



सी.एस.आई.आर.–हिमालय जैवसंपदा प्रौद्योगिकी संस्थान
CSIR-INSTITUTE OF HIMALAYAN BIORESOURCE TECHNOLOGY

(Council of Scientific & Industrial Research)

Post Box No.6, Palampur-176 061 (HIMACHAL PRADESH)

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Open Tender Notice No: 07/2015

Director, CSIR-IHBT invites tenders in closed/sealed covers with wax/cello tape/ company seal under two bid systems from the reputed Indian/Foreign Manufacturers or Sole Authorized Dealers/Distributors/Agents for the supply of the following item(s):

S. No.	TENDER NO.	ITEMS	QTY.	EMD (In Rs.)
1.	4/5(95)15-Pur	SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF HYDROPONICS AND AEROPONICS SYSTEM IN EXISTING GREEN HOUSE AT CSIR-IHBT	One	1.80 lakhs

Tender Document with complete terms & conditions, technical specifications etc. can be downloaded from CSIR-IHBT website <http://www.ihbt.res.in> free of cost. Alternatively, the same can be obtained from this office against a request letter along with the non refundable & non-transferable tender fee of Rs. 300/- by Demand Draft in favour of Director, CSIR-IHBT, Palampur. Last date of receipt of complete tender(s) is **March 26, 2016 upto 2.30 pm (IST)**. The date of opening of technical bid(s) is **March 26, 2016 at 3.00pm (IST)** onwards in the presence of tenderers' who wish to be present.

(Controller of Stores & Purchase)



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Open Tender Notice No.- 07/2015

March 15, 2016

TENDER DOCUMENT FOR OPEN TENDER

(TERMS & CONDITIONS INCLUDING INSTRUCTION TO BIDDERS AND CONDITIONS OF CONTRACT)

1. **GENERAL:** Quotations in closed cover under two bid system are invited on behalf of the Director, CSIR-Institute of Himalayan Bioresource Technology (CSIR-IHBT), Palampur from the reputed Indian and foreign manufacturer. **The offer/ quotation must be strictly as per required specifications and the tender terms & conditions.**

ELIGIBILITY CRETERIA: *The Bidders should comply fully with the Technical Specifications in the tender documents.*

2. **PREPARATION AND SUBMISSION OF OFFERS:**

- a) Quotation should be submitted directly by the original manufacturer/supplier or its sole authorized distributor/dealer/Indian Agent. In case of bid by authorized dealer/distributor/Indian Agent, the manufacturer authorization should be attached with the technical bid as per **Annexure-'F'**.

One Indian Agent can participate in a tender on behalf of one manufacturer. No offer will be entertained if the same Indian Agent is representing another manufacturer.

- b) In case a bidder is not doing business within India, it shall furnish the certificate to the effect that the bidder is or will be represented by an agent in India equipped and able to carry out the supply, maintenance, repair obligations etc. during the warranty and post-warranty period or ensure a mechanism at place for carrying out the supply, maintenance, repair obligations etc. during the warranty and post-warranty period.
- c) The bidder shall bear all costs associated with the preparation and submission of its bid irrespective of the conduct or outcome of the bidding process.
- d) The bidder should not indulge in any corrupt, fraudulent, collusive, coercive practices during the entire process of procurement and execution of contract/order.
- e) Before the deadline for submission of the bid, CSIR-IHBT reserves the right to modify the bidding document and to extend or not to extend the date of submission. Such amendment/modification will be notified to bidders receiving the bidding document in writing or by cable/fax/ email and will also be hosted on CSIR-IHBT website.
- f) Conditional tenders will be summarily rejected.
- g) A bidder may withdraw, substitute, or modify its bid after it has been submitted by sending a written notice signed by the authorized signatory before the date of submission of the bid. Any re-submission or modification in the bid should be submitted before the date & time of submission of bid as originally conveyed in the invitation of bid.
- h) No bid may be withdrawn, substituted or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Bid Form or any extension thereof.
- i) In case of (g) above, first envelope marked "WITHDRAWAL" shall not be opened, but returned to the Bidder subject to submission of valid authorization to request the withdrawal. In case of substituted and modified bid, only the substituted bids and modified bids will be opened subject to production of authorization from the bidders.
- j) The quotation should be addressed to the Director, Institute of Himalayan Bioresource Technology, Post Box No.6, Palampur-176061 (HP) India and sent to the Stores & Purchase Officer.
- k) Each offer/quotation should be kept in separate envelope against each item of the tender notice.
- l) For items covered under Two-Bid -Tender System, quotation/offer should be submitted in two separate envelopes containing Techno-Commercial bid and Price bid and these put in one envelope.

m) The outer cover containing the offer/quote should be super-scribed with the respective Tender No. (Not the Open/ Global Tender Notice No.), Due date and Date of opening of tender.

n) **The offers must contain** the following documents :-

(A) Techno-commercial offers must contain:

- (i) Manufacturer authorization (as per clause 2(a)) as per **Annexure –‘F’**.
- (ii) Certificate by bidder not doing business in India as per clause 2(b).
- (iii) Technical literature/ leaflets and complete specifications of quoted model(s) along with commercial terms and conditions.
- (iv) Compliance statement/questionnaire of tender terms and conditions as per **Annexure-‘A’**
- (v) Compliance statement of specifications as per **Annexure- ‘B’**
- (vi) Bid Security/EMD (as per clause -4) as per **Annexure- ‘C’**
- (vii) In case of exemption from submission of Bid security, proof of registration with DGS&D/NSIC as per clause (4(a)).
- (viii) Copies of previous supply orders (as per clause 9(c) and clause 24) as per **Annexure –‘G’**.
- (ix) Details of supplies of similar equipments as per clause 9(d).

(B) Price Bid offers must contain: (Only in case of two bid system)

- (i.) Bid price as per clause 5 in format enclosed as **Annexure- ‘D’** or **Annexure- ‘E’** as applicable.
- (ii.) Certificate of price reasonability as per clause 9(b).

3. **DUE & OPENING DATES:** The Offer/Quotations must **reach** at CSIR-IHBT on or before **March 26, 2016 up to 2.30pm (IST)** The tenders will be **opened** at **3.00pm (IST) Onwards on March 26, 2016** in the presence of bidders, who wish to present themselves at the time of opening of tender. In case opening date happens to be a holiday, the tender will be opened on next working day at the same time & location. The price bids of two bid tender system shall be opened after technical evaluation of technical bids. The date of opening of price bids shall be informed to the bidders found suitable in technical evaluation. No request for extension in the date of submission & opening of tender will be entertained. However CSIR-IHBT , may at its discretion, extend the deadline for submission of bids under intimation to bidders.

4. **EARNEST MONEY DEPOSIT (EMD):**

- a. EMD in the form of Bank guarantee (**As per format enclosed as ANNEXURE- ‘C’**) or Term Deposit Receipt/FDR or Bank Draft of a scheduled bank pledged in the name of Director, CSIR-IHBT , Palampur **valid for 180 days** from the date of opening of the tender for the required amount as mentioned in the tender notice separate for each item must be submitted along with the quotation (with the techno-commercial quotation in case of two-bid system and photocopy of the same enclosed with the price bid. The firm registered with DGS&D/NSIC as manufacturer for the supply of the same category of item for which the party is submitting quotation will be exempted from submission of EMD. Intended parties will have to give proof of registration along with their quotation. EMD of the unsuccessful bidders shall be refunded without any interest at the earliest after finalization of the purchase of concerned item. The party must therefore, submit a pre-receipted Bill in triplicate along with the quotation (in case of EMD sent in form of Bank Draft) to enable us to refund their EMD.
- b. The bid security /EMD may be forfeited if a bidder withdraws or amends or impairs or derogates its bid during the period of bid validity.

5. **PRICES**

Bid prices should be filled in the appropriate format enclosed as **Annexure ‘D’ and ‘E’**.

ALL THE BIDDERS SHOULD QUOTE PRICES FOR EACH AND EVERY ITEM SEPERATELY ALONG WITH THE CONSOLIDATED PRICES APPLICABLE FOR BOTH INDIGENOUS AND IMPORTED ITEMS.

A. For goods manufactured in India:

- (i) The price of goods quoted Ex-Works including taxes already paid.
- (ii) VAT and other taxes like excise duty etc. which will be payable on the goods if the contract is awarded.
 - (a) The charges for inland transportation, insurance and other local service required for delivering the goods at the desired destination as specified in the price schedule form.
 - (b) The installation, commissioning and training charges including any incidental services, if any.

B. For goods manufactured abroad:

- (i) The price of the goods, quoted on FCA (Named place of delivery abroad) or FOB (Named port of shipment), as specified in the schedule form.
- (ii) The charges for insurance and transportation of the goods to the port/place of destination.
- (iii) The agency commission charges, if any.
- (iv) The installation, commissioning and training charges including any incidental services, if any.

C. We are exempted from payment of Excise Duty under notification number 10/97 dated 01.03.1997 and Customs Duty under notification No.51/96 dated 23.07.1996. **Hence Excise Duty and Customs Duty, if any, should be shown separately. No other charges than those mentioned clearly in the quotation will be paid.**

D. **Sales Tax:** We are not authorized to issue any Sales Tax Form 'C' & 'D'. However, being R&D Organization concessional Sales Tax Forms can be issued, if it is applicable in your states from where the material is being supplied.

6. VALIDITY OF OFFER :

The prices must be valid at least for a period of **90 days for indigenous supplies & 180 days for imports** from the date of opening of the Tender. No changes in prices will be acceptable in any condition after opening of tender till the validity of the offer or execution of the order whichever is later.

7. EVALUATION OF BIDS: Before submission of bid, the bidder is expected to examine all the instructions, forms, terms and specifications in the bidding document and should ensure that the following conditions are fulfilled:

- a) Bidder Information form as per **Annexure-'H'**.
- b) The price schedule should be enclosed and must be signed.
- c) The bid validity should not be shorter than required.
- d) The manufacturer's authorization should be enclosed in case the bidder is authorized dealer/ distributor.
- e) The bidders should agree to provide the Performance Security.
- f) The quoted goods should be as per required specifications.
- g) In case the bid is substantially responsive, the purchase may request that bidder may submit the necessary information, documentations, within a reasonable period of time, to rectify, non-material, non-conformities or omission in the bid related to documentation requirements. Failure of the bidders to comply with the request may result in the rejection of its bids. But in case of the material deviation/reservation or omission which limits or is inconsistent with the bidding documents and the Purchaser's Rights or Bidders obligation under the contract or which if rectified, would unfairly affect the other bidders, the bid will be rejected.
- h) The Purchaser shall correct arithmetical errors on the following basis:
 - (i) If there is a discrepancy between the unit price and the line item total that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the line item total shall be corrected, unless in the opinion of the Purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the line item total as quoted shall govern and the unit price shall be corrected.
 - (ii) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
 - (iii) If there is a discrepancy between words & figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (i) and (ii) above.
- i) Selling exchange rate/equivalent to Indian currency will be as on the date of bid opening in the case of single bidding and the rate on the date of opening of the priced bids in the case of two-part bidding.
- j) The bids shall be evaluated on the basis of final landing cost as per **Annexure -'D'** in case of import and **Annexure -'E'** in case of indigenous items.
- k) The comparison between the indigenous and the foreign offers shall be made on FOR destination basis and CIF/CIP basis respectively. However the CIF/CIP prices quoted by any foreign bidders shall be loaded further as under :
 - (a) Towards customs duty and other statutory levies-as per applicable rates.
 - (b) Towards custom clearance, inland transportation etc. - 2% of the CIF/CIP value.
- l) Where the price quoted on FOB/FCA and CIF/CIP basis are the same, the Contract would be made on CIF/CIP basis only.

- m) The Purchaser reserves the right at the time of Contract award to increase or decrease the quantity of goods and services originally specified in the tender document without any change in unit price or other terms and conditions. Further, at the discretion of the purchaser, the quantities in the contract may be enhanced by 30% within the delivery period.
8. The Vague terms like “packing, forwarding, transportation..... etc. extra” without mentioning the specific amount/percentage of these charges will not be accepted. Such offers shall be treated as incomplete and rejected.
9. **REASONABILITY OF PRICES :**
- Please quote best minimum prices applicable for a premiere Research Institution, **leaving no scope for any further negotiations on prices.**
 - The quoting party should give a certificate to the effect that** the quoted prices are the minimum and they have not quoted the same item on lesser rates than those being offered to CSIR-IHBT to any other customer nor they will do so till the validity of offer or execution of the purchase order, whichever is later.
 - Copies of **at least last three supply orders of the last 3 years** received from other customers along with details of such supply orders preferably in India for the same item/model **may be submitted with the offer** giving reasons of price difference of their supply order & those quoted to us, if any. (As per **Annexure –‘G’**).
 - The party must give details of identical or similar equipment, if any, supplied to any CSIR lab during last three years along with the final price paid and Performance certificate from them.
10. **ANNUAL MAINTENANCE CHARGES:** The party **may kindly** mention in the quotation, the rate/amount of annual maintenance charges for next five years, if we opt for maintenance contract after expiry of the warranty period. .
11. **SPECIFICATIONS:**
- Specifications are basic essence of the product. It must be ensured that the offers must be strictly as per our specifications. At the same time it must be kept in mind that merely copying our specifications in the quotation shall not make the parties eligible for consideration of the quotation. A quotation has to be supported with the printed technical leaflet/literature of the quoted model of the item by the quoting party/manufacturer and the specifications mentioned in the quotation must be reflected/supported by the printed technical leaflet/literature. Therefore the model quoted invariably be highlighted in the leaflet/literature enclosed with the quotation. Non-compliance of the above shall be treated as incomplete/ambiguous and the offer can be ignored without giving an opportunity for clarification/negotiation etc. to the quoting party
 - The technical bid shall be evaluated for acceptability by the technical committee and may call the tenderers for discussion. If necessary, the committee may modify the technical specification to suit the CSIR-IHBT requirement. In such case the opportunity shall be given to the participating bidders for submitting the revised bid as per modified specifications, if any.**
12. **COMPLIANCE STATEMENTS:**
- Bidders must furnish a Compliance Statement of each and every required Specification of our tender in the format at ANNEXURE –‘B’.** The deviations, if any, from the tendered specifications should be clearly brought out in the statement. Technical literature/leaflet showing the compliance of the specification may also be attached with the quotation.
 - Similarly, **the Compliance Statement/questionnaire for Terms & Conditions of the tender may be furnished, as per the enclosed format at Annexure –‘A’**, along with quotation (with techno- commercial bid in case of two bid tender system).
 - The firms are advised to submit both the compliance statements essentially along with their quotation failing which their offer may not be considered.
13. **PERIOD & MODE OF DELIVERY:** **The delivery period is the essence of supply; hence** it must be indicated specifically in the quotation. Mode of delivery, tentative size and weight of consignment may also be indicated in the quotation.
14. **PERFORMANCE SECURITY:** All the successful bidders will have to submit the Performance Bank Guarantee or establish a Standby Letter of Credit (SLOC) or a Bankers cheque / or FDR pledged in favour of DIRECTOR, CSIR-IHBT for required amount as per payment terms mentioned at clause 15 below except where supplier opts for release of amount equivalent to PBG after expiry of warranty period. The PBG format shall be provided to the successful bidder later on along with the purchase order.

15. PAYMENT CONDITION:

A. FOR INDIGENEOUS SUPPLIES:

Payment on Bill Basis after supply: For local supplies the payment will be made only after satisfactory installation, commissioning and performance of the equipment at CSIR-IHBT , Palampur and after certification by our technical expert/scientist. However, supplier will be required either to submit performance bank guarantee (PBG) for **10%** amount of the total value of equipment, after installation of the material, valid up to 60 days after the expiry of warranty period or the equivalent amount shall be released after expiry of the satisfactory warranty period.

B. FOR IMPORTS:

The payment against imports shall be made through irrevocable L/C. **L/C will be opened for 100% FOB value. 90% of L/C** amount shall be released on presentation of complete and clear shipping documents and remaining **10%** shall be released after satisfactory installation/demonstration/commissioning, subject to submission of 10% PBG to cover the warranty period. The PBG should remain valid up to 60 days after the expiry of warranty period. **In case of non-submission of PBG after installations/demonstration/commissioning, remaining payment i.e. 10% will be released only after the completion of warranty period.**

16. COMMENCEMENT OF WARRANTY PERIOD: The warranty period of an item shall commence after receipt of the items in good working condition and from the date of its satisfactory installation/commissioning/demonstration at the project site in CSIR-IHBT , Palampur. The warranty period and validity of Performance Guarantee shall be extended for the period of delay in satisfactory installation and delay in warranty services.

17. NO ADVANCE PAYMENT: No advance payment will be made to any supplier.

18. INSTALLATION: The equipment should be installed/commissioned and demonstrated, by the supplier at CSIR-IHBT immediately but in any case within **one month** after receipt of the item in CSIR-IHBT and the same will be put under operation to the satisfaction of our technical expert/Scientist who will test the performance of the equipment. No separate charges for installation etc. will be paid to the party beyond the quoted prices.

19. GUARANTEE/WARANTEE: The equipment/instrument must be guaranteed/warranted for a period of at least **one year, if not specifically mentioned otherwise in the specifications sheet, from the date of its satisfactory installation/commissioning** against all manufacturing defects. If the equipment is found defective during this period the whole equipment or part thereof will have to be replaced/repared by the supplier free of cost at the CSIR-IHBT or at site of the supplier for which 'to and fro' expenses will be borne by the supplier. However, if the items are guaranteed for a period of more than one year, it may be specifically mentioned in the quotation.

20. SPARE PARTS: Availability of spare parts of the equipment/instrument must be guaranteed for a period of at least seven years from the date of supply.

21. AFTER SALES SERVICES: It should be clearly mentioned in the quotation whether the after sales services during and after the completion of warranty shall be provided directly by the supplier or their authorized agent/representative. Terms of the after sales services, if any, may be mentioned in the offer. However, in both the cases the original supplier shall be responsible for poor performance/services.

22. INSPECTION :

- a) The inspection of the system will be done by our technical expert /Scientist in the presence of firm's representative.
- b) In case of receipt of the material in short supply or damaged condition the supplier will have to arrange the supplies/replacement of goods free of cost pending the settlement of the insurance case wherever applicable on FOR at the CSIR-IHBT . Or CIF basis till satisfactory installation of the system.
- c) The supplier **should arrange for physical Inspection of the items directly or through their authorized representative within seven days of arrival of the consignment failing which they will be responsible for the losses.** After the shipment is effected, the supplier/its representative/Indian agents must remain in touch with the lab/instt. to ascertain the date of arrival of consignment.

23. AUTHORIZATION OF INDIAN AGENTS & INDIAN REPRESENTATIVE:

- a) In case there is involvement of an /Indian agent/representative in any form as mentioned at (b) below, an authority letter/copy of agreement from the principal manufacturer must be submitted with the quotation.
- b) Where quoting party/Indian representative claims to be the subsidiary or branch office or an authorized representative of the principal foreign manufacturer/supplier in India, then a copy of approval from RBI/Ministry for operating business in India as Subsidiary/Branch/Liaison office or Joint-Venture may be submitted with offer.
- c) The details of all supplies involving the foreign exchange shall be furnished to the Enforcement Directorate, as per rule. It may be noted that only the quoting parties & their principals shall be responsible for violation of Foreign Exchange Management Act (FEMA) for not declaring the actual bilateral mutual interests, if any.
- d) Indian agency commission shall be paid only to the Indian Agents in Indian Rupee out of the quoted FOB/Ex-works prices, after receipt of goods in good working condition & satisfactory installation/demonstration/commissioning of the items.

24. USERS LIST :

- a. The list of users specifically for the same model/make of the quoted item (not the list of general users) along with the complete name, address & contact numbers of the user organizations/persons may be submitted with the quotation along with the performance certificates from all/some of them.
- b. **If you have supplied identical or similar equipment to other CSIR Labs./Instts., the details of such supplies for the preceding three years shall be given together with the prices finally paid.**

25. PENALTY CLAUSE FOR LATE DELIVERY & LATE INSTALLATION:

- a) **Subject to operation of Force Majeure, time for delivery and acceptance is the essence of this contract. The supplier shall arrange to ship the ordered materials within the delivery period mentioned in the order unless extended with/without penalty.**
- b) In case of delay in supply and/or late installation of the equipment/instrument on part of the supplier, a penalty @ 0.5% per week of Order/FOB value will be charged for delayed period subject to a maximum of 10% of order/FOB value.
- c) If the delay in the shipment of the ordered materials attributable to the supplier exceeds agreed time period from the date of original agreed upon date of shipment and extended with/without penalty, the CSIR-IHBT , Palampur shall have the right to cancel the contract/purchase order and recover the liquidated damages from other dues of the party or by legal means. It will also affect the other/future business dealings with such suppliers.

26. TRAINING: Wherever needed, Our Scientist/Technical persons should be trained by the supplier at the project site . In case the person is to be trained at supplier's site abroad or in India it should be mentioned in the quotation clearly. The supplier should mention all the expenses for such training including 'to & fro' fares and lodging & boarding charges.

27. NON-SUBMISSION OF TENDER: In case you are unable to submit your quotation against our tender enquiry we would appreciate and expect a note of regret from your side giving in brief, reasons for not quoting.

28. DELETION OF NAME : Names of bidders, backing-out/defaulting after opening of tenders will be recommended for deletion from the list of suppliers in addition to forfeiture of EMD submitted by them, if any.

- 29. LATE/ DELAYED /UNSOLICITED QUOTATION:** Late or delayed/Unsolicited quotations/offers shall not be considered at all. These will be returned to the firms as it is. Post tender revisions/corrections shall also not be considered.
- 30. ACCEPTANCE OR REJECTION OF OFFER:** The Director, CSIR-IHBT , Palampur reserves the right to accept or reject any quotation /tender in part or full without assigning any reason thereof. The successful bidder should submit Order acceptance within 15 days from the date of issue.
- 31. PAGE NUMBERING & SIGNATURES:** Your offer should be a page numbered and signed by an authorized signatory giving his/her name and designation below the signatures.
- 32. INTERIM ENQUIRIES:** No interim inquiries will be attended.
- 33. FORCE MAJEURE:** The Supplier shall not be liable for forfeiture of its performance bank guarantee, 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 events 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 and freight embargoes.

If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

- 34. DISPUTE SETTLEMENT:** The Purchaser and the Supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

If, after twenty-one (21) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or the Supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given. Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Goods under the Contract.

The dispute settlement mechanism/arbitration proceedings shall be concluded as under:

- (a) In case of Dispute or difference arising between the Purchaser and a domestic supplier relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Indian Arbitration & Conciliation Act, 1996, the rules there under and any statutory modifications or re-enactments thereof shall apply to the arbitration proceedings. The dispute shall be referred to the Director General, Council of Scientific & Industrial Research and if he is unable or unwilling to act, to the sole arbitration of some other person appointed by his willing to act as such Arbitrator. The award of the arbitrator so appointed shall be final, conclusive and binding on all parties to this order.
- (b) In the case of a dispute between the Purchase and a Foreign supplier, the dispute shall be settled by arbitration in accordance with provision of sub-clause (a) above. But if this is not acceptable to the supplier then the dispute shall be settled in accordance with provisions of UNCITRAL (United Nations Commission on International Trade Law) Arbitration Rules.

The venue of the arbitration shall be the place from where the purchase order or contract is issued.

Notwithstanding any reference to arbitration herein,

- (a) The parties shall continue to perform their respective obligations under the contract unless they otherwise agree; and
(b) The purchase shall pay the Supplier any monies due the Supplier.

35. Integrity Pact

As per directive of the Central Vigilance Commission, all organizations including CSIR labs./institutes have to adopt an Integrity pact (IP) to ensure transparency, equity and competitiveness in major Public procurement activities. The integrity pact envisages an agreement between the prospective bidders/vendors with the buyer committing the persons/officials of both the parties with the aim not to exercise any corrupt influence on any aspect of the contract. Only those bidders/vendors who are willing to enter in to such an integrity pact with the buyer i.e. CSIR or its Labs./institutes, would be competent to participate in the bidding.

IP also envisages Panel of Independent External Monitors (IEMs) which shall be provided/recommended by CSIR/its labs and institutes with the approval of by CVC. The Model format of Integrity Pact (IP) is at Annexure-I.

The integrity Pact would be applicable for any single purchase where estimated value of purchase exceed Rs.3 (Three) crores on each occasion.

(Stores & Purchase Officer)

Encl:

- 1.** Format for Compliance of Terms & Conditions.
- 2.** Different Forms/ Formats enclosed as Annexure(s)
- 3.** Set of Specifications (Please see page 25-27)

FORMAT/QUESTIONNAIR FOR COMPLIANCE OF TERMS AND CONDITIONS

Tender No.: _____

Due Date _____

NOTE:

1. **Quotation will not be considered without submission of this format.**
2. **If a particular question is not at all applicable please write NA in compliance part in Col. No. 4 below.**
3. **Kindly see the relevant terms & conditions of the tender document as mentioned in Col. No. 3 in each question before replying to the questions mentioned in Col. 2 below).**

SNo	Terms & condition of Tender document	Relevant Clause No. of the tender terms & conditions of the tender	Whether acceptable (say 'Yes' or 'No' (preferably use different colour ink for 'No')	Deviation from tender terms, if any, with reasons for noncompliance or alternative condition quoted for
1	2	3	4	5
1	a.) Whether quotation is direct from Principal supplier/manufacturer or their own office in India (Please specify)	Clause 2(a)		
	b) Whether quotation is being submitted by Indian Agent/authorized distributor/ dealer	Clause 2(a)		
	c) Whether the agent is registered with DGS&D/NSIC	Clause 4(a)		
2	a) Whether the Techno-commercial and price bids (for two bid tender system only) have been kept in separate envelopes duly marked with "Techno-commercial Bid" and "Price Bids" respectively.	Clause 2(l)		
	b) Whether the tender No., Due date & Opening dates have been written outside all the envelopes.	Clause 2 (m)		
3	Whether techno-commercial Bid contains EMD, technical literature/leaflets, detailed specifications & commercial terms & conditions etc. as applicable.	Clause 2(n)(A)		

4	a) Whether the required EMD is being submitted with the quotation	Clause 4		
	b) Please specify the form of EMD whether in the form of DD/bank guarantee or TDR/FDR (Please mention No., date & amount of EMD documents.) or Bid Security Format at Annexure –‘C’	Clause 4		
	c) Pre-receipted bill for refund of EMD is enclosed (for bank drafts only)	Clause 4		
5	a) If the prices are on Ex-Works basis or FOB (names port of shipment) or FCA (named place of delivery abroad)	Clause 5 (A) & (B)		
	b) Whether specific amounts or percentage of expenses like packing, forwarding, handling, freight, insurance, documentation etc. have been mentioned in quotation separately in clear terms.	Clause 5(B), (C) & (D)		
6	a) Whether prevailing rates of sales tax, excise duty & other govt. levies (for indigenous supplies) have been given in quotation	Clause 5 (A), (C) & (D)		
7	Have you mentioned the validity period of the quotation as per our requirements	Clause 6		
8	a) Whether the Price reasonability Certificate is submitted with quotation	Clause 9 (b)		
	b) Whether copies of last two supply orders of the same item from other customers have been attached with the quotation	Clause 9 (c)		
	c) If there is any difference in prices of last two orders & those quoted to us. If yes, please give reasons for the same	Clause 9 (c)		
	d) Whether supplied in CSIR Labs.	Clause 9 (d)		
9	Whether rates/amount of AMC after the warranty period is over has been mentioned	Clause 10		
10	Have you gone through the specification Clause & complied with the same	Clause 11 (A) & (B)		
11	Whether the Make/Brand, Model number and name of manufacturer has been mentioned in the quotation and Printed technical literature/ leaflets of quoted items have been submitted			

12	Whether compliance statement of specifications has been attached with the quotation.	Clause 12 (a) & annexure- 'B'		
13	a) Whether the delivery period for supply of the items has been mentioned	Clause 13		
	b) Whether mode of delivery & tentative size & weight of the consignment has also been indicated	Clause 13		
14	Do you agree to the submission of Performance Bank Guarantee/Standby L/C and have you mentioned in your quotation about this.	Clause 14		
15	a) Do you agree with the payment terms for indigenous supplies?	Clause 15A		No deviation permitted
	b) Do you agree with the payment terms for imports supplies?	Clause 15 B		
16	Do you agree about the date of commencement of warranty period & its extension is necessary.	Clause 16		
17	a) Who will install/commission and demonstrate the equipment at CSIR-IHBT , FREE OF COST	Clause 18		
	b) Will you be able to do it within a month	Clause 18		
18	Have you mentioned the guarantee/warranty period in your quotation and do you agree with guarantee clause?	Clause 19		
19	Spare parts	Clause 20		
20	After Sales service	Clause 21		
21	a) Do you agree that on receipt of material in damaged condition or short supply you will replace the same on CIF basis, free of cost pending the settlement of the insurance claim?	Clause 22 (b)		
	b) Do you agree with the clause of physical inspection?	Clause 22 (c)		
22	For Import Cases only:	Clause 23		
	a) Whether the Indian agent is registered with DGS&D	Clause 23		
	b) Whether the valid DGS& D registration certificate has been enclosed with the offer	Clause 23		
	c) If the party is a subsidiary or corporate branch office of the foreign supplier, then whether copy of the approval from Reserve Bank of India is attached with the offer	Clause 23 (b)		

23	Whether list of specific user's for the same item & model as quoted along-with performance certificates from the users is submitted with offer	Clause 24		
24	Whether you agree to the penalty clause for late delivery & installation?	Clause 25 (a to c)		
25	Whether training to our scientist/technical person will be given free of cost . If yes, have you specified in quotation whether it will be in our lab? Or at supplier's site in India or abroad.	Clause 26		
26	a) Whether all the pages have been page numbered?	Clause 31		
	b) Whether quotation has been signed and designation & name of signatory mentioned.	Clause 31		
27	Do you agree to settle the issue as per the terms of Clause -34 of tender documents?	Clause 34		
28	Do you agree to adopt an Integrity Pact (IP) as per Clause-35 of Tender documents?, if applicable	Clause 35		

Signatures of the authorized signatory _____

Name of the signatory _____

Designation _____

Name & Seal of the quoting party _____

Dated: _____

FORMAT OF COMPLIANCE STATEMENT OF SPECIFICATIONS

S. N.	Name of specifications/ part / Accessories of tender enquiry	Specifications of quoted Model/ Item	Compliance Whether “YES” Or “NO”	Deviation, if any, to be indicated in unambiguous terms	Whether the compliance / deviation is clearly mentioned in technical leaflet/ literature
1	2	3	4	5	6

BID SECURITY FORM

Whereas (Hereinafter called “the tenderer”) has submitted their offer dated for the supply of (Hereinafter called “the tender”) against the purchaser’s tender enquiry No. _____

KNOW ALL MEN by these presents that WE (Name of bank) of (Name of country), having our registered office at (Address of bank) (Hereinafter called the “Bank”), are bound unto ... (Name of purchaser) (Hereinafter called “the purchaser”) in the sum of for which payment will and truly to be made to the said Purchaser, the Bank binds itself, its successors, and assigns by these presents. Sealed with the Common Seal of the said Bank this day of..... 20.....

THE CONDITIONS OF THESE OBLIGATIONS ARE:

- 1. If the tenderer withdraws or amends, impairs or derogates from the tender in any respect within the period of validity of this tender.
- 2. If the tenderer having been notified of the acceptance of his tender by the Purchaser during the period of its validity.
- 3. If the tenderer fails to furnish the Performance Security for the due Performance of the contract.
- 4. Fails or refuses to accept/execute the contract.

WE undertake to pay the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchase will note that the amount claimed by it is due to it, owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

The guarantee shall remain in force up to and including forty five (45) days after the period of the bid validity, and any demand in respect thereof should reach the Bank not later than the above date.

.....
(Signature of the authorized officer of the Bank)

Name and Designation of the Officer
Seal, Name & Address of the Bank and address of the branch

PRICE SCHEDULE FOR GOODS BEING OFFERED FROM ABROAD

Name of the Bidder _____

Tender No. _____

1	2	3	4	5	6		7		8		9
Sl No	Item Description	Country of origin	Unit	Qty	Unit Price		Total price (5x6)		Charges for Insurance & transportation to port/ place of destination		Total Price (7+8)
					FOB (named port of shipment)	FCA (named place of delivery)	FOB (named port of shipment)	FCA (named place of delivery)	Ocean	Air	CIF

Total Bid price in foreign Currency _____ in words.

Signature of Bidder**Name:****Business Address:****Note:**

- (a) Indian agents name & address _____
- (b) Installation, commissioning & training charges, if any _____
- (c) Cost of Spares _____
- (d) The Indian agent's commission shall paid in Indian Rupees only based on the Exchange Rate prevailing on the date of negotiation of documents.
- (e) The cost of optional items shall be indicated separately.

PRICE SCHEDULE FOR GOODS BEING OFFERED FROM INDIA

Name of the Bidder _____

Tender No. _____

1	2	3	4	5	6	7	8	9	10	11
Sl. No.	Item Description	Country of Origin	Unit	Qty	Ex-Works. Ex-Warehouse, Ex-show room off the shelf price (inclusive of all taxes already paid)	Total price Ex-Works. Ex-Warehouse, Ex-show room off the shelf price (inclusive of all taxes already paid) 5x6	VAT & other taxes like excise duty payable, if contract is awarded	Packing & forwarding up to station of dispatch, if any	Charges of inland transportation, insurance up to Lab./Instt.	Installation, Commissioning & training charges, If any.

Total Bid price in foreign Currency _____ in words.

Signature of Bidder**Name:****Business Address:****Note:**

- (a) The cost of optional items shall be indicated separately.
 (b) Cost of spares _____

MANUFACTURER’S AUTHORIZATION FORM

[The Bidder shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that re binding on the Manufacturer]

Date: *[Insert date (as Day, month and year) of Bid submission]*

Tender No.: *[Insert number from Invitation for Bids]*

To: *[Insert complete name and address of Purchaser]*

WHEREAS

We *[insert completer name of Manufacturer]*, who are official manufacturers of *[Insert type of goods manufactured]* having factories at *[insert full address of Manufacturer’s factories]*, do hereby authorize *[insert complete name of Bidder]* to submit a bid the purpose of which is to provide the following goods, manufactured by us *[insert name and or brief description of the goods]*, and to subsequently negotiate and sign the contract.

We hereby extend our full guarantee and warranty in accordance with **Clause 19** of the Terms and Conditions of Contract with respect to the Goods offered by the above firm.

Signed: *[insert signature(s) of authorized representative(s) of the Manufacturer]*

Name: *[insert complete name(s) of authorized representative(s) of the Manufacturer]*

Title: *[insert title]*

Duly authorized to sign this Authorization on behalf of: *[insert complete name of Bidder]*

Dated on _____ day of _____ *[insert date of signing]*

PREVIOUS SUPPLY ORDERS FORMAT

Name of the Firm _____

Order placed by {Full address of Purchaser}	Order No. and Date	Description and quantity of ordered equipment	Value of order	Date of completion of delivery as per contract	Date of actual completion of delivery	Remarks indicating reasons for late delivery, if any and justification for price difference of their supply order & those quoted to us.	Has the equipment been installed satisfactorily? <i>(Attach a certificate from the Purchaser/ Consigner)</i>	Contact Person along with Telephone no., Fax no. and e-mail address.

Signature and Seal of the Manufacturer/ bidder

Place:

Date:

BIDDER INFORMATION FORM

[The Bidder shall fill in this form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted. This should be done on the letter head of the firm]

Date: *[Insert date (as day, month and year) of Bid Submission]*

Tender No.: *[Insert number from invitation of bids]*

Page 1 of _____ pages

1. Bidder's Legal Name *[Insert Bidder's legal name]*
2. In case of JV, legal name of each party: *[insert legal name of each [arty in JV]*
3. Bidders actual or intended Country of Registration : *[insert actual or intended country of registration]*
4. Bidder's year of registration: *[insert Bidder's year of registration]*
5. Bidder's Legal Address in Country of Registration: *[insert bidder's legal address in country of registration]*
6. Bidder's Authorization Representative Information
Name: *[insert Authorization Representative's name]*
Address: *[insert Authorization Representative's address]*
Telephone/Fax numbers: *[insert Authorization Representative's telephone/fax numbers]*
Email address: *[insert Authorization Representative's email address]*
7. Attach are copies of original documents of : *[check the box(es) of the attached original documents]*
Articles of Incorporation or Registration of firm names in 1 above.

Format of the Integrity Pact**INTEGRITY PACT**

Between

Council of Scientific & Industrial Research (CSIR) hereinafter referred to as “The Principal”.

And

.....herein referred to as “The Bidder/ Contractor.”

Preamble

The Principal intends to award, under laid down organizational procedures, contract/s for _____
 _____ The Principal values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/ transparency in its relations with its Bidder(s) and/or Contractor(s).

In order to achieve these goals, the Principal will appoint an Independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 – Commitments of the Principal

(1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:

- a. No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
 - b. The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
 - c. The Principal will exclude from the process all known prejudiced persons.
- (2) If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary action.

Section 2 – Commitments of the Bidder(s)/Contractor(s)

- (1) The Bidder(s)/Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
- a. The Bidder(s)/Contractor(s) will not, directly or through any other Person or firm, offer, promise or give to any of the Principal’s employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
 - b. The Bidder(s)/Contractor(s) will not enter with other Bidders into any Undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications,

certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

c. The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act; further the Bidder(s)/Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

d. The Bidder(s)/Contractor(s) of foreign origin shall disclose the name and address of the agents/representatives in India, if any. Similarly the Bidder(s)/Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the “Guidelines on Indian Agents of Foreign Suppliers” shall be disclosed by the Bidder(s)/Contractor(s). Further, as mentioned in the Guidelines all the payments made to the Indian agent/representative have to be in Indian Rupees only. Copy of the “Guidelines on Indian Agents of Foreign Suppliers” is annexed and marked as Annexure.

e. The Bidder(s)/Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

- (2) The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 – Disqualification from tender process and exclusion from future contracts.

If the Bidder(s)/Contractor(s), before award or during execution has committed a transgression through a violation of Section 2, above or in any other form such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/Contractor(s) from the tender process or take action as per the procedure mentioned in the “Guidelines on Banning of business dealings”. Copy of the “Guidelines on Banning of business dealings” is annexed and marked as Annex - “B”.

Section 4 – Compensation for Damages

(1) If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/Bid Security.

(2) If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the contract value or the amount equivalent to Performance Bank Guarantee.

Section 5 – Previous transgression

(1) The Bidder declares that no previous transgressions occurred in the last 3 Years with any other Company in any country conforming to the anti corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.

(2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action can be taken as per the procedure mentioned in “Guidelines on Banning of business dealings.”

Section 6 – Equal treatment of all Bidders / Contractors/ Subcontractors.

(1) The Bidder(s)/Contractor(s) undertake(s) to demand from all Subcontractors a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.

(2) The Principal will enter into agreements with identical conditions as this one with all Bidders, Contractors and Subcontractors.

(3) The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7 – Criminal charges against violating Bidders / Contractors/Subcontractors.

(1) The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

(2) The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the JS(A), CSIR.

(3) The Bidder(s)/Contractor(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/Contractor(s)/Subcontractor(s) with confidentiality.

(4) The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

(5) As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

(6) The Monitor will submit a written report to the JS(A), CSIR within 8 to 10 weeks from the date of reference or intimation to him by the Principal and should the occasion arise, submit proposals for correcting problematic situations.

(7) Monitor shall be entitled to compensation on the same terms as being extended to/provided to Independent Directors on the CSIR.

(8) If the Monitor has reported to the JS(A), CSIR, a substantiated suspicion of an offence under relevant IPC/PC Act, and the JS(A), CSIR has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.

(9) The word 'Monitor' would include both singular and plural.

Section 9 – Pact Duration

This Pact begins when both parties have legally signed it. It expires for the Contractor 10 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded.

If any claim is made/lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/determined by JS(A), CSIR.

Section 10 – Other provisions

(1) This agreement is subject to Indian Law. Place of performance and Jurisdiction is the Registered Office of the Principal, i.e. New Delhi

(2) Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

(3) If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

(4) Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

(Office Seal)

(Office Seal)

Place.....

Date.....

Witness 1:

(Name & Address): _____

Witness 2:

(Name & Address): _____

Specifications for Hydroponic system in existing green house

The hydroponics facility has to be housed in the existing green house made up of double walled polycarbonate sheet (6 mm thick) and having inner dimensions of 13 m (L) x 8 m (W) x 2.0 m (slope height) x 2.8 m (maximum height at the centre).

The facility should have:

- i. Fully automated computer controlled unit capable of irrigation, fertigation and climate control with controls for water level, temperature, RH etc. Environmental data loggers compatible to system are to be provided. Also provision for easy data transfer to computer/USB. The system should work 24 hr x 7 days. It should also have provision for manual control in case of emergency.
- ii. The fertigation by pass system is to be equipped with online measurement facility for EC and pH and ventury should be expanded upto 8.
- iii. Reverse osmosis system of ISI/CE or equivalent of at least '250 litre per hr' capacity for r/o water complete with pipe fittings, pre-filters, carbon filter and all necessary accessories.
- iv. A back-up of at least 10,000 litre PVC tank of reputed make – Diplast, Sintex, Reno or equivalent for untreated water. The tank will be connected to the r/o plant with necessary intermediary booster pumps of reputed make– Kirloskar, Crompton Greaves, KSB, Grundfoss or equivalent ISI/CE.
- v. Three nos. of separate PVC tank of reputed make– Diplast, Sintex or equivalent of at least 500 litre each for collecting water, nutrient solution and mixture along with stands made up of epoxy painted mild steel. Should include automated refill with r/o water and over-flow protection.
- vi. One number high pressure accumulator of volumetric capacity at least 25 litres for storing nutrient solution at 60-100 psi and made up of rust free material with the outside having epoxy coated paint. Accumulators are to be connected to suitable capacity high pressure solenoid pumps and hydro-control units of reputed ISI/CE or equivalent.
- vii. There should be 2 nos. of suitable capacity high pressure diaphragm pumps with solenoid valves and transformer of ISI/CE or equivalent make; one for feeding the accumulators with water and the other for feeding the accumulator with nutrient solution.
- viii. There should be efficient arrangements to supply nutrient solution/water/recipe to the plant gullies. There should be automated pressure sensors with a provision to cut out water/nutrient solution supply at 60-100 psi.
- ix. The system should be provided with automated digital timers having multiple settings for regulating the pressure pumps at regular intervals as per the requirements of the plant to be grown. The control systems should have capacity for auto-reset upon power interruption with LED display.
- x. The system should have arrangement for complete cleaning of the pipes, gullies and other accessories during changeover of crop/recipe/nutrient composition.
- xi. Central air conditioning facility with ducting of suitable size and insulation for maintaining the temperature of the system between 15-28°C.
- xii. There should be an arrangement for controlling temperature and also pH of nutrient and water.
- xiii. LED /fluorescent lights/metal halide/HPSV or equivalent lighting arrangement with sufficient light intensities to support different plant growth. All necessary electrical fittings and timers are to be provided.
- xiv. All connectors and fitters such as nuts, bolts and screws should be rust free.
- xv. Hydro-controllers of ISI/CE or equivalent make with precision release of water and nutrient solution.
- xvi. Non metallic valves and pressure gauges of ISI/CE or equivalent make to monitor solution pressure.
- xvii. The green house is to be made airtight with necessary minor modifications i.e., removal of exhaust fans, cooling pads and fixing of polycarbonate sheets on that locations, fit in all respects for use as air-conditioned chambers.
- xviii. Suitable circulation system for supply and return back of water and nutrient solution into gullies.

- xix. Rows of insulated, flat bottomed, non-corrosive, non-metallic, algal growth resistant gullies with NFT (nutrient film technique) structures for supplying and recycling clean/algal-growth free-water and nutrient solution at 25 to 35 litres per hour.
- xx. The gully should have dimensions ranging from 0.3 to 0.45 m (W) and 0.3 to 0.4 m (Depth). These should be fitted on elevated steel frames of adjustable heights (0.30 to 1.3 m) and accordingly there should be arrangement for circulation adjustment system.
- xxi. At least six gullies of suitable design and length (10 m) or part thereof will be required to be installed in the green house chamber.
- xxii. There should be holes of 20-30 mm diameter at the top of each gully with spacings ranging from 15-25 cm (plant to plant).
- xxiii. Suitable single phase air-pump of ISI make or equivalent to oxygenate the nutrient solution and water.
- xxiv. There should be suitable provision for maintaining the root zone temperature within a range of 5 to 20°C for fresh as well as re-circulated nutrient solution.
- xxv. There should be suitable disinfectant system for fresh as well as re-circulated nutrient solution

Specifications for Aeroponics system in existing green house

The aeroponics facility has to be housed in the existing green house made up of double walled polycarbonate sheet (6 mm thick) and having inner dimensions of 13 m (L) x 8 m (W) x 2.5 m (slope height) x 3.0 m (maximum height at the centre)

The system should have

- i. Fully automated computer controlled unit capable of irrigation, fertigation and climate control which consists of imported controller, fertiline mixture, fertigation dosing unit made up of PVC with aluminum frame, irrigation pump, mixing tank. EC/PH transmitted dosing channels 3 x 350 L/H, flow rate upto 10 M³/H system pressure 3-5 BAR (Quantity-1 No). Environmental data loggers compatible to system are to be provided. Also provision for easy data transfer to computer/USB. The system should work 24 hr x 7 days. It should also have provision for manual control in case of emergency.
- ii. The fertigation unit should be equipped with online measurement facility for EC and pH.
- iii. Connection from RO system of hydroponics green house will be made to aeroponics green house also.
- iv. Three nos. of separate PVC tank of reputed make– Diplast, Sintex or equivalent of at least 500 litre each for collecting water, nutrient solution and mixture along with stands made up of epoxy painted mild steel. Should include automated refill with r/o water and over-flow protection.
- v. One number high pressure accumulator of volumetric capacity at least 25 litres for storing nutrient solution at 60-100 psi and made up of rust free material with the outside having epoxy coated paint. Accumulators are to be connected to suitable capacity high pressure solenoid pumps and hydro-control units of reputed ISI/CE or equivalent.
- vi. There should be 2 nos. of suitable capacity high pressure diaphragm pumps with solenoid valves and transformer of ISI/CE or equivalent make; one for feeding the accumulators with water and the other for feeding the accumulator with nutrient solution.
- vii. There should be efficient arrangements to supply nutrient solution/water/recipe to the growth boxes. It should have automated pressure sensors with a provision to cut out water/nutrient solution supply at 60-100 psi.
- viii. The system should be provided with automated digital timers having multiple settings for regulating the pressure pumps at regular intervals as per the requirements of the plant to be grown. The control systems should have capacity for auto-reset upon power interruption with LED display.
- ix. There should be provision for controlling spray interval between 5-120 min with spray duration between 5-10 seconds.
- x. The system should have arrangement for complete cleaning of the pipes, gullies and other accessories during changeover of crop/recipe/nutrient composition.

- xi. Central air conditioning facility with ducting of suitable size and insulation for maintaining the temperature of the system between 15-28 °C.
- xii. LED /fluorescent lights/metal halide/HPSV or equivalent lighting arrangement with sufficient light intensities to support different plant growth. All necessary electrical fittings and timers are to be provided.
- xiii. All connectors and fitters such as nuts, bolts and screws should be rust free.
- xiv. Hydro-controllers of ISI/CE or equivalent make with precision release of water and nutrient solution.
- xv. Non metallic valves and pressure gauges of ISI/CE or equivalent make to monitor solution pressure.
- xvi. The green house is to be made airtight with necessary minor modifications i.e., removal of exhaust fans, cooling pads and fixing of polycarbonate sheets on that locations, fit in all respects for use as air-conditioned chambers.
- xvii. Suitable circulation system for supply and return back of water and nutrient solution into growth boxes.
- xviii. Single phase air-pump of ISI make or equivalent to oxygenate the nutrient solution and water.
- xix. Growth chambers (at least 16 numbers) having dimensions ranging from 1.5 m long x 0.5 m wide x 0.4 m deep. There should be provision for additional chamber expansion ports. The chambers should be fitted in elevated steel frames of adjustable heights and should have growth boxes with provision for complete darkness inside the boxes.
- xx. The growth boxes should have grid platforms with holes of approximate 30 mm diameter for hanging plants at spacings ranging from 15-25 cm (plant to plant).
- xxi. Corrosion resistant, spray jets/ultrasonic nozzles with fine orifice of 0 .025" or better of ISI/CE or equivalent for spraying mist particles of size 30-50 micron or better. The nozzles/jets should be capable of supplying clean/algal-growth free water/nutrient solution to plant roots hanging above the spray jets in grow boxes.
- xxii. Two auto-refilling reservoirs of rust free material of atleast volumetric capacity 30 litres for water and nutrient solution recycling.
- xxiii. Algal growth resistant, non-metallic and insulated pipes for pressurized delivery of temperature controlled nutrient solution and/or water and also for re-circulation.
- xxiv. There should be provision of chilling plant system one no. with heat exchanger plate for cooling down the temperature up to 6-8 °C in summer.
- xxv. There should be suitable disinfectant system for fresh as well as re-circulated nutrient solution.

Note

1. Supply of all accessories required for the hydroponic and aeroponic systems, cleaning tools, pro-nets, net pots, hanging baskets, spare parts etc.
2. Supply of all consumables required for hydroponics and aeroponics system for one crop cycle of 6 months only (i.e., nutrient solution, pH solution, pH test kit, grow rock, floral foam etc.)
3. Supply of installation and working manuals, growers guide, and all electrical fittings of high quality or of ISI mark and electrical wires and cables should be FRLS.
4. Delivery and installation within 60 days.
5. Warranty of one year on the system, units and parts.
6. List of users with addresses and certificates.
7. AMC for three years after warranty.
8. The firms are required to visit the site and see the existing structures before submitting the tender.
10. Deputation of computer engineer/representative to standardize the operations and train our staff for at least two months after installation of units.

Optional

Supply of salient type CPCB approved Genset of suitable size.