units, air handling unit, ACUs in MTS anteroom.
 - (d) MCBs for control circuit e) MCBs as spare.
 - (e) MCBs for capacitors.
 - The control panel should have provision for inter locking of various equipment as per standard practice.
 - Power wiring with ISI approved PVC insulated copper conductors with supports, cable trays *etc* to be laid on walls/trenches/under the ceiling. As required as per drawings. Electric connection with distribution box should be provided by Firm.

ITEM NO. 11 GEL DOCUMENTATION SYSTEM (*FIRST CALL*)

- With ≥ 5 megapixel digital camera with auto exposure.
- With large $\geq 25 \times 30$ cm viewing area.
- With a viewing pane having universal 560nm amber filter for gel inspection.
- With an interchangeable filter slide having 620nm ethidium bromide filter as standard.
- Should include a front LCD indicator panel for safe and convenient gel inspection.
- With an option for blue epi-illumination module.
- With white light table for viewing visible gels and making the gel doc suitable for imaging most fluorescent and colorimetric gels.
- Should have a cabinet with door with pull out transilluminator.
- The system should include analysis software.
- Camera: CMOS scientific grade sensor with auto-exposure; pre-focused ≥ 5 mega pixel camera; Maximum CMOS resolution $\geq 2400 \times 1800$ pixels; Pixel density RAW 8 bit/10 bit/12bit; with ~ 6 mm focal length; F1.2 aperture size with manual adjustment.
- Software: With options to rotate image, flip image, brightness, contrast, zoom, selecting image lanes, addition and deletion of lanes, Lane analysis, auto find and adding the peaks. Should have image summarization option which includes calculation of density and calculation of molecular weight. Option for Dot/Blot positive and negative analysis. With automated software for rapid analysis of 2d protein spots between samples. Database Software to match unlimited number of primers in unlimited Gels; Genotyping capabilities, Create cluster analysis, RFLP, RAPD, SSR, Fingerprinting, VNTR analysis, Genotyping, etc. All the software should be supplied with a lifelong license and should free upgrades as and they are introduced. Also, in the event of softwares being accidentally deleted from the PC, they should be supplied free of charge.
- Transilluminator: Should be 312nm single wavelength transilluminator. Viewing area size should be $\geq 25 \times 30$ cm; with at least 6x8W UV tubes.

- Darkroom: with 6x1W white lamp module; UV lights shuts off when the door opens.
- Data Processing Unit with Intel i7 Processor, 8GB RAM, 1TBROM, Licensed latest version Windows Professional, MS Office and Adobe Photoshop. Should be supplied with suitable on-line UPS.

ITEM No.12 BOD INCUBATOR (*FIRST CALL*)

- Temperature ranging from 10°C to +50°C with excellent stability.
- Capacity: Minimum 550 liters
- Temperature Uniformity @ 37°C ±0.5 °C.
- Microprocessor control with easy-to-read display shows actual temperature within 0.1°C.
- Push-button controls for temperature set point selection.
- Forced-air circulation for excellent temperature stability.
- CFC-free, foamed polyurethane insulation to prevent heat loss.
- RTD temperature probe and protected set point mode to prevent accidental temperature change.
- Door key lock to protect samples from unauthorized access.
- Temperature set point selection with high and low temperature protection and simple calibration.
- Available with dual lamp fluorescent lighting for plant growth studies and day/night cycles, programmable lighting conditions.
- Safety relay and alarm LED alert to over/under temperature conditions.
- Access port for independent sensors/connection of equipment inside unit.
- Cooling switch provides high temperature accuracy and saves energy at temperatures above to ambient.
- RS-232 and recorder jacks for data logging.

TEM No.13 GRADIENT THERMAL CYCLER (*FIRST CALL*)

- Sample volume 10µL to 100µL
- Flexibility of modular 96- and 384-well interchangeable blocks on the same system
- Max block ramp rate ≥3.5°C /sec. Max sample ramp rate of ≥3.0°C /Sec.
- Programmed methods for hot start PCR, cycle sequencing, long PCR, touchdown PCR and unlimited protocols on USB drive.
- Touch screen interface with real time display of program
- Gradient temperature range of ~30°C to ~99°C.
- Remote access feature to allow the access from web enabled device, start a run and stop a run or just to check on its status.
- Pre-loaded protocols for some of most popular protocols
- PCR Wizard feature for quick and customized protocol creation.
- Memory capacity of at least 10000 protocols.
- With USB ports.
- With compatible online UPS for 2 h backup.

ITEM NO 14 HOT AIR OVEN (*FIRST CALL*)

- Programmable Microprocessor control with vacuum fluorescent/LED display.

- Broad temperatures range 50°C to 250°C.
- Temperature Uniformity at 150°C: $\pm 3^\circ\text{C}$
- Stainless steel perforated shelf at least :3
- Capacity in liter: 400-500 liters
- Machine should have to 2 PT-100 Sensor for Sample protection.
- Inner chambers corrosion-resistant stainless steel 1.4016/AISI 430 with rounded corners for easy cleaning.
- Automatic over temperature alarm system to protect samples.
- Timer function to programme start or switch off times for additional energy savings.
- Interior W x H x D:500-600 x 1300-1400 x 500-600 mm.
- Exterior W x H x D:1500-1600 x 700-800 x 700-800 mm.
- Access port allows the introduction of sensors for independent data monitoring by appropriate Thermometer with range from 0 To 300°C.
- Ovens should come standard with a RS232 data interface with an optional facility for wireless temperature monitoring.
- Lockable casters for mobility and easy set-up in lab.
- Rated voltage:230 volt 50 Hz with Less than 600 watt power consumption @ 150 degree Celsius.
- Machine must be supplied with compatible appropriate voltage stabilizer.

ITEM NO. 15 AUTOMATED SYSTEM FOR PROTEIN, NUCLEIC ACID

EXTRACTION AND CELL SEPARATION (FIRST CALL)

- Instrument should be compatible to Microtiter 96 deep well plates and 96 well standard plates depend on the sample volume.
- The principle should be a magnetic bead based, to purify nucleic acids, proteins, cells, bacteria in a convenient, rapid and reproducible manner from different starting materials with high quality and yield.
- The processing volume should be flexible for all type of sample volumes, with 96 well format it should be from 20 μl – 1000 μl .
- Entire processing time for 96 samples on instrument should be 30-40 min, depends on various kits.
- Instrument should not have liquid transfer step involved to avoid sample cross contaminations.
- The instrument should be able to run a maximum of 96 samples per run and a minimum of one sample per run.
- The instrument should have an open system, able to accommodate any kit from any manufacturer not closed spin column & pre-filled cartridges based system.
- The particle collection efficiency should be $>95\%$.
- The instrument should have an option of stand-alone mode and PC controlled mode.
- The system should have a memory for 100 internal protocols.
- The software and computer should be supplied with the instrument and the software should not have licenses key for unlimited users' access.
- The instrument should be open system for any magnetic bead based kits.

- The instrument should have a option heating block which should be capable of setting the temperature up to 115⁰ C.
- Upgradable to 24 format magnet, large volume sample preparation with 24 format deep well plate.

ITEM NO. 16 TISSUE LYSER CUM HOMOGENIZER (FIRST CALL)

- Sample throughput should be 1.5 and 2ml or both tube.
- Should be compatible for 24x2ml, 24x48ml, 24x4.5ml, 12x15ml, 2x50ml and provide adaptors for above sample quantity.
- Adapter compatibility: Adapter should be cool able at -20°C or less.
- Adapter cooling to operate in cryogenic conditions even without liquid nitrogen.
- Sample tube loading: Top-loading design for angular motion during processing.
- Sample type must be able to homogenize plants, animal, human, faces; insect, tissues, bacteria, bone, teeth & Environmental.
- Motion should have (3D-8 shaped) multi directional angular vibratory motion with typical sample processing time less than one minutes.
- Program memory up to 12
- Recommended programme >70
- Lid protection: Should have lockdown lid and safety interlock for operator protection and should have transparent for viewing of sample while lysis processing.
- Sample process time 1-120 Sec.
- Speed settings: Up to 10 m/s or equivalent or more if quoted in different units.
- Acceleration<2 Sec to maximum speed.
- Deceleration: <2 Sec to stop.
- Cycle between sample run1-9.
- Cycle pause: 1-300 seconds.
- Beads format should be able to use with different types of available beads like glass, ceramic and metal *etc.*
- Noise Less than 70db.
- Touch screen User Interface HD Monitor.
- Comply having certification with CE or equivalent

ITEM NO. 17 MANUAL CUP FILLER TO PACK SOIL IN BAG (FIRST CALL)

- Qty to be packed: 1 kg.
- Speed minimum: As soon as you can hold the packet
- Mild steel stand structure to absorb vibration at higher speed.
- Cup filler based manual filler.
- 1 KW motor of standard makes.
- Air-cooled panel.
- Stand for cup filler.
- Hoper: Made with SS304.
- Weight Variation: plus minus % maximum.
- Foot paddle base operation or on off switched base.
- Sensor based filling on/off system

- Conveyor of 5 feet
- With castor trolley for movement of media bottle for one place to another place.

ITEM NO.18 TISSUE CULTURE MEDIA MIXING, AUTOMATIC FILLING AND CAPPING EQUIPMENT(FIRST CALL)

- Automatic piston based media bottle filling machine should be works on volumetric principle with filling four nozzles one times.
- The unit is made compact, versatile and enclosed in stainless steel elegantly matt finish body, consists of S.S.
- Slat Conveyor, reciprocating nozzle with self-centering devices & SS Honing Pipe.
- The main drive of the machine and conveyor drive consist of A/c motor with synchronized variable A/c Frequency Drive.
- Containers moving on SS Slat conveyor, feed below the filling four nozzles through a settable twin pneumatically operated stopper system.
- The twin pneumatically operated stopper system and reciprocating nozzles can precisely match for centering of container below nozzles, to avoid spillage of liquid on container.
- Filling Range - 20 ml to 100 ml
- Output/Hour - 1800 to 2500
- Direction of movement - Left to Right
- Number of Head / Syringe 04 Nos.
- Power Consumption - Heater
- Conveyor - 0.5 HP / 415 V / 50 HZ
- Height of Conveyor - 850 mm to 900 mm adjustable
- Machine Dimensions - 1800 mm (L) x 950 mm (W) x 1800 (H) Approx.
- Case Dimensions - 1950 mm (L) x 1100 mm (W) x 2000 (H) Approx.
- **Container Neck Diameter**
- Container Size - Ø 60 mm Respectively height 110 mm round shape
- Air Pressure - 6 bar pressure 0.5 CFM
- Diameter - 19 mm to 38 mm
- Height - 15 to 18.3 mm
- Container Size - Ø 60 mm respectively height 110 mm Round shape
- Electrically Heated Tank With Insulation: 100 L
- SS- 316 L tank with closed top and bottom conical with outlet nozzle.
- Finishing of all SS joints and body should be 150 grits
- Inner Shell- It should be cylindrical body and closed top and conical bottom.
- It should be made up of 2 mm thick AISI 316 SS material for contact parts.
- Outer shell after insulation to be of 2 mm SS-304 and legs in pipe SS 304.
- Spray ball to clean vessel with agitator.
- Temperature Sensor to see the temperature of the product inside.
- Temperature controlled the media at 90 to 100 °C.
- Contact Parts: -SS-316.
- Non-Contact Parts: -SS-304
- With castor trolley for movement of media bottle for one place to another place.

ITEM NO.19 HERBARIUM STORAGE RACKS/CABINET

Cabinet Construction:

- Herbarium storage racks/cabinet with double doors, including 50-55 compartments.
- Size: 50-60"W x 20-24" D x 80-85" D.
- Suitable to keep botanical specimens safe from dust, light, insects and water.
- All-welded heavy-duty steel construction with 18 gauge doors, tops, bottoms, backs and sides and 12 gauge base.
- Steel inserts constructed of 20 gauge metal.
- All edges are folded for a smooth surface to prevent snagging of folders.
- Doors with four-point or six-point latching system for air-tight storage.
- Locking compression handles.
- Should be supplied with 100% non-off gassing silicon gaskets.
- Removable doors capable of lifting off of the hinges.
- Glass or solid doors.
- Leveling base.
- Solvent-free powder-coated finish.
- With large pull-out work shelf /Vents.

Shelf Construction Details:

- One-piece 18 gauge formed steel shelves with 20 gauge reinforcements.
- 16 gauge adjustable support rails for shelves.
- Shelves adjustable on 3/4" centers with no tools required (counter high cabinets adjust on 1" centers).
- Standard shelf load capacity 250 lbs; heavy-duty shelf load capacity 500 lbs of evenly distributed weight per shelf.

Tray Construction Details:

- 18-gauge welded construction.
- Adjustable on 3/4" center.

ITEM NO.20 SEED GERMINATOR

- Standard chamber with very high humidity control and uniformity.
- The interior should be made up of stainless steel and designed with 5 shelves on the base unit and up to 25 additional shelves available as an option.
- **Lighting:** Standard lighting of the chamber includes light fixtures mounted vertically on the sides of the cabinet separated from the germination area by dual pane sealed glass barriers.
- The base equipped with four lamps in each fixture with the option to upgrade to eight lamps per fixture.
- Observation Window 10-12" x 14-16" .
- **Light** options also should provided for use as a dark germinator.
- The unit provided with an adjustable fresh air intake port for air exchange.
- **Refrigeration:** Cooling self-contained air-cooled condensing unit with hot gas bypass for continuous compressor operation.
- Water cooled condensing unit.
- **Temperature/Humidity Control:** (Based on ambient condition) 5-50 °C.

- **Humidity Range:** Up to 98% RH, limited by a +25°C dew point. Control: ±3% RH. With wet bulb sensor complete with wet sock. An electronic modulating valve provides **temperature control** while ensuring noiseless operation.
- To be provided with pressure transducers for monitoring the status of the refrigeration system. User programmable alarms with user-defined set points without the need for adjustment every time the set point is redefined. Backup “high/ low” alarms.
- Exterior Dimensions: 35-40” W x 35-40” D x 75 -80” H.
- Interior Dimensions: 25-30” W x 25-30” D x 45-50” H
- Interior Capacity: (550-600 liters).
- Bonded paneling using CFC-free polystyrene insulation. Interior Finish: Stainless steel and water-tight. Trays: Five stainless steel trays 2.5” x 22.5” included with basic unit.
- Capacity: Up to 30 trays spaced 1½” apart.
- A full complement of 30 trays
- Instrument Port: One port, 1” with light tight cap.
- Additional stainless steel trays to a total of 25.

ITEM NO.21 BOD (WALK-IN TYPE)

- Walk-In BOD (Bio-Oxygen Demand) compact incubators to maintain temperature for tissue culture growth, storage of bacterial cultures and incubation to provide high degree of constant temperature accuracy. Pre-fabricated doubled walled modular panels with PUF insulation Inside Stainless Steel and Outside Mild Steel Powder Coated or Stainless Steel, Floor panels to withstand movement and sample load inside.
- Interior illumination for working area.
- Capacity 6000 liter
- Size: Approximate W x D x H: 2.0x1.5x2.0 Mts
- Temperature range 10°C to 60°C, Temperature Accuracy ± 0.5°C Temperature Uniformity ± 1°C
- Multi panel vacuum sealed observation glass window.
- Heavy-duty door hinges and latches to maintain a secure and uniform seal.
- Racks & trays – Stainless Steel with adjustable height.
- Provision of Port hole with rubber seal to insert sensors for validation purpose.
- Interior illumination for working.
- Air heaters made up of Nichrome wires.
- Auto change over to stand by cooling system in case of failure of regular cooling system or *vice versa*.
- Compressor with Eco-Friendly refrigerant and system for continuous noiseless run of compressor.
- PLC based control system with touch screen display colored screen. Web based online monitoring works on AC single phase 50Hz.
- Compressor remain off mode to save time. Electrical consumption, heat dissipation in the room and increasing the life of the compressor.
- Weather proof unit can be placed indoors as well as outdoors.
- Air distribution system with separate supply and return duct for ensuring uniformity of set conditions

- Safety & Alarms to cut off the supply in case of overshoot and undershoot of temperature giving audio visual alarm.
- Door Opening alarms.
- Emergency bell switch provided inside the chamber.
- Special door lock provided to open the door from inside.
- All the alarms are events are logged in the software
- Touch screen door access system.
- **Password based access control.**
- **Restricts access to unauthorized persons.**
- **To be supplied with complete documents.**
- **Operations and Maintenance manuals.**
- IQ, OQ, PQ, Calibration certificates.
- Training to end-users.

ITEM NO.22 SEED PACKING MACHINE

- Should be suitable for semi-automatic filling combined with single channel counter.
- Should be suitable for use for accurate and fast seed counting and filling in bags, alu packets, vials, pots, cans *etc.*
- Should be suitable for small series like from 10-100 packets.
- The seeds should dropped automatically in each packet.
- Counter count from a small seed $<\varnothing$ 0.3 mm to 20mm size.
- Accessories: Sealer to seal Alu and poly bags.

ITEM NO.23 LIQUID NITROGEN GENERATOR (FIRST CALL)

(A) Capacity : 50-70 liter per day

- Fully integrated Liquid Nitrogen Generator with all the essential components *viz.*, Air compressor, N₂ generator, Cryo-refrigerator, Dewar storage and Level Indicators.
- Suitable for production and stable and continuous LN₂ supply for preservation of biological materials.
- Should have capacity to produce liquid nitrogen at least 50-70 liters per day.
- Should have facility to supply directly to LN₂-cooled suitable cryogenic storage (Dewar) with 100-150 liter storage capacity.
- To be supplied with backup power supply.
- Should have an efficient nitrogen generation system with N₂ membranes to defect free separating layers.
- Purity should be 95% to 99.5%.
- Should have facility to deliver nitrogen directly without an additional booster, Dry gas, with dew point of (-) 60-70°C with online detection device for dryness.
- Low Maintenance.
- Easy to operate.
- Minimum Installation and Running Cost.
- Installation by supplier free of cost.
- Should be provided Operational manual and to train a person to get smooth running for supply of LN₂.

(B) Capacity : 100-150 liter per day

- Should be a compact (mounted on a single skid) fully automatic unit.
- Should be easy to install and operate and needs minimum maintenance.
- The plant should be fully assembled system including Air compressor, Nitrogen gas generator, Liquefier, external chiller, storage tank *etc.* supplied for quick installation and production of LN₂.
- Should use only electricity and atmospheric Air to run the unit.
- Completely automatic system that can be run unattended at nights and on holidays.
- No need for any skilled or dedicated person to operate.
- Should come with all necessary safety interlocks installed in the system.
- Should have high reliability with over 12,000 hours of maintenance intervals.
- Should have very simple and easy maintenance procedures.
- Should come with user friendly TOUCH SCREEN interface with controls & Display of parameters.
- Should be supplied with Non-Magnetic, vacuum jacketed LN₂ storage vessel.
- Once tank is full, the unit should stop and conserve electrical power until it is necessary to make more LN₂.
- Should have provision for automatic fill operation of external LN₂ tanks.
- Should have auto-restart facility to enable restart of the unit when power supply resumes after a break.
- Should provide Nitrogen gas of purity of 99% or better.
- Production capacity ranging from 120 to 150 liter per day of liquid nitrogen generation.
- Storage capacity not less than 300 litres.
- Suitable external chiller should be provided.
- Should run on three phase power supply with minimum power usage.
- The unit should have a redundancy feature where one liquefier is shut while others are working during maintenance or during less requirement of Liquid Nitrogen. In other words production is not stopped even during maintenance.

(C) Capacity: 220-240 liter per day

- Production Capacity: Should have minimum of 240 litres per day.
- Purity of LN₂: Better than 99% consistently; certification of purity to be provided by Bidder.
- Internal Dewar Volume 480-500 litres fitted with Level Sensor.
- Air Quality: Better than Class 1 as per ISO8573.1.
- Air Dryer: In-built Desiccant Type Air Dryer with Dew Point -60°C.
- Air Compressor should be System Integrated outside canopy of LN₂ Generator and Factory tested with LN₂ Plant.
- Closed Loop Water Chiller: should be System Integrated outside canopy of LN₂ Generator and Factory tested with LN₂ Plant.
- Air Filters: Must have PF, FF with filtration up to 0.01 ppm.
- Human Machine Interface Thru 8 inches Graphic Colour Display showing operational & diagnostic parameters and bar-graph display of LN₂ level continuously.
- Portability Plant on Wheels, fully portable.
- Sound Level, Low noise level < 65 dB @ 1 meter for LN₂ Generator, Major Maintenance Interval, Must be more than or equal to 30000 hours.
- Facility of Tuning Down should be inbuilt, Prod. Capacity can be tuned down 100%-75%-50%-25%, in case of variable requirement.
- Modular Configuration.
- Nitrogen Separation, Should be thru efficient PSA only, factory tested with LN₂ Plant, based on Warm Gas Separation.
- Auto drains, should be in-built.

- Control should have PLC Control with HMI Touch Screen Display.
- System Diagnostics in a separate screen
- Operation: should be fully automatic with no requirement of manpower assistance for operation.
- Refrigerant ,Ultra Pure Helium Gas to be used in Cryocooler Cycle.
- No Mixed Refrigerants with recipe of toxic, inflammable or costly mixtures of gases / fluids should used.
- To enhance the working life, reliability of system at Cryogenic Temperatures, eases maintenance & lowers cost of ownership.
- Automatic Restart, Plant should be able to restart itself when LN₂ Level depletes to a pre-set level.

Note: Please quote the rates for each capacity (A&C) separately

ITEM NO.24 MICROPIPETTES (FIRST CALL)

(A) Adjustable single channel pipettes (0.1 – 2.5 µl)

- Spring loaded tip cone for connecting tips very tightly.
- Adjustment opening for adjusting pipettes to a specific liquid and volume.
- Control Button with very low operating force, color indication for pipette volume.
- Tip ejector with very low operating force, positioned for perfect ergonomics.
- Volume Display: 4 Digits with magnifier.
- Perfect Piston System made out of Fortron.
- Very easy removable lower part for cleaning pipette.
- Fully autoclavable.
- No discoloration upon UV irradiation.
- Volume range 0.1 – 2.5 µl.

(B) Adjustable single channel pipettes (0.5 – 10 µl)

- Spring loaded tip cone for connecting tips very tightly.
- Adjustment opening for adjusting pipettes to a specific liquid and volume.
- Control Button with very low operating force, Color indication for pipette volume.
- Tip ejector with very low operating force, positioned for perfect ergonomics.
- Volume Display: 4 Digits with magnifier.
- Perfect Piston System made out of Fortron.
- Very easy removable lower part for cleaning pipette.
- Fully autoclavable.
- No discoloration upon UV irradiation.
- Volume range 0.5 – 10 µl.

(C) Adjustable single channel pipettes (0. 2– 20 µl)

- Spring loaded tip cone for connecting tips very tightly.
- Adjustment opening for adjusting pipettes to a specific liquid and volume.
- Control Button with very low operating force.
- Color indication for pipette volume.
- Tip ejector with very low operating force, positioned for perfect ergonomics.
- Volume Display: 4 Digits with magnifier.

- Perfect Piston System made out of Fortron.
- Very easy removable lower part for cleaning pipette.
- Fully autoclavable.
- No discoloration upon UV irradiation.
- Volume range 0.2– 20 μ l.

(D) Adjustable Single channel pipettes (10– 100 μ l)

- Spring loaded tip cone for connecting tips very tightly.
- Adjustment opening for adjusting pipettes to a specific liquid and volume.
- Control Button with very low operating force, Color indication for pipette volume.
- Tip ejector with very low operating force, positioned for perfect ergonomics.
- Volume Display: 4 Digits with magnifier.
- Perfect Piston System made out of Fortron.
- Very easy removable lower part for cleaning pipette.
- Fully autoclavable.
- No discoloration upon UV irradiation.
- Volume range 10– 100 μ l.

(E) Adjustable single channel pipettes (20 – 200 μ l)

- Spring loaded tip cone for connecting tips very tightly.
- Adjustment opening for adjusting pipettes to a specific liquid and volume.
- Control Button with very low operating force, Color indication for pipette volume.
- Tip ejector with very low operating force, positioned for perfect ergonomics.
- Volume Display: 4 Digits with magnifier.
- Perfect Piston System made out of Fortron.
- Very easy removable lower part for cleaning pipette.
- Fully autoclavable.
- No discoloration upon UV irradiation.
- Volume range 20 – 200 μ l.

(F) Adjustable single channel pipettes (30-300 μ l)

- Spring Loaded Tip Cone for connecting tips very tightly.
- Adjustment opening for adjusting pipettes to a specific liquid and volume.
- Control Button with very low operating force, Color indication for pipette volume.
- Tip ejector with very low operating force, positioned for perfect ergonomics.
- Volume Display: 4 Digits with magnifier.
- Perfect Piston System made out of Fortron.
- Very easy removable lower part for cleaning pipette.
- Fully autoclavable.
- No discoloration upon UV irradiation.
- Volume range 30-300 μ l.

(G) Adjustable single channel pipettes (500 – 5,000 µl)

- Spring Loaded Tip Cone for connecting tips very tightly
- Adjustment opening for adjusting pipettes to a specific liquid and volume.
- Control Button with very low operating force, color indication for pipette volume.
- Tip ejector with very low operating force, positioned for perfect ergonomics.
- Volume Display: 4 Digits with magnifier.
- Perfect piston system made out of Fortron.
- Very easy removable lower part for cleaning pipette.
- Fully autoclavable.
- No discoloration upon UV irradiation.
- Volume range 500 – 5,000 µl.

(H) Adjustable single channel pipettes (1000 – 10,000 µl)

- Spring loaded tip Cone for connecting tips very tightly.
- Adjustment opening for adjusting pipettes to a specific liquid and volume.
- Control Button with very low operating force.
- Color indication for pipette volume.
- Tip ejector with very low operating force, positioned for perfect ergonomics.
- Volume Display: 4 Digits with magnifier.
- Perfect Piston System made out of Fortron.
- Very easy removable lower part for cleaning pipette.
- Fully autoclavable.
- No discoloration upon UV irradiation.
- Volume range 1000 – 10,000 µl.

(I) Multi channel pipettes

- Spring loaded tip cone for connecting tips very tightly.
- Adjustment opening for adjusting pipettes to a specific liquid and volume.
- Control Button with very low operating force.
- Color indication for pipette volume.
- Tip ejector with very low operating force, positioned for perfect ergonomics..
- Volume Display: 4 Digits with magnifier.
- Perfect Piston System made out of Fortron.
- Very easy removable lower part for cleaning pipette.
- Fully autoclavable.
- No discoloration upon UV irradiation.
- Channel indicator to use pipette the same way round.
- Channel's can be removed for adjusting the distance between channels to use it different format.
- Volume range 0.2 – 10 µl, 10 – 100 µl, 30 – 300 µl.

Note: Please quote the rates for each capacity (A&I) separately

**ITEM NO.25 ATTACHMENT FOR EXISTING MULTIMODE (SYNERGY HTX) READER FOR
NANO SAMPLE READING (*FIRST CALL*)**

- 2 µL sample capacity 16 samples/spot at a time.
- Cuvette capacity 1 cuvette reading in same attachment.
- BioCell capacity 2 ml vessels.
- Optical path length 0.5 mm (nominal)
- Detection limit 2 ng/µL dsDNA

**ITEM NO.26 EMPANELMENT FOR RUNNING TISSUE CULTURE LABORATORY,
GREEN HOUSE/POLYHOUSES FACILITIES AT BIOTECHNOLOGY CENTRE
UNDER RAJMATA VIJAYARAJE SCINDIA AGRICULTURAL UNIVERSITY,
GWALIOR (M.P) FOR PRODUCTION, MARKETING AND SALE OF PLANTS FOR
REVENUE GENERATION**

Sealed “Notice Inviting tender” are invited in two bid systems. Technical bid and Financial bid, respectively, from ISO 9001:2000 certified reputed agencies, expertise in production of large scale tissue culture plants their marketing and sale to generate high revenues on Public Partner Participatory (PPP) mode in the already established facilities and well equipped plant tissue culture laboratory at Biotechnology centre, RVSKVV, Gwalior with capacity to produce more than 10 million saplings per annum. Initially the production would involve Banana, Bamboo, and Sugarcane and Strawberry saplings but may be extended for other plants species too.

Eligibility Criteria

1. The agency must have expertise and experience in raising demand, production of tissue culture plants, sales and marketing, at least for the last three years.
2. The agency must have undertaken research technology innovation including field trials and has implemented similar project with all components and having proven record for running such facilities.
3. The experience detailed in the technical bid must be supported by literature in printed form (in original) along with the specifications of products produced on commercial level and marketed.
4. The firm should provide certificate that the company or its sister company, if any, is not black listed by any institute or department within the country and also in abroad.
5. The firm having approval under DSIR as R&D Company by Govt. of India and Department of Biotechnology, BCIL with ISO certification will be given preference.
6. The agency should also submit the non-black listing certificate issued by the non- judicial rotatory stamp paper.

Available infrastructure Details

SNo.	Product detail	Qty
01	Plant Growth Chamber	3
02	Media preparation & Sterilization room	1 each
03	Inoculation room	1
04	Laminar airflow	15
05	Store Room	1
06	Washing Area	1
07	Green House	1
08	Hardening facility	1

Terms and conditions

1. The Contractor/ Second Party shall manage, run and Up-keep the Tissue Culture Laboratory and attached infrastructure and facilities **for a period of three years which can be further extended subjected to performance based on revenue generation.**
2. The mother plants will be procured and confirmed from DBT recognized centers for virus indexing and genetic fidelity. Supply of desired plants will be worked up, so that disease free plants are available for tissue culture. The expenditure incurred for purchase of mother plants and their virus indexing shall be initially borne by **Second party.**
3. The Land and Lab and basic facilities will be provided by RVSKVV, Gwalior over which the captioned/said project will run. The laboratory will be handed over in as is where is basis along with equipment's/facilities already available and successful bidder will be solely responsible for maintenance and daily running. Bidder may visit carry out site visit **with prior information** to assess facilities/laboratory.
4. Necessary electricity connection shall be made available by first party.
5. The RVSKVV Gwalior will retain legal identity of laboratory and various facilities and equipments provided.
6. The Second Party will provide Power back-up for the facility and will bear all running expenses, electricity bill *etc.* during the period of Contract.
7. The first party (RVSKVV) shall provide 10 Interns (B.Sc UG IVthYear Students) to work as intern for technical work. The stipend fixed shall be paid by the Second party.
8. The revenue shall be generated by virtue of the sale under joint Brand of RVSKVV and Second party .
9. **The distribution of the net profit shall be in suitable and agreed proportion between both the parties.** After deducting the entire expenses during the year so permitted and agreed upon by the parties the profit shall be vested to the first party who will make the suitable and agreed percentage of the net profit to the Second Party.
10. The Taxes applicable shall be deducted from the bill of the Second Party as per rule and law from time to time in operation.
11. A committee of experts constituted by First Party will supervise the Management and work of the Second Party and during supervision if any defect is found and pointed out by the committee, the Second Party shall carry out such rectification at their risk and cost as rectification defects of the project during that period as and when the same occur.

12. If during the validity of the contract, First Party, comes to the conclusion that Second Party is unable to perform its role, it may appoint another Agency, to take over the tasks and function being performed by in any or all the work allotted, or may assume the role of the Second Party itself and terminate the agreement with Second Party.
13. The firm may give a technical power point presentation before a high level technical committee, if asked to the compliance of the requirements of the University.
14. **Technical bid should consist of the following:**
 - Catalogue of the products.
 - GST No. should be mentioned clearly and Xerox copy of last three years & Income Tax clearance certificate.
 - List of Institute/Organization where the concerned firm work and set up the Tissue Culture unit.
 - The firms should enclose the photocopy of authorization certificate.
 - The firms should enclose the photocopy of sold quantity of Tissue Culture Plants of last two years.
 - Audited financial statement of the last three years should be enclosed.
 - Each submitted sheet should be signed and stamped by the bidders.
 - **The technical competence shall include agency profile, CV of Key and Technical Persons. Details of project undertaken in last three years, list of clients/list of purchasers**
15. **Financial bid should consist of the following:**

S.No.	Infrastructure details Available for Tissue Culture Facility	Minimum Rental annual Charges (Rs.)	Quoted prices (Rs.)
01	Available for Tissue Culture Facility	300000.00	

College Level Technical Purchase Committee

1. Dr. R. K. Pandya, Professor, Department of Plant Pathology, COA, Gwalior (Chairman)
2. Dr. Ashok Ahuja, Guest Faculty, Department of PMB&B, COA, Gwalior (Member)
3. Dr. M. K. Tripathi, Professor & Head, Department of GPB& PMB&B, COA, Gwalior (Member)
4. Dr. R.S. Sikarwar, Scientist (Senior Scale), Department of G&PB, COA, Gwalior (Member)
5. Dr. Akhilesh Singh, Scientist (Senior Scale), Department of Agricultural Engineering (Member)
6. Dr. Sushma Tiwari, Scientist, Department of PMB&B, COA, Gwalior (Member Secretary)

College Level Purchase Committee

1. Dr. Reeti Singh, Professor & Head, Department of Plant Pathology, COA, Gwalior (Chairman)
2. Dr. V. B. Singh, Professor & Head, Department of Agricultural Statistics, COA, Gwalior (Chairman)

3. Dr R. K. Pandya, Professor, Department of Plant Pathology, COA, Gwalior (Member)
4. Dr. M. K. Tripathi, Professor & Head, Department of Genetics & Plant Breeding and Plant Molecular Biology & Biotechnology, COA, Gwalior (Member)
5. Dr. Varsha Gupta Scientist, Agronomy, College of Agriculture, Gwalior (Member)
6. Dr. Shashi Yadav/ Dr. Rashmi Bajapai, DDO, COA, Gwalior (Member)
7. Dr. R.S. Sikarwar, Scientist (Senior Scale), Department of G&PB, COA, Gwalior (Member Secretary)

Dean College of Agriculture, Gwalior