



NAME OF DIVISION/ UNIT: GENETICS  
[भारतीय कृषि अनुसंधान परिषद-भारतीय कृषि अनुसंधान संस्थान]  
ICAR-INDIAN AGRICULTURAL RESEARCH INSTITUTE  
NEW DELHI – 110 012

Tender No. [GEM/2024/B/5280891](#)

Dated. 12/08/2024

**TENDER NOTICE THROUGH GEM**

Online tender under two bid system (Commercial /Technical bids) on behalf of Secretary, ICAR is invited by the Director, IARI from the reputed Manufacturers /Dealers in the line for Establishment item namely “ **Speed breeding (Rapid generation advancement) facility for genome editing research at IARI New Delhi and IIPR Kanpur.**”

The detail of the tender is as under: -

1. **Name of the equipment/item & No. of units: “Speed breeding (Rapid generation advancement) facility for genome editing research at IARI, New Delhi& IIPR Kanpur. (2) (As per detailed specification attached at Annexure “A”)**
2. “Establishing speed breeding (Rapid generation advancement) facility for genome editing research at IARI, New Delhi& IIPR Kanpur.
3. Pre-bid conference (i) 21/08/2024 at 11.00 AM in Conference Room, Division of Genetics, IARI, Pusa, New Delhi. 110012.
4. Submission of tender documents: As per GeM tender.
5. Last date of Tender 09/09/2024 at. 4.00 PM
6. Opening of technical bid of tender: - 09/09/2024 at 4.30 P.M
7. Earnest Money: - Rs. 30,00,000/- (Rs.Thirty Lakh Only) **The bid security may be accepted in the form of Account Payee Demand Draft, Fixed deposit receipt, Banker’s Cheque or Bank Guarantee from any of the commercial banks in favour of Director, IARI payable at New Delhi. (To be enclosed with Technical bid) before closing date of tender.**
8. Firms registered with the Central Purchase Organization/NSIC/MSME only are exempt from submitting bids without EMD if they have experience in relevant field of speed breeding (proof of registration must be attached therefor without which it will not be considered). Except Micro and small Enterprises (MSEs) as defined in MSE Procurement policy issued by Department of Micro, Small and Medium Enterprises (MSME) or are registered with Central Purchase Organization or the concerned Ministry or Department of Start-ups as recognized by Department of Industrial Policy and Promotion (DIPP).

Custom Duty Exemption Certificate (CDEC) will be issued only when the bid is quoted in foreign currency in case of foreign made items only and meant for IARI.

**Asstt. Admn. Officer (Genetics)**

**SCHEDULE OF TENDER**

**(OPEN TENDER ENQUIRY)**

**NAME OF DIVISION/ UNIT: GENETICS**  
**ICAR- IARI, New Delhi – 110 012**

For and on behalf of the Secretary, ICAR, the Director, IARI invites sealed tenders under **Two Bid System** (Technical and Commercial Bid) on the prescribed forms **Chapter -IV** and **V**, for the purchase of the following stores as detailed in this schedule to tender. However it may be noted that it will be the discretion of the IARI authority whether to purchase the below mentioned equipment or not.

Description of stores required	Q t y .
Supply and Installation of Speed Breeding facilities, details as per Annexure "A"	2

**2. THIS TENDER ENQUIRY HAS THE FOLLOWING CHAPTERS AND ANNEXURES:**

**Schedule of Tender**

- Chapter I : Instructions to Bidders  
Chapter II : Conditions of Tender /Contract  
Chapter III : Schedule of Requirement  
  
Chapter IV : Proforma for Technical Bid  
Chapter V : Proforma for financial bid  
  
Annexure -I Performance Statement for last 3 years  
Annexure-II Certificate for compliance of instructions  
Annexure-III Checklist for tenderes

3. You are requested to study the tender documents completely and ensure all documents and Annexures are correctly filled in, signed and stamped where applicable and then submit your offer.

4. Tenderers are advised to carefully go through all the conditions and documents attached with this tender enquiry, before filling in the tender. All tender documents attached with the tender are sacrosanct for considering any offer as a complete offer. **All tender documents must be duly completed, signed by authorized signatory on each page and returned with the offer.** (from Page 01 to 16)

5. This tender is not transferable

**Signature of Tenderer with office seal**

**Asstt. Admn. Officer (ST)**

**Chapter-I****Instructions to Bidders****(THIS TENDER SET IS NOT TRANSFERABLE)**

1. Name of Stores : **Online through Gem portal**  
Tender Cost : **As per Gem norms.**
  
2. Last Date & Time of : **09/09/2024 at 4.00PM**  
Receipt of Tender
  
3. Time, Date & Venue of Technical :  
Bid of Tender (09/09/2024 at 4.30 PM)
  
4. Place of Submission of : : **GeM Portel**  
Tender Documents
  - i) **The Division will not be responsible for tenders submitted at any other place then GeM. Tenders not received within the due date will not be considered under any circumstances or for any reason.**
  
  - ii) **Tenderers are requested to study the tender documents completely and ensure all documents, forms and annexure to the tender are completely and correctly filled in, signed and stamped where applicable, all necessary literature, brochures and pamphlets have been attached and then to submit their offer. Incomplete tender offer shall be rejected straightway without any reference to the tenderers. Leaving any column not filled in or with cuttings will lead to rejection of the tender**
  
5. Earnest Money Deposit : **Rs. 30.00 Lakh (Rs. Thirty Lakhs only). The bid security may be accepted in the form of Account Payee Demand Draft, Fixed deposit receipt, Banker's Cheque or Bank Guarantee from any of the commercial banks in favour of Director, IARI payable at New Delhi. Original EMD must be deposited to Division of Genetics before the last date of submission of bid.**  
(EMD) and Validity
  
6. OFFER VALIDITY : **Six months from date of opening of tender.**  
  
**In the absence of any indication in the tender documents submitted, of the date up to which the offer has been kept valid, it will be taken that the offer will remain open for acceptance for the period specified in the Schedule to Tender.**
  
7. Extension of validity & : **If the validity of the tender is extended, the validity of the Earnest Money will also have to be suitably extended by the tenderer failing which their tender shall not be considered by the purchaser after the expiry of the said period.**  
Earnest money

**Signature of Tenderer with office seal**

9. Eligibility for Responding :
- i) Only those firms should respond who are the manufacturers or authorized dealers/agents of the stores specified in the tender specifications.
  - ii) The foreign manufacturers of the tendered stores will have to specify in the tender document, details of the sales service to be provided after expiry of warranty period.
  - iii) Indian agents of foreign manufacturers/principal are allowed to participate in the tender subject to the following conditions: -
    - a) The Indian agent will submit along with the tender documents a copy of latest authority letter/agreement from the foreign manufacturer /principal.
    - b) Such agreement/authority with the foreign manufacturers/principal should be a long- term agreement and not merely for the present tender.
    - c) If the agreement is only for the present tender, the offer received is liable to be rejected.
    - d) The Indian agent will provide details of the after sales service and post contractual support i.e. repair, maintenance, supply of spare parts etc. that he will carry out.
    - e) Offers from firms whose business activities are limited to procuring items from manufacturers, both Indian and Foreign and supplying the same to the purchaser, and having no after sales service backup will not be entertained.
    - f) Where the quoting party /Indian representative claims to be subsidiary or branch office or an authorized representative or principal foreign manufacturer /supplier in India, then a copy of approval from RBI/Ministry concerned for operating business in India as subsidiary /branch /liaison may be submitted with offer. The Indian agent of foreign manufacturer should be Registered with DGS&D only in case the bid is for item falling in the restricted list of the Export & Import Policy of Govt. of India copy of the current concerned Registration Certificate must be enclosed failing which the bid will not be accepted.

**g) The tenderer must have latest income tax clearing certificate /PAN no/TIN**

**h) The tenderer must have latest GST Clearance certificate**

**i) The firm must have trade registration certificate**

10. Delivery Required By : **For Indian manufacturer - Within 180 days from the Date of issue of award letter or as specified in the supply order.**

11. Terms of Delivery : **For Indian\manufacturer/suppliers: FOR IARI, New Delhi/ IIPR, Kanpur**

Inspection after Receipt of Goods: The inspection will be done by the Divisional Committee in the presence of firms representative. The successful tender will have to provide at his own cost and arrangement technically qualified personnel at the consignee's location for joint inspection. These personnel must be able to unpack, assemble and demonstrate the use of the equipment fully and identified each Part/Machines supplied. Any consumables that are essential will be provided by the supplier free of cost.

**In case of receipt of materials in damaged condition the suppliers will have to arrange the replacement of goods free of cost. All expenses in this regard will be borne by the supplier.**

**Signature of Tenderer with office seal**

**Purchaser:** Director, IARI, New Delhi – 110012

All damages which may occur as a result of defective packing shall be borne by the seller.

13. Compliance Statement : The firms must submit compliance statement -cum- technical bid in the format given in Chapter -IV failing which their offer will be treated as incomplete and is liable to be rejected.
14. Earnest /Security Deposit : Rs.30,00,000/- (Rs. Thirty Lakh Only) to be deposited along with Technical bid in the form of Crossed Demand Draft/Pay Order/ Fixed Deposit receipt/ Bank Guarantee in the name of the Director, IARI, New Delhi from any Commercial Bank payable at New Delhi. No other form of deposit will be accepted.  
**In the absence of any indication in the tender documents submitted, of the date up to which the offer has been kept valid, it will be taken that the offer will remain open for acceptance for the period specified in the Schedule to Tender.**
15. Guarantee/Warranty : Comprehensive on site warranty i.e 26 months is required. Warranty Terms period will start from the date of installation of items. In case at installation stores/part of stores are found defective /damaged during or after delivery to consignee, the suppliers will replace or repair the store under warranty at consignee's location in India free of cost or if any case it is required to sent back to the foreign manufacturer. Bank Guarantee equivalent to the cost of equipment is required to be submitted before lifting the store. All expenses in this regard will be borne by the supplier.
16. Performance Security : The successful bidder will have to submit a Performance security of equivalent **to 5 % of the** Contract /Order value before the issue of award letter valid till 60 days + the period of expiry of the warranty/ Guarantee period in shape of crossed Demand Draft/Pay order/ Fixed Deposit Receipt/ Bank Guarantee from a commercial bank in favour of the Director, IARI, New Delhi. The performance security will remain valid till expiry of warranty period. This will be released after completion of warranty period.
17. Liquidated Damages : In case the firm does not complete the supply within the laid down agreed Security delivery period as per contract, liquidated damages will be charged @ 0.5% per week or part thereof subject to a maximum of 5% of the contract value. However, the Institute reserves the right to either further extend or cancel the contract after expiry of delivery date and recover the liquidated damages from the dues of the firm or by legal means.
18. Dispute settlement : The dispute arising out of this contract shall be subject to the jurisdiction of Indian laws & court at New Delhi. Sole arbitrator is appointed by the Secretary, ICAR, New Delhi. His decision will be final and binding to both parties (Supplier and Purchaser)
19. Submission of the : The tenderers must submit the tenders in **TWO BID SYSTEM. The price bid should be submitted in the BOQ provided in Gem Portel.**

proposal (A) TWO BID SYSTEM

- i) Rates for optional item if only should be submitted **as per Chapter -V in a separate sealed cover alongwith the technical details/bid as per Chapter -IV in a separate sealed cover** along with detailed specifications of the store offered supported by leaflets, Brochure, if any.

- ii) Rates of optional items can be provided by firm, if they want to. It will be submitted in a sealed envelope. EMD must be submitted in sealed envelope.
- iii) Both the above mentioned cover should be sealed separately and thereafter be kept in one big cover and again sealed.
- iv) This big cover should also be superscribed with the Tender No., Stores and date of Tender opening.
- v) **Composite bid i.e. rates indicated in the technical bid openly in tender is liable to be ignored.**
- vi) Only the first cover i.e. Technical Bid shall be opened on the date of tender opening.
- vii) Price bids of only those offers, which will be technically qualified, will be opened on Gem Portal.
- viii) Technical comparative statement for technically qualified firms will be uploaded on Gem portal. Any firm having any representation can submit through Gem portal.

**Signature of Tenderer with office seal**

**A. TECHNICAL BID**

a) The **FIRST COVER** should contain the following:

i) **Tender** documents duly completed and signed but

**WITHOUT INDICATING THE RATE QUOTED.**

ii) The technical details of the models offered along with the supporting original technical literature, leaflets, brochures etc. as per Chapter-IV

iii) Earnest Money:- Rs. 3000000/- (Rs. Thirty Lakhs only) non refundable

iv) Details of supplies of similar item as per Annexure- "A" along with copies of supply orders.

v) Latest income tax clearance certificate /copy of PAN card/TIN

vi) Latest GST clearance certificate.

vii) Technical bulletin with specifications clearly stated with model.

**B. SECOND COVER should contain the following:**

i) Details of rates, taxes, duties, discounts, if any, quoted by the bidder, should be submitted as per Chapter-V.

ii) Any documents in support of price bid.

iii) For Indian manufacturer rate should be at F.O.R. destination.

**NOTE:** a) The word "**TECHNICAL BID**" should be written clearly and prominently on the first cover along with tender number, name of stores and date of opening. Similarly, the word "**PRICE BID**" should be written clearly and prominently on the second envelop along with Tender Number, Name of Store.

b) Full name and status of the person signing the tender documents must be clearly mentioned in the Tenders.

20. Evaluation of the Proposal :

A two stage procedure will normally be adopted: -

i) **Stage-I:**

a) Evaluation of Technical Bids to assess their suitability against the laid down parameters.

b) Tenderers must ensure that they enclose all original technical literature and detailed documentary proofs which specifically bring out the compliance of the equipment being offered against the specifications. If necessary the Tenderers may be directed to give a presentation for evaluation by a technical committee constituted for the purpose.

c) In case it is not possible to verify compliance of items as per technical bid due to lack of adequate documents, in original no reference will be made to tenderer and the bid will not be considered further and **treated as cancelled.**



**ii) Stage-II  
Financial  
Evaluation**

a) The price bids of only those firms found meetings the laid down specifications at stage I shall be opened, evaluated and considered further.

III) It is in the tenderers interest to include all relevant and detailed technical data as supporting documents along with their bid.

21. **Mode of Payment:**

**A. FOR INDIGENOUS SUPPLIES: -**

Payment on running bills basis after supply, satisfactory installation, commissioning and performance of the equipment at New Delhi and after certification by our Scientists concerned/intender and Director (Works), will be made as per below schedule:-

**Payment :** Payment release will be against running bills submissions as under

- i. 15% against first RA bill on completion of Plinth Level completion of first project milestone.
- ii. 15 % against 2<sup>nd</sup> RA bill on completion of PEB steel structure and supply of cladding PUF panel and pre-coated sheets (against completion of 2<sup>nd</sup> project milestone)
- iii. 20 % against 3<sup>rd</sup> RA bill on completion of covering, floor C.C. and supply of HVAC and electric items (against completion of 3<sup>rd</sup> project milestone)
- iv. 20 % at the time of delivery of imported lights, instruments, control system, benching system (against completion of 4<sup>th</sup> project milestone)
- v. 30 % after completion of work and submission of handover documents and bill certification with measurement sheet (against completion of 5<sup>th</sup> project milestone)

**A legally agreement/contract shall be executed with the contractor/firm by the Institute before installation of all/any type of instrument/machine as per the instructions of the Indian Council of Agricultural Research (ICAR).**

**Signature of Tenderer with office seal**

22. Training : **THE TENDERERS SHALL PROVIDE TRAINING TO THE USER AS PER THE TERMS & CONDITIONS OF THE CONTRACT AS HAS BEEN SPECIFIED IN TECHNICAL & FINANCIAL BIDS FREE OF COST AT THE TIME OF INSTALLATION/COMMISSION OF EQUIPMENT AT THE CONSIGNEES/USERS LOCATION. AS SPECIFIED BY THE PURCHASER. ALL EXPENSES IN THIS REGARD WILL BE BORNE BY THE SUPPLIER.**
23. Insurance : As applicable in the case of imported goods. For indigenous item it will be responsibility of the supplier to supply the material in good condition on FOR basis without involving the risk of the purchaser.

## **CHAPTER-II**

### **CONDITIONS OF TENDER/CONTRACT**

1. All annexures, attached with the Tender should be duly filled in and supported with requisite documents for considering any offer as a complete offer.
2. Director, IARI, New Delhi, reserves the right to cancel/reject any or all the tenders without assigning any reason.
3. **EARNEST MONEY DEPOSIT:-** EM of Rs. 30,00,000/- (Rs. Thirty Lakh only) must be deposited in the form of crossed Demand Draft/Pay Order / fixed deposit receipt/ Bank Guarantee in favour of Director, IARI from any Commercial Bank payable at New Delhi. No other form of deposit will be accepted. Technical bid without supported with earnest money, therefor will be rejected.

There will be no exemption for paying earnest money. However, Firms registered with the Central Purchase Organization/NSIC only are exempt from submitting bids without EMD (proof of registration must be attached therefor without which it will not be considered).

- a) No interest shall be payable by the purchaser on the EM deposited by the tenderer.
- b) The EM deposited is liable to be forfeited if the tenderer withdraws or amends impairs or derogates from the tender in any respect within the period of validity of his tender.
- c) If the successful tenderer fails to furnish the performance security as required in the contract within the stipulated period, the **Earnest Money** shall be liable to be forfeited by the purchaser.
- d) **EMD** of the unsuccessful tenders shall be returned after finalization of tender.

#### 4. **GUARANTEE/WARRANTY**

- I. Except otherwise provided in the invitation to tender the contractor hereby declares that the goods/stores/articles/equipment sold/supplies to the purchaser/consignee under this contract shall be of best quality and workmanship and new in all respects and shall be strictly in accordance with the specification and particulars mentioned/contained in the contract. The contractor hereby guarantees that the said goods/stores/articles would continue to conform to the description and quality aforesaid for a period of 26 months from the date of receipt of goods/articles/equipment in good condition at site by the consignees in case of supply contract and 26 months from the date of installation and satisfactory taking over of the goods/stores/articles/equipment at site by consignee where installation and commission is involved and notwithstanding the fact that the purchase /inspection authority has inspected and/or approved the said goods/stores/articles/equipment or such if during the 26 months the said goods/stores/articles/equipment be discovered not to conform to the description and quality aforesaid or not giving satisfactory performance or have deteriorated and the decision of the purchase /consignee in that behalf shall be final and binding on the contractor/seller and the purchaser shall be entitled to call upon the contractor/seller to rectify the goods/stores/articles/equipment or such specified period as may be allowed by the purchaser in his discretion on application made thereof by the contractor/seller, and in such an event, the above period shall apply to the goods/stores/articles/equipment rectified from the date of rectification mentioned in the warranty thereof, otherwise the contractor/seller shall pay the purchaser such compensation as may arise by reason of the breach of warranty therein contained. **Notwithstanding anywhere else mentioned to the contrary in this document,**

**9 of 16 the bids would be evaluated on price of the equipment and accessories, if any. AMC/CMC charges shall not be included for the evaluation of the financial/commercial bids.**

- II. Guarantee that they will supply the spare parts, if and when required on agreed basis for an agreed price. The agreed basis could be and including but without limitation an agreed discount on the catalogue price or an agreed percentage of profit on landed cost.
- III. Warranty to the effect that before going out of production for the spare parts they will give adequate advance notice to the purchaser of the equipment so that the later may undertake the balance of lifetime requirements.

**NOTE: - In case of any discrepancy in the period of guarantee/ warranty mentioned anywhere else in this Tender document, the stipulations as mentioned in the chapter III (specification of the equipment/ item to be purchased) would prevail.**

5. **Price: -** The price quoted shall be on firm and fixed basis and should be reasonable living no scope for any further negotiation on price.  
A. For goods manufactured in India: - on FOR basis (including all kind of charges and taxes)  
i) Installation commissioning charges, if any  
The Institute is exempted from payment of excise duty. Hence, excise duty will not be paid to the firm.  
Sales tax we are not authorized to issue Sales Tax Form C&D;  
The Institute is exempted from payment of Custom Duty

- 5(A) **AMC of Equipment:** After the warranty/Guarantee term is over, the firm should mention the charges of AMC atleast for first three years separately. It will be submitted alongwith second cover i.e optional item cover.

**NOTE: - In case of any discrepancy in the period of and/or AMC mentioned anywhere else in this Tender document, the stipulations as mentioned in the chapter III ( specification of the equipment/ item to be purchased ) would prevail.**

6. The bidder shall necessarily be a legal valid entity either in the form of a registered firm or Limited company or a Private Limited Company registered under the Indian Companies Act, 1956 or sole proprietorship or country of origin
7. The Bidder should have registered with (Department of Scientific and Industrial Research (DSIR) Govt. of India, Documentary proof should be attached.
8. An understanding (Self Certificate) is to be submitted that the Organization has not been blacklisted during the last 3 years by any central/state Government Department/organization/Autonomous Body/PSU etc.
9. Joint Venture / Collaboration for the said project is not allowed.
10. The Bidder should quote for all items of the tender. Any tender for part item will be rejected out rightly.
11. Bidders who meet the criteria given above are subject to be disqualified, if they have made untrue or false representation in the forms, statements and attachments submitted in proof of the qualification requirements or have a record of poor performance, not properly completing the contract, inordinate delays in completion or financial failure, etc.
12. Financial bids will be opened / considered only for the bidders who have qualified in the essential technical criteria/bid.

**13. Penalty for use of undue influence:-**

The seller should undertake that he has not given offered or promised to give directly or indirectly any gift, consideration, reward, commission, fees brokerage of inducement to any person in service of the Purchaser or otherwise in procuring, the contract or forbearing top do or for having done or for borne to do any act in relation or execution of the contract or any other contracts with the Institute for showing or for bearing to show favour or disfavor to any person in relation to the contract or any other contract in the IARI. Any breach of the aforesaid undertaking by the seller or any one employed by him or acting his behalf whether with or without the knowledge the seller or the commission of any offers by the seller or any one employed or acting on his behalf, as defined in Chapter-IX of the IPC, 1860 or the Prevention of Corruption Act, 1947 or any other Act enacted for the Prevention

of Corruption shell entitle the purchase to cancel the contract and all or any other contract with the Institute seller and recover from the seller the amount of any loss arising from such cancellation. A decision of the purchaser or his nominee to the effect that a breach of the

undertaking had been committed shall be final and binding on the seller.

Giving or offering of any gift, bribe or inducement or any attempt at any such act on behalf of the seller towards any officer /employee of the purchaser or to any other person in a position to influence any officer /employees of the purchaser for showing any favour in relation to this or any other contract sell render

14. **LAWS GOVERNING THE CONTRACTS** : - The contracts shall be governed by the laws of India for the time being in force. The contract shall be interpreted in accordance with these laws.
15. **Jurisdiction of Court**: - The court of the New Delhi shall have a Jurisdiction to decide any dispute arising out of or in respect of contract
16. **Force Majeure Clause** : - The Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure. For purposes of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such event may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods. Epidemics, quarantine restrictions, strikes, lockout or any act of war. Notice of the happening of any such event is given by either party to the other within 15 days from the date of occurring thereof. However either party at its discretion can terminate the contract in such cases.
17. **Termination of contracts**:- Time shall be the essence of the contract. The purchaser shall have the right to terminate the contract without any notice in part or in full in any of the following cases.
- a) The delivery of the material is delayed for causes not attributed to Force Majeure after the scheduled date of delivery.
  - b) The seller is declared bankrupt or becomes insolvent.
  - c) The delivery material is delayed due to causes of Force Majeure by more than reasonable time.
  - d) In case Performance Security is not furnished within the time period specified by the purchaser.
- Supply in the case of successful Tenderer should strictly confirm to the specifications of the equipment being purchased.
- Any change in Address /Telephone/Fax/e-mail of the tenderer should immediately be informed. The state of non-communication by the firm will make the offer liable for rejection.
18. The successful bidder will have to provide the original proforma invoice from the foreign principal (duly signed in ink), in case of imported item/equipment, within 15 days of the date of receipt of purchase order, otherwise the purchase order will automatically stand cancelled without any further communication.
19. **Govt. Regulations**: - It shall also be confirmed that there are no Govt. restrictions or limitation in the country of the supplier or countries from which sub-components are being procured and/or for the export of any part of the system being supplied. Supplies/Contracts shall provide a certificate this effect.
20. **Late /Delayed tenders** shall not be considered at all. These will be returned to the firm as it is at their expenses. Post tender revision/correction shall also not be considered.
21. **Acceptance or rejection of offer**: - The Director, IARI, New Delhi reserves the right to accept or reject any tender in part or full without assigning any reason thereof. The successful bidder should submit order acceptance letter within 15 days from the date of issue.
22. **Page Numbering & Signatures**: - Every page of the tender must be numbered and signed by the authorized signatory giving his/her name and designation below the signature.

**Signature of Tenderer with office seal**

**Asstt. Admn. Officer (ST)**

**NAME OF DIVISION/ UNIT: GENETICS**  
**ICAR- IARI, New Delhi – 110 012**

**Specification of the equipment / item(in detail) to be purchased.**

1	As per Annexure "A"	
2		
3		
4		
5		
6		

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**Signature of Tenderer with office seal**

**NAME OF DIVISION / UNIT: GENETICS**  
**ICAR- IARI, New Delhi- 110012**

**Technical Bids**

(To be sealed in separate cover)

Specification of the equipment/ item (in detail) to be purchased

S. No	Essential Criteria	Whether complied with YES/NO	If yes, please Tech literature of the equipment duly printed & clearly specify page No. of Bulletin which specifically confirm this	If no, attach deviation statement	Remarks (if any)
1.	The Bidder should have completed at least 1 project of establishing the fully climate-controlled speed breeding facility from initial stage to till project completion with any Foreign Research Institute/Central Govt./State Govt./PSUs/Autonomous bodies in India satisfying any one from the below mentioned criteria Supporting Documents to be uploaded: List of projects with purchase order and completion certificate issued by the client.				
2.	The Bidder/Applicant should have registered with valid ISO Certifications like ISO 45001:2018, ISO 9001:2015 & ISO 14001:2015.				
3.	The Bidder/Applicant should have registered with PF & ESIC Govt. of India, Documentary proof should be attached.				
4.	The Bidder must submit Purchase Orders for establishment of Speed Breeding Facility in Government/state Government/Autonomous Bodies in India. a. One order costing more than Rs.4.80 crore or b. Two orders each costing more than Rs. 3.60 crore or c. Three orders each costing more than Rs. 2.40 crore				
5.	The Applicant must be a legal entity like Private Limited/Public Limited/Government Registered Company registered under the Companies Act, Limited Liability Partnership (LLP) under the Partnership Act, Partnership Firm, Societies Registration Act, etc. The agency/s must have valid PAN card and GST Registration.				
6.	The bidder shall have Annual turnover for last three financial (2021-22, 2022-23 & 2023-24) years, ending on 31 March 2024, should not be less than INR 10 Crores. The copies of the Profit & Loss statement also to be provided. The bidder should not be in loss in the last 03 financial years. The Turnover Certificate duly signed & stamped by Chartered Accountant.				
7.	The Bidder/Applicant should provide ITR (Income Tax Return) for last three financial (2021-22, 2022-23 & 2023-24) years.				

**N. B. :- All the bidders are requested to provide true statement in the columns. Concealing of facts will liable to be rejected the tender completely. No communication will be made in this regard.**

**Signature of Tenderer with office seal**

**NAME OF DIVISION/ UNIT: GENETICS**

**ICAR- IARI, New Delhi – 110 012**

**PROFORMA FOR PRICE BID FOR OPTIONAL ITEMS ONLY**  
**(Compulsory to be filled up with details by the bidder & sealed**  
**in separate cover)**

Tender Inviting Authority:

Contract  
No

Name of the Bidder/ Bidding Firm/ Company:							
<b><u>PRICE SCHEDULE</u></b> <b>(DOMESTIC TENDERS - RATES ARE TO GIVEN IN RUPEES (INR) ONLY)</b> <b>(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)</b>							
NUMBER #	TEXT #	NUMBER #	NUMBER #	NUMBER	NUMBER #	TEXT #	Grand Total in words
Sl. No.	Item Description	Quantities / Number of Jobs	Enter for bidder of each job BASIC RATE In <b>Figures</b> To be entered by the <b>Bidder</b> in <b>Rs. P</b>	GST Amount in <b>INR</b> <b>Rs. P</b>	<b>TOTAL AMOUNT With Taxes</b> <b>Rs. P</b>	<b>TOTAL AMOUNT In Words</b>	
1.	2.	3.	4.	5.	6.	7.	8.
1.00	Supply and Installation of Speed Breeding Facility details as per Annexure "A"	2					
		Total in Figures					
Quoted Rate in Words							

***Note:-Financial bid without optional items should be quoted in the BOQ in Gem portal. Further, sealed cover alongwith the technical bid in separate envelope for optional items must be submitted to office before the last date of submission of tender.***

I) Ex factory price offer ( <b>excluding agency commission, to be invariably separately shown and if nothing is claimed reasons thereof must be indicated failing which the bid will not be considered</b> )		
II) Training Cost, if any		
Packaging & handling charges		
<b>FOB Price excluding agency commission</b>		
Any payment to be paid in Indian Rupees towards agency commission, supply of Indian made item and other charges like GST.		
Name of items: -		
1. _____		
2. _____		
3. _____		
4. _____		
_____		
Total		

\*Components to be supplied locally to be clearly indicated.

**Signature of Tenderer with office seal**



Annexure-I

**PERFORMANCE STATEMENT FOR LAST 3 YEARS**

<b>S. No.</b>	<b>Name of the items</b>	<b>Name of the office by whom order was placed</b>	<b>Order No. &amp; date (Please enclose copy of supply orders)</b>	<b>Value of supply order</b>	<b>Delivered in time or not</b>	<b>If not please specify the reason</b>	<b>Attach satisfactory working report from each office (Yes/No)</b>

**Signature of Tenderer with office seal**

**CERTIFICATE TO BE SIGNED BY THE TENDERER**

**CERTIFICATE**

It is certified that I have read and understood and will comply all instructions contained in tender enquiry and its schedule. All pages of schedule to tender from page \_\_\_\_\_ to \_\_\_\_\_ have been filled properly and signed.

Signature of tenderer: - \_\_\_\_\_

Name in block letters: - \_\_\_\_\_

Name of firm: \_\_\_\_\_

Full address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

i) Telephone No. \_\_\_\_\_

ii) Mobile No. \_\_\_\_\_

iii) Fax No. \_\_\_\_\_

iv) Email id \_\_\_\_\_

v) Website \_\_\_\_\_

**Signature of Tenderer with office seal**

**Annexure-III**

**Check list for Tenderers**

**Before submission of tender documents, Tenderers should check they have complied with the following requirements: -**

<b>Sl. No.</b>	<b>Requirements to be checked before submission of the tender</b>	<b>Compiled (Please indicate) <u>Yes</u> after complying with the requirement)</b>
1.	Cost of Tender has been enclosed with tender document, if downloaded from website. If not, then supporting documents proving exemption to this enclosed.	
2.	Earnest money Deposit (EMD) has been enclosed.	
3.	<b>Complete tender documents have been enclosed, after signature &amp; stamping on ALL pages.</b>	
4.	Signatures of witness with full name and address have been added whenever required on tender document.	
5.	Proposal has been submitted in two bid system – Technical Bid & separate price Bid as per tender enquiry.	
6.	Offer validity as required in tender has been accepted & clearly mentioned in tender document.	
7.	Delivery Terms & Period as per tender have been accepted and mentioned in tender.	
8.	Payment Terms as per tender have been accepted and mentioned in tender.	
9.	Compliance statement as per chapter-IV has been enclosed along with supporting technical documents /proof for each point/parameter clearly showing it is complied with or not.	
10.	Performance statement for 3 years as required in tender, in the laid down format as per annexure-I, has been enclosed. If not, reasons be specifically given in writing.	
11.	Warranty terms as per tender accepted.	
12.	Annexure-II regarding compliance of all conditions mentioned in the tender form has been enclosed.	
13.	Status of tenderer has been clearly written in tender – manufacturer or manufactures authorized agent. If authorized agent, valid latest agreement authority letter/agreement for the stores quoted from the manufacturer has been enclosed.	
14.	Free Training on use of equipment after supply, as specified tender, has been accepted in writing.	
15.	Technical and financial bid along with necessary documents have been sealed in separate envelops and both envelops again sealed in a big envelops with prescribed writing on envelops.	
16.	The tenderer has clearly mentioned in writing that business dealings with their firms have not been banned by any Govt./Private agency.	
17.	If the tenderer wants to mention any specific condition, it must be mentioned on the covering/forwarding letter only which will be placed on the first page of the technical bid. Such condition mentioned in any other document shall not be given any consideration.	

**Signature of Tenderer with office seal**

**CLIMATE CONTROLLED SPEED BREEDING FACILITY**  
**TECHNICAL SPECIFICATIONS**

<b>Speed Breeding Facility Area:</b> 277.2 sq.m. at ICAR-IARI, New Delhi and ICAR-IIPR, Kanpur.			
<b>Dimension:</b> (16700 x 16600 x 5000:6000) mm			
<b>Temperature Range:</b> 18°C to 42°C ± 0.5°C			
<b>Humidity (RH):</b> 60-90% ± 5%			
<b>CO<sub>2</sub>:</b> 350-1200 ppm			
A	Description	Dimensions	Quantity
1	Walk-in Chamber (A&B)	(7800x7100x4000) mm	02 Chambers
2	Walk-in Chamber (a, b, c, d, e & f)	(3400mx2200mx4000) mm	06 Chambers
3	Research Lab Area	(4600m x4040mx4000) mm	01 No.
4	Reception/ Entry Area	(4170x7100x4000) mm	01 No.
5	Corridor	(2500x16600x4000) mm	01 No.

**FACILITY;**

Speed breeding facility should be an integrated facility to conduct research with temperature, light, CO<sub>2</sub> and humidity controlled walk-in chambers with data logging. This facility consists of climate-controlled growth chambers enclosed in a suitable housing. The entire facility should meet Biosafety Level 2 compliance (Please refer to **Guidelines for the Establishment of Containment Facilities: BSL2 and Certification of BSL2 facility 2020**, vide DBT order dated 18.12.2020; <https://ibkp.dbtindia.gov.in/Content/Rules>).

This Facility Consist total eight chambers, two chambers of same specifications & other six chamber of same specifications with Front two side elevation as per drawings.

**Total Area of facility:** 277.2 sqm.

**1. SPEED BREEDING CHAMBER (Walk-in) - 2 Nos**

**A) CONSTRUCTION:**

**Dimensions:** 7800mm x 7100mm x 4000mm. (LxWxH)

- 1) **Growth Area:** 55.38 m<sup>2</sup>
- 2) **Growth Capacity:** 221.52 m<sup>3</sup>
- 3) **Height:** should be inside height 4m (4000mm).
- 4) **Fresh Air:** Filtered inlet 50 cfm per day.
- 5) **Exterior Finish:** Polyurethane coated Sheet.
- 6) **Interior Finish:** Interior surface in SS (stainless steel) 316 sheet with smooth surface.
- 7) **Cabinet Insulation:** 80mm thick polyurethane filled insulation.

- 8) **Door:** Door Size: 1200mm x 2100mm with inside safety release latch and cam-type self-closing hinges. Door has positive closer device, thermal plastic gasket with magnetic core, and door stop.
- 9) **Anti-frost Observation Window:** Tight cover 355mm x 355mm.
- 10) **Control Panel:** Left hand side & details specification mention in control system
- 11) **Instrument Ports:** Two ports, 50mm diameter with light cap.
- 12) Sound level should be healthy (about 50 dB or less) within and outside the chambers.

## **B) LOCAL CONTROL SYSTEM**

Software Climate Control Master (CCM) Version: CCM-G V2.0

Features:

- Control system will be capable of Real time clock programming of temperature, relative humidity and lighting status.
- Microcontroller based control system.
- 178/254 mm touch display
- Multi set-point programming.
- Experiment protection via temperature limit shut-down. Auto-restart when temperature is normal.
- Temperature/RH%/light/CO<sub>2</sub> high & low deviation alarm.
- Auto restarts in case of power failure with in-built battery.
- Alarm history of last 15 alarms
- Data recording facility of minimum 30 days with 1-minute interval.
- Data logging is in excel and graphical format.
- Average hourly values of parameters for analysis of research.
- Remote access to local computer.
- Remote access from anywhere on computer when connected to internet.
- Email Alarm Alert system
- Infrared CCTV Camera for Monitoring the Facility

Control system along with all electric wiring and electrical switch gear panel with all safety features.

### **Virtual Chamber Software:**

To access & monitor all chamber from one location to fulfil customer need give solution for centralised system that has following features

- To work on networked Windows computer
- To facilitate user to communicate directly with the local control system
- Same programming facilities as local control system
- Access able via. Internet from anywhere
- On line service diagnostic by service personal
- Chamber usage tracking and reporting by user

- Global email alerts
- Supplied with a compatible, necessary software-loaded desktop computer with UPS and appropriate size TFT monitor

### **C) LIGHTING SYSTEM**

1. Light Grid size: 6m x 6m
2. Programming and control: Independent level programming to set up day/night programming.
3. Light Grid mechanism customized modules with gear motor, driving shaft, swivel pulley, special cable drum with S.S. wire rope. Grid Integrated with following LED Light: - Light Intensity: 200-1200  $\mu\text{mole}$  at 50 cm from light source advanced Heliospectra model with a wavelength range of: 350nm to 735 nm & white (5700K)
4. Qty: 15 Nos in each Chamber
5. There should be adjustable ratio of blue, green, red, and far-red radiation (B:G:R:FR) with independent control for each colour.
6. Optical specification of LED panel: LED should have cylindrical lenses to create beam of light about 12 to 24°C in order to eliminate decrease of intensity with increase distance.
7. LED panel should have IP67 protection.
8. Light adjustment in the chamber in sinusoidal mode.
9. Life span of LED lights: At least five years with full warranty for replacement.
10. Height of individual light source: Adjustable individually from 50 cm to 250 cm.
11. Light sensors: Set distance specific (50 cm to 200cm from the canopy level) and it should be positioned, so as to measure the light intensity accurately.
12. Light outside of the chamber should not enter the growth chamber.
13. Self-cooling LED light panels: Active fan cooling mechanism for LED lights with air ducts for removal of heat generated from each of the lights to prevent escalation of temperature above 36°C in the chamber.

#### **Day night and season cycles:**

Minimum 8 cycle per day (24 hrs.) and multiple programs per season are required. Controller functions required are:

- i. 24-hour day & night cycle control with dawn and dusk
- ii. 24 hours (one day) can be divided into four phases of day and four phases of night.
- iii. Ramping: Shifting from one phase to another phase by increasing or decreasing 1°C temperature by 5 min.

**Accessories:** 5 standby LED light panels of the above specification and motors for light adjustment.

### **D) TEMPERATURE CONTROL**

- 1) Temperature Range: 18°C to 42°C (Ambient temperature of in winter may reach up to 0°C and in summer 48°C) with a photosynthetic photon flux density (PPFD) of 200-1200  $\mu\text{mol m}^{-2} \text{s}^{-1}$ . The above range is for five growth optimization chambers and two Plant cultivation chambers. One growth optimization chamber should have a temperature range of 15°C to 42°C.

- 2) Temperature Control: +/- 0.5°C (maximum deviation) at control point.
- 3) Temperature change in the chamber in sinusoidal mode (@ 1°C per 10 minutes)
- 4) Temperature Safety Limits:
  - a) Programmable High and Low temperature limits tracking alarm, automatically following programmed set point.
  - b) Independent, high and low temperature limits for secondary safety.
  - c) Audible alarm for both safety devices and automatic Chamber power off on reaching limits.
- 5) Vertically adjustable sensing device in the growth area to sample Chamber area of accurate temperature and humidity control and recording to avoid measurement error by lamp radiation.
- 6) Easy-to-Use Proportional-Integral-Derivative (PID) Microprocessor Control: the microprocessor PID and refrigeration capacity control, eliminates temperature fluctuations thereby improving overall temperature control. This allows superior precision during experimentation paired with energy-efficiency.
- 7) Temperature accuracy should be same in all parts of the chamber (with appropriate number of sensors for continuous monitoring and control of temperature).

#### **E) REFRIGERATION**

- 1) Air-cooled condenser (RAC out door only): capable of trouble-free working at upto temperature 44°C.  
**Evaporator:** Copper – tube construction.  
**Refrigerant:** CFC-free refrigerant.  
**Circulation:** Internal Circular of air smooth modulation Using of air for smooth modulation of heating and cooling.  
 Replacement warranty for at least 5 years with an option of extending to 2 more years.

#### **F) AIR FLOW**

1. Upward/Horizontal airflow through uni-floor less than 15.2m/min. and having minimum impact on rate of transpiration of plant entire growth area, filtered fresh air, adjustable input and exhaust.
2. Fresh air exchange approx. Filtered inlet, 50 cfm per day.

#### **G) HUMIDITY CONTROL**

Ultra-Sonic humidity System/Atomizing spray nozzle with fine water particles (size: 12µm) to attain humidity level up to 90% ± 5%. **Capacity:** 10Ltrs / Hrs. capacity. Qty: 4 Units in each chamber with at least 2.5 KW/10 litres/ hour capacity for each Plant Cultivation Chambers.

**Range:** Up to 85% RH lights OFF and 80% Light ON,

- 1) **Control:** +/- 5% RH.
- 2) **System:** It has a dry sensor to direct measure humidity in % RH.

PVC connection for de-ionized water supply from a single point source

Humidification is maintained by injection of sterile steam by using RO water through ultra-sonic humidity system and preventing harmful bacteria (including *Legionella*) from entering the chamber, creating a safe working environment

Imported PID controller which features excellent accuracy and uniformity with temperature and capacitive humidity sensors throughout the chambers.

Temperature and humidity actually are stored in the memory and displayed on the monitor as a trend graph.

Data logger system (with five years warranty) for monitoring and archiving of the Temperature, light and humidity conditions in the chamber

#### **H) CARBON DIOXIDE CONTROL SYSTEM**

Facility to inject additive CO<sub>2</sub> through a supply from CO<sub>2</sub> cylinder

CO<sub>2</sub> Range: 350-1200 ppm using CO<sub>2</sub> scrubber.

Accuracy  $\pm$ 50 ppm

Appropriate scrubber/gas exchange mechanisms to control CO<sub>2</sub>.

#### **I) ELECTRICAL**

Chamber to be compatible with Indian Power supply 415 Volt  $\pm$ 10%, 3-Phase- 50 Hz-A.C. supply Neutral and Ground.

#### **J) SSBF CUSTOMIZED BENCHES**

**For Chamber A&B** (Size: 6m x 1.2m)

**Material: Extruded** Anodized aluminum with expanded metal top for keep pot plants with service life of 20 years.

Qty: 05 Nos. in each chamber.

## **2. SPEED BREEDING CHAMBER (Walk-in) 6 Nos**

### **A) CONSTRUCTION:**

**Dimensions:** 3400mm x 2200mm x 4000mm.

- 1. Growth Area:** 7.48 m<sup>2</sup>
- 2. Growth Capacity:** 30 m<sup>3</sup>
- 3. Height:** should be inside height 4m (4000mm).
- 4. Fresh Air:** Filtered inlet 50 cfm per day.
- 5. Exterior Finish:** Polyurethane Coated Sheet.
- 6. Interior Finish:** Interior surface in SS (stainless steel) 316 sheet, smooth surface
- 7. Cabinet Insulation:** 80mm of Polyurethane filled insulation.
- 8. Door:** Door Size 1000mm x 2100mm with inside safety release latch and cam-type self-closing hinges. Door has positive closer device, thermal plastic gasket with magnetic core, and door stop.
- 9. Anti-frost Observation Window:** Tight cover 355mm x 355mm.
- 10. Control Panel:** Left hand side and details specification mention in control system.



**11. Instrument Ports:** Two ports, 50mm diameter with light tight cap.

**12.** Sound level should be healthy (about 50 dB or less) within and outside the chambers.

## **B) LOCAL CONTROL SYSTEM:**

Software Climate Control Master (CCM) Version: CCM-G V2.0

Features:

- Control system will be capable of Real time clock programming of temperature, relative humidity and lighting status.
- Microcontroller based control system.
- 178/254 mm touch display
- Multi set-point programming.
- Experiment protection via temperature limit shut-down. Auto-restart when temperature is normal.
- Temperature/Rh%/light/CO2 high & low deviation alarm.
- Auto restarts in case of power failure with in-built battery.
- Alarm history of last 15 alarms
- Data recording facility of minimum 30 days with 1-minute interval.
- Data logging is in excel and graphical format.
- Average hourly values of parameters for analysis of research.
- Remote access to local computer.
- Remote access from anywhere on computer when connected to internet.
- Email Alarm Alert system
- Infrared CCTV Camera for Monitoring the Facility

Control system along with all electric wiring and electrical switch gear panel with all safety features.

## **Virtual Chamber Software:**

To access & monitor all chamber from one location to fulfil customer need Saveer give solution for centralised system that has following features

- To work on networked Windows computer
- To facilitate user to communicate directly with the local control system
- Same programming facilities as local control system
- Access able via. Internet from anywhere
- On line service diagnostic by service personal
- Chamber usage tracking and reporting by user
- Global email alerts
- Supplied with a compatible, necessary software-loaded desktop computer with UPS and appropriate size TFT monitor

### **C) LIGHTING SYSTEM:**

1. Light Grid size: 2.4m x1.2m
2. Programming and control: Independent level programming to set up day/night programming.
3. Light Grid mechanism customized modules with gear motor, driving shaft, swivel pulley, special cable drum with S.S. wire rope. Grid Integrated with following LED Light: - Light Intensity: 200-1200  $\mu\text{mole}$  at 50 cm from light source Model Heliospectra model with wavelength range of: 350nm to 735 nm), & white (5700K)

Qty: 2 Nos in each Chamber

4. There should be adjustable ratio of blue, green, red, and far-red radiation (B:G:R:FR) with independent control for each colour.
5. Optical specification of LED panel: LED should have cylindrical lenses to create beam of light about 12 to 24°C in order to eliminate decrease of intensity with increase distance.
6. LED panel should have IP67 protection.
7. Light adjustment in the chamber in sinusoidal mode.
8. Life span of LED lights: At least five years with full warranty for replacement.
9. Height of individual light source: Adjustable individually from 50 cm to 250 cm.
10. Light sensors: Set distance specific (50 cm to 200cm from the canopy level) and it should be positioned, so as to measure the light intensity accurately.
11. Light outside of the chamber should not enter the growth chamber.
12. Self-cooling LED light panels: Active fan cooling mechanism for LED lights with air ducts for removal of heat generated from each of the lights to prevent escalation of temperature above 36°C in the chamber.

### **Day night and season cycles:**

Minimum 8 cycle per day (24 hrs.) and multiple programs per season are required. Controller functions required are:

- i. 24-hour day & night cycle control with dawn and dusk
- ii. 24 hours (one day) can be divided into four phases of day and four phases of night.
- iii. Ramping: Shifting from one phase to another phase by increasing or decreasing 1°C temperature by 5 min.

**Accessories:** 4 standby LED light panels of the above specification and motors for light adjustment.

Qty: 1 No. in each Chamber.

### **D) TEMPERATURE CONTROL**

- 1) Temperature Range: 18°C to 42°C (Ambient temperature of in winter may reach up to 0°C and in summer 48°C) with a photosynthetic photon flux density (PPFD) of 200-1200  $\mu\text{mol m}^{-2} \text{s}^{-1}$ . The above range is for five growth optimization chambers and two Plant cultivation chambers. One growth optimization chamber should have a temperature range of 15°C to 42°C.
- 2) Temperature Control: +/- 0.5°C (maximum deviation) at control point.
- 3) Temperature change in the chamber in sinusoidal mode (@ 1°C per 10 minutes)
- 4) Temperature Safety Limits:

- a) Programmable High and Low temperature limits tracking alarm, automatically following programmed set point.
  - b) Independent, high and low temperature limits for secondary safety.
  - c) Audible alarm for both safety devices and automatic Chamber power off on reaching limits.
- 5) Vertically adjustable sensing device in the growth area to sample Chamber area of accurate temperature and humidity control and recording to avoid measurement error by lamp radiation.
  - 6) Easy-to-Use Proportional-Integral-Derivative (PID) Microprocessor Control: the microprocessor PID and refrigeration capacity control, eliminates temperature fluctuations thereby improving overall temperature control. This allows superior precision during experimentation paired with energy-efficiency.
  - 7) Temperature accuracy should be same in all parts of the chamber (with appropriate number of sensors for continuous monitoring and control of temperature).

#### **E) REFRIGERATION**

- 1) Air-cooled condenser (RAC out door only): capable of trouble-free working at temperature 40°C.

**Evaporator:** Copper – tube construction.

**Refrigerant:** CFC-free refrigerant.

**Circulation:** Internal Circular of air smooth modulation of heating and cooling.

Replacement warranty for at least 5 years with an option of extending to 2 more years.

#### **F) AIR FLOW**

1. Upward/Horizontal airflow through uni-floor less than 15.2m/min. and having minimum impact on rate of transpiration of plant entire growth area, filtered fresh air, adjustable input and exhaust.
2. Fresh air exchange approx. Filtered inlet, 50 cfm per day.

#### **G) HUMIDITY CONTROL**

Ultra-Sonic humidity System/Atomizing spray nozzle with fine water particles (size: 12µm) to attain humidity level up to 90% ± 5% **Capacity:** 8Ltrs / Hrs. capacity. Qty. 1 Unit in each chamber with at least 1.8 KW/8 litres/ hour capacity for each optimization chamber.

1. **Range:** Up to 85% RH
2. **Control:** +/- 5% RH.
3. **System:** It has a dry sensor to direct measure humidity in % RH.
4. PVC connection for de-ionized water supply from a single point source

#### **H) CARBON DIOXIDE CONTROL SYSTEM.**

Facility to inject additive CO<sub>2</sub> through a supply from CO<sub>2</sub> cylinder

CO<sub>2</sub> Range: 350-1200 ppm using CO<sub>2</sub> scrubber.

Accuracy ±50 ppm

Appropriate scrubber/gas exchange mechanisms to control CO<sub>2</sub>

#### **D) CUSTOMIZED FLOOD & DRAIN BENCHES**

**For Chamber a, b, c, d, e & f** (Size: 2.4m x 1.2m)

**Material: Extruded** Anodized aluminum with expanded metal top for keep pot plants. Qty: 01 No. in each chamber.

#### **J) ELECTRICAL**

Chamber to be compatible with Indian Power supply 415 Volt ±10%, 3-Phase- 50 Hz-A.C. supply Neutral and Ground.

### **3. RESEARCH LAB**

#### **CONSTRUCTION:**

**Dimensions:** 4600mm x 4040mm x 4000mm. (LxWxH)

- 1. Working Area:** 18.58 m<sup>2</sup>
- 2. Volume:** 74.33m<sup>3</sup>
- 3. Height:** 4m (4000mm) Inside height
- 4. Air-conditioning System:** Split type Air conditioning system.
- 5. Exterior Finish:** Polyurethane Coated Sheet
- 6. Interior Finish:** Interior PPGI Sheet
- 7. Cabinet Insulation:** 80mm of Poly urethane filled insulation.
- 8. Door:** Door Size: 1200mm x 2100mm with Aluminum Sliding.
- 9. Reception Partition:** 80mm of Poly urethane filled insulation with Aluminum Sliding Door.

### **COMMON ITEMS SPECIFICATION DETAILS**

#### **DOOR ACCESS SYSTEM:**

Biometric magnetic door access for secured door opening and closing with PC interface communication or card for access for each growth room

#### **DOOR: Specially designed for Speed Breeding/ Clean Room Facility**

- Heavy duty reinforcement in double blade for extreme rigidity.

- Minimalist design & smooth surface enabling highest standard of hygiene.
- Design bottom gasket for Complete hermetic sealing.
- 60-80mm PU Insulation
- Door Integrated with Air tight gasket and magnetic lock.
- **Emergency Door:** These are Fire Rated Doors. Hardware consist such as Panic Bar, door closers, handles etc. 1 Nos.
- **Main Door Size:** 2200x2400 mm

### **RO SYSTEM:**

RO System- purified water through RO (2 units) with 2 tanks of 5000 litres capacity each for storage of RO water. RO water is required for both irrigation and humidifier to prevent salt deposition on the plants as well as on costly instruments (200 litres/hour).

### **FIRE SAFETY “LEVEL 1”**

- Consist Portable Fire Extinguisher Cylinder in each chamber and corridors.
- Designed to ensure safe passage through limited visibility conditions, Evacuation
- We give Solutions to customer with one aim in mind: to save lives.
- Fire Detection systems are equipped with a variety of detectors that cannot just sense smoke heat & flames as well.

### **ELECTRICAL WIRING:**

All wires will be of copper and desired load (Make-finolex/Havells) and switches imported make, extra switches also provided as stand by. Each feature has own electric line with MCB and will be underground in PVC conduit pipe complete set with A grade work. Separate electrical work, panel board and main switches as well as per International norms- 01 complete set.

ELCB (Earth Leakage Circuit Breaker) to protect electronic components in case of abnormal power supply.

Low water level alarm with safety cut off to safeguard boiler heater Audio visual alarm when temperature deviates from set temperature.

Provision for mobile alert via GSM technology Safety cut off when temperature crosses 45-50.0°C.

Overload Protector to safeguard the compressor 180 seconds time delay for compressor switch ON.

### **FLOORING:**

International standard “Resin based Epoxy” flooring of 2 mm thickness on concrete surface. Providing and applying a thick primer & thick self levelling topping. As per IS:4631 standards.

### **CIVIL WORK:**

Civil construction including foundation and base platform of the facility and M-25 flooring. Plinth Protection of 600mm wide and 75mm thick all around the facility. (Made up of 2" thick crushed bricks with 20mm graded stone (1:3:6 Cement: Sand: Rodi) and 25mm thick 1:2:4 ration cement slurry on top of it.

### **POWER SUPPLY AND BACKUP:**

- A separate 250 KVA Generator and stabilizer backup system However, the bidders may quote for higher capacity, if the estimated power supply requirement is more than 250 KVA, along with calculation and justification.
- Uninterrupted online power supply for PLC in case of power failure

### ACCESSORIES:

**1. Motorized trolley with castor brake for plant/pot carrier x two units (Capacity 500 kgs)**

**2. UV and LUX Meter (One)**

Calibrated PAR meters for measuring light intensity and ultraviolet rays

**3. Autoclave for disinfecting the soil/ plants/ bio-waste - one unit** with the following specifications:

- i. The autoclave must be suitable for research laboratory that works on molecular biology, microbiology and pathological research. Must be **HORIZONTAL UNIT chamber fabricated** with high quality non-corrosive stainless steel and is made in round corners for easy and quick cleaning and with gentle slope for full drainage of the condensed moisture. Shell and tube type steam condenser; Chamber is provided with safety valve and compounding gauges on both sides; Double safety valve protection.
- ii. Volume: **100-300 Ltrs**; Working pressure: **2.2 -2.5 kg**; Working temperature: **120 to 135°C**; should be made up of non-corrosive stainless steel; Stainless steel steam generator must be fitted beneath the chambers for pumping steam in the chamber.
- iii. **Multi point temperature recorder and single point pressure sensor** and recorders must be available.
- iv. The sterilizer must be provided with automatic, sliding doors operated through pneumatic cylinders. The door must be fabricated from high-quality stainless-steel material with mechanical sealing with adequate safety features while in operation and after operation. **Safety and Alarms system must be built in.**
- v. The sterilizer must provide uniform heat, humidity and other sterilization contributors within the chamber. **There must be provision for steam stock; Provision for quick cooling must be available.**
- vi. An adequate capacity **Vacuum Pump** is provided along with the equipment to create the highest degree of vacuum in the chamber for air removal & for drying purpose. The pump is mounted on the equipment along with stainless steel steam condenser.
- vii. Pressure gauge should be provided for gasket, door status indications are provided on both doors. All valves & pipe lines must be of high quality stainless steel.
- viii. **Autoclave must be controlled through programmable Logic Controller.**
- ix. The entire system including doors is sufficiently insulated so that the exterior body temperature of the equipment does not increase beyond safety.
- x. Must be provided with suitable **power stabilizer** and installation must be done the supplier ONLY.

### GENERAL CONDITIONS

#### PERPETUAL LICENSE OF ALL THE SOFTWARES:

All the softwares used in the facility (Control systems, data logging, etc.,) should be provided perpetual license with a provision for upgradation on yearly basis

#### WARRANTY:

Two years warranty after takeover of the facility.

#### OPTIONAL ITEMS (TO BE QUOTED SEPERATELY)

### **OPTIONAL 1. STANDBY HUMIDITY SYSTEM**

Ready to use stand by Humidity System in case a regular system fails. (**CAPACITY:** 2 units of humidifier with at least 2.5 KW/10 litres/ hour capacity for multiplication chambers)

### **OPTIONAL 2. STAND BY REFRIGERATION SYSTEM**

Ready to use stand by refrigeration system in case a regular refrigeration system fails in any growth chamber. This includes Compressor, Evaporator, condensers, and other accessories.

### **OPTIONAL 3. COMPREHENSIVE ANNUAL MAINTENANCE**

After completion of two years warranty period, the firm needs to provide AMC. A comprehensive AMC proposal for 3 years after warranty period may be quoted. Depending upon budget availability for Comprehensive AMC, the Institute may sign agreement while placing order for construction of the facility.

### **OPTIONAL GENERAL CONDITIONS**

The items mentioned under optional and quoted separately are at the discretion of the client to award or not to award as per the availability of the budget.