



क्रय अनुभाग  
वन अनुसंधान संस्थान  
देहरादून-२४८००६  
GSTIN 05AAAAI1708G2Z6  
PAN NO. AAAAI1708G

Purchase Section  
Forest Research Institute,  
DEHRADUN-248006  
Phone: 0135-2224205  
http://fri.icfre.gov.in/tender/  
Email: po\_fri@icfre.org



## Notice Inviting Tender (E-Publishing mode)

### निविदा दस्तावेज/ Tender Document

Ref. No X-78/POFRI/CHEM/AICRP/2019-20

Date: 27/02/2020

Physical Bids under two bid systems (Technical and Commercial) are invited from the reputed manufacturer /authorized supplier/dealer for the following items. The bids complete in all respect must reach to the Purchase Officer, Purchase Section, Forest Research Institute, P.O. New Forest, DEHRADUN-248006 Uttarakhand, India on or before:

Date	12-03-2020	Time	03:00PM
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#### वस्तु की तकनीकी विशिष्टताये / Technical Specification of item:

Sr. No.	Name of item / Specifications/	Quantity	Warranty	EMD (Rs.)	Tender Fee (Rs.)
1.	Flash Chromatography System	01	02 Year	30,000/-	590/-
2.	Flash Rotary Evaporator	01	01 Year	5,000/-	

(For Detailed Technical Specification Plz refer Annexure-VI)

नोट-1: कृपया वस्तु का मूल्य एवं कर अलग-अलग दर्शाए / Please quote the rate & Taxes of the item separately.

Note-2: E-way bill is to be issued by the Venders/Transporter

Note-3: The HSN / SAC Code of the item must be mentioned.

For Reasonability of Rates, The firm must enclose the last two supply orders for the same item with Financial Bid (Annexure-IV) only.

Technical Clarifications:	Dr. V.K. Varshney	Chemistry & Bio-Prospecting Division , FRI Dehradun	Ph: 0135-222-4208 Mobile No. 91 94105 48521 Email: varshneyvk@icfre.org,
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#### Critical Date Sheet

1.	Published Date	27.02.2020 5.00 P.M	FRI website and CPP portal <a href="https://www.eprocure.gov.in/epublish/app">https://www.eprocure.gov.in/epublish/app</a>
2.	Bid Submission Start Date	28.02.2020 10.00 A .M	Central Public Procurement Portal as above
3.	Seek Clarifications Start Date	28.02.2020 6.00 P.M	Through Ph/Email
4.	Seek Clarification End Date	09.03.2020 5.00 P.M	Through Ph/Email
5.	Bid Submission End Date	12.03.2020 3.00 P.M	Purchase Section Main Building, FRI
6.	Bid Opening Date	12.03.2020 4.00 P.M	Purchase Section Main Building, FRI

#### Chapter-1: Instruction to bidders

A. The Tender should be enclosed with proper certifications like Agency Certification, Authorization certificate and /or Proprietary Certificate, as the case may be, in support of your offer.

B. बोली का जमा किया जाना / Submission of Bids:

1) The bids should be submitted in **two parts**-

- The Technical Bid (Annexure-I, II, III, V and VI with Supporting/Required documents)
- The Financial Bid (Annexure-IV).

Both in **separate sealed covers** and then these two sealed packets (with the identification statement clearly written-Technical Bid or Financial Bid) should be put in one covering sealed envelope labeled on the left hand top corner of their envelope mentioning followings:

Bid Submission End Date/Time:	12-03-2020	by	03:00 PM
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Name (in full) and complete address of the firm should be mentioned on left hand bottom corner of the covering envelop.

- 2) The bids should be printed on **official pad** preferably with GST Number of the firm.
- 3) The quotations should bear full details and where possible may be duly supported with catalogues, pamphlets, literature, samples of the item/items as the case may be for comparing the quality and rates of the item(s).
- 4) Quotation received after the closing date and time shall not be considered.
- 5) The transportation cost, insurance charge etc., if any, Percentage/ rate of GST or all other taxes and duties should be clearly mentioned.
- 6) The bids / rates / tenders should remain valid for a minimum period of 45 days from the date of opening.
- 7) **Since this purchase being for research purpose, the Forest Research Institute, Dehradun is registered in DSIR, New Delhi; it is therefore exempted from the payment of custom duty / GST up to the limit of exemption as per the Govt. Rules. The bidder should quote accordingly.**
- 8) There should not be any over-writing or cutting on rates quoted. However, all cutting/corrections must be duly authenticated else the offer will be rejected.
- 9) The rates shall not be subject to escalation of any nature.
- 10) The rates quoted should be applicable to educational institutions and any cost advantage received in lieu thereof should be passed on the Institution.
- 11) While quoting/ sending rates, the firm shall give an undertaking as per Annexure-II.
- 12) The quotations should be given for the items in the same order as in the enquiry letter.

**C. निविदा शुल्क/ Tender Fee एवं/and अग्रिम धन राशि / Earnest Money Deposit (EMD)**

The Technical Bid should accompany **non-refundable Tender Fee in form of Demand Draft only** and an **EMD in the form of FDR only of the value mentioned at the first page of this tender document only for the equipment(s) bidding by the bidder**, issued from any of the Commercial Banks of India drawn in favour of "Director, Forest Research Institute, Dehradun" valid 90 days beyond the validity period of bid. The Bidder have to fill up Tender Fee and EMD details **online if (e-Procurement mode)** as per quoted item(s) and the hard copy of these payment(s) should be deposited in a separate sealed cover super-scribed as Tender Fee and EMD for Tender No. & Item Name, addressed to: Purchase Officer, Purchase Section Forest Research Institute, Dehradun-248006 on or before the Bid Opening date and time as mentioned in Critical date sheet. And if **offline tender (e-Publishing mode)** the tender fee and EMD should be submitted physically with tender document at above mentioned address.

Exemption on submission of Tender Fee/EMD will be given against valid MSME/NSIC certificate under valid category and within the validating period of the certificate.

The earnest money shall be refunded to all the unsuccessful firms, without any interest after finalization of the contract.

EMD shall be refunded to the successful firm on receipt of PBG/Security Deposit. No interest is payable on the EMD to either the successful firms or the unsuccessful firms.

**D. निष्पादन बैंक प्रत्याभूति / Performance Bank Guarantee (PBG):**

5% of the cost price in the form of Bank Guarantee or FDR pledged in favour of "Director, Forest Research Institute, Dehradun" is required to be submitted by successful bidder before the delivery / installation works complete of the items(s) which should remain valid at least during the warranty period plus sixty days. No interest shall be claimed by the bidder on the PBG submitted. The Bank Guarantee may be forfeited in case of improper services provided by the bidder/firm and duly certified by the concerned Consignee/HOD.

**E. बोलियों का खोला जाना/Opening of Bids:**

- 1) The technical Bids will be opened as given below. Representatives of the firms (s) may be present at the time of opening the technical bid if they so desire at below schedule (No information shall be given to the late arrivals regarding the bids):

Bid Submission Opening Date/Time:	12-03-2020	04:00 PM	Venue: Purchase Section, Main Building FRI Dehradun
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- 2) The Financial bids of only the Technically Qualified bidders will be opened. The date and time for opening the Financial Bid will be communicated to the respective firm later on by post/e-mail.
- 3) Representatives of the firms (S) may be present at the time of opening the financial bids if they so desire.

**Chapter-2: Conditions of Contract**

**A. कार्य अनुबन्ध / Award of Contract:**

The final selection of the bidder for the award of the contract will be made on the basis of the lowest commercial bid amongst the Technically Qualified Bidders.

**B. पूर्व आपूर्ति निरीक्षण/ Pre-supply Inspection:**

Authorized representative of the Institute shall make the final inspection before supply of the item at site of the firm, if required.

**C. वस्तु की आपूर्ति / Supply of Item:**

The whole supply as per order shall have to be completed within the time mentioned in the order failing which the FRI Dehradun shall have the right to accept or reject any quantity of items ordered. The firm will have to arrange for supply of the material/ equipment in good condition.

**D. भुगतान की शर्तें / Payment Terms:**

**1) Payment in INR for supply of goods:**

Where installation is not required: 100% payment will be made after satisfactory delivery of material duly certified by the HOD. **OR**

Where installation is required: 100% payment will be made after satisfactory delivery and installation of the material duly certified by the HOD. **OR**

100% Advance will be paid against submission of 110% Bank Guarantee of the Total Order value.

**2) Payment in INR for AMC/CMC/Service:**

Quarterly/Half yearly after satisfactory completion of work/service duly certified by the H.O.D./P.I.

**3) Payment in Foreign Currency for supply of goods:**

Payment will be made as below after deducting Indian Agency Commission (if any). IAC is payable in Indian Rupee after satisfactory installation.

- (i) Payment through Letter of Credit (LC).
- (ii) Payment 100% through Sight Draft

(iii) Payment through Wire transfer after receipt of material in good condition.

**4) Payment in Foreign Currency for AMC/CMC/Services:**

Quarterly/Half yearly after satisfactory completion of work/service duly certified by the H.O.D./P.I. through wire transfer.

**E. दंड/ Penalty:**

A penalty of 0.5% of the total order value per week shall be levied for the delay subject to a maximum of 5% of the total order value. In case of the non-supply of the item after the acceptance of the work/supply order, EMD will be forfeited by the Institute.

**F. अप्रत्याशित घटना/ Force Majeure:**

For the purpose of and within the scope of contract by way of indication and not of limitation, the term "Force Mejeure" shall mean acts of nature, strikes, Lockouts, or other industrial disturbances, act of public/enemy, wars, blockades, insurrection, riots, epidemics, landslides, earthquakes, storms, lightning, flood, washouts, civil disturbances, explosion and any other similar even not within the control of either party on which by exercise of due care and diligence neither party is able to prevent or overcome.

**G. मध्यस्थता/Arbitration:**

In the event of any difference or dispute arising out of this work, all effort shall be made by both the parties to settle the same amicably. Failing an amicable settlement, the dispute shall be finally settled through arbitration conducted under the Arbitration and Conciliation Act 1996, by arbitrators appointed in accordance with the said Act. The arbitration shall give reasoned and speaking award. All disputes are subject to Dehradun jurisdiction only.

**H. बोली अस्वीकृती के लिए मानदंड/ Criteria for bid rejection:**

- 1) If not received on or before due date and time.
- 2) If technical bid found without the required undertaking (Annexure-II).
- 3) If it found at a later date that any information given in the bids is incorrect/false then the bid is liable to be disqualified/rejected.
- 4) Canvassing in any form will result in disqualification.
- 5) If "extra, as actual" etc. are mentioned against any of the price components in the bid the bid will be rejected.
- 6) Technical bids should be sealed. More cover, Financial / Commercial bid should also be sealed separately. The sealed envelopes of technical and financial bids should be further put in the main envelop. Main envelop should be sealed. If the financial bid envelop is found opened/unsealed, then bid shall be rejected outrightly.
- 7) If any bidder submitting two/multiple bids for the same of a tender, both/all the bids if that bidder will be outrightly rejected.
- 8) If the firm quotes 'NIL' charges/ consideration, the bid shall be treated as unresponsive and will not be considered.

**I. सत्यनिष्ठा संहिता /Code of Integrity**

False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for upto 2 years as per rule 151 (iii) of the General Financial Rules along-with such other actions as may be permissible under law.

**Chapter-3: Schedules of requirements**

**A. टिप्पणी/Note:**

- 1) If the Supplier/firm is manufacturer/authorized dealer/sole distributor/of the item, the certificate to this effect should be attached.
- 2) Please note that the firms must submit the compliance Statement in an organized and structured manner in respect of all the specifications as per Annexure-V with the supporting printed catalogue/leaflet of the firm. Annexure-I, II, III, V & VI have to be submitted with Technical Bid and Annexure-IV with Financial Bid.
- 3) It may also be noted that the tender bids received after the stipulated date & time or found incomplete and tender bids containing false/incorrect information shall be summarily rejected. The Institute shall not entertain any communication in this regard, whatsoever.
- 4) The firm is required to give its Bank Account details with IFSC for the purpose of making e-payment.
- 5) The Forest Research Institute (FRI) Dehradun reserves the right to reject any quotation wholly or partly without assigning any reason.
- 6) The quantity shown against the item is approximate and may vary as per demand of the Institute at the time placing order.
- 7) The decision of the Institute in all matters relating to eligibility, acceptance, rejection of the bid will be final and binding on the applicants.
- 8) Forest Research Institute (FRI) Dehradun discourages High Sea Sale Purchase. All tenders with High Sea Sale will be rejected.
- 9) The firms should clearly mention (in the financial bid) the Harmonized System of Classification (HS code) defined by the Central Custom and Excise Board (Govt. of India) for the item (s) involving import.
- 10) If the due date happens to be a holiday, then the bid will be accepted till 03.00 PM and opened at 04.00 PM of the next working day followed by the holiday.
- 11) If an agent submits bid on behalf of the Principal/OEM, the same agent can not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product.
- 12) **Indian Agent should submit the certificate from the Foreign Principal that they are the Authorized & Registered Indian Agent.**
- 13) The quantity shown in the tender can be increased or decreased to any extent depending upon the actual requirement. Any corrigendum/addendum/errata in respect of the Tender Notice/ Enquiry letter shall be made available only at our Institute website <http://fri.icfre.gov.in/tender/>. Hence prospective bidders are advised to visit the Institute website regularly.
- 14) Bidders shall be responsible for the correctness of the information provided in the enquiry letter/tender document. If it is found at a later date that any information given in the bid is incorrect/false then the bid is liable to be disqualified/rejected.
- 15) Institute will not be responsible for non-receipt of bid(s) within the stipulated date due to any postal delay or delay for any other reason in transit.
- 16) Before submission of bids, bidders should read the complete enquiry letter/tender document carefully and ensure that the bidders fulfill the eligibility criteria.
- 17) In case the item /product is under rate contract with DGS&D or GeM, then bidder should certify that the rate quoted is not over and above (higher side) the rates under RC with the DGS&D or GeM.
- 18) In case calculation mistakes are found in the financial bid, then calculation shall be made by the Institute on the basis of rate per unit quoted by the bidders will be processed further.
- 19) The Institute reserves the right to rectify any discrepancy of this advertisement, if found later on. In case of any inadvertent mistake in the process which may be detected at any stage even after the issue of purchase order, the Institute reserves the right to modify/withdraw/cancel any communication made to the bidder.

**Chapter-4: Specification and allied Technical details**

**Plz. See Annexure-I, II, III, V & VI**

**Chapter-5: Price Schedule (to be utilized by the bidders for quoting their prices)**

**Plz. See Annexure- IV**

**Chapter 6: Contract Form**

**Purchase Order is used as Contract Form**

**Chapter-7: Other Standard Forms, if any to be utilized by the purchaser and bidders**

**Plz. See Annexure -V**

  
**[PURCHASE OFFICER, FRI]**

**तकनीकी बोली**  
**(To be given on Company Letter Head)**

विस्तृत विवरण अनुपालन रिपोर्ट के साथ प्रस्तुत किया जाना है (अपने आधिकारिक लेटरहेड पर विक्रेता/ फर्म द्वारा प्रस्तुत करने के लिए)  
Detailed specification cum compliance report to be submitted with the Technical Bid  
(to be submitted by the vender/firm on its official letter head)

**(For Detailed Technical Specification Plz refer Annexure-VI)**

Sr. No.	Name & Required Specifications of item (s)	Qty.	EMD	Offered specification of item (s) by the firm
1.				
2.				

<b>Firm's Profile</b>	
1)	Manufacturer/Authorized Agent/Distributor/Dealer/Supplier (Valid certificate must be attached)
2)	E-mail ID & Telephone/Mobile No. Detail of Bank A/C
Note:	(i) "Offered specification" should be filled up properly in the format provided as per Annexure-I
	(ii) Volume & Weight of the item should also be mentioned.
	(iii) The HSN / SAC Code of the item must be mentioned.

Signature:

Name:

Designation:

Seal of the Organisation

**उपक्रम/UNDERTAKING**  
**TENDER ACCEPTANCE LETTER**  
**(To be given on Company Letter Head)**

Date: .....

To,  
Director  
Forest Research Institute  
Dehradun-248006

**Sub: Acceptance of Terms & Conditions of Tender.**

Ref. No X-78/POFRI/CHEM/AICRP/2019-20

Date: 27/02/2020

**Agreement/Contract Form**

Dear Sir,

- (i) I / We hereby certify that I / we have read the entire terms and conditions of the tender documents from (including all documents like annexure(s), schedule(s), etc.), which form part of the contract agreement and I / we shall abide hereby by the terms / conditions / clauses contained therein.
- (ii) The corrigendum(s) issued from time to time by your department/organization too have also been taken into consideration, while submitting this acceptance letter
- (iii) I / We hereby unconditionally accept the tender conditions of above mentioned tender document(s) / corrigendum(s) in its totality / entirety.
- (iv) **I / We do hereby declare that our Firm has not been blacklisted/ debarred / banned by any Govt. Department/Public sector undertaking.**
- (v) I / We certify that all information furnished by the our Firm is true & correct and in the event that the information is found to be incorrect/untrue or found violated, then your department/ organization shall without giving any notice or reason therefore or summarily reject the bid or terminate the contract, without prejudice to any other rights or remedy including the forfeiture of the full said earnest money deposit absolutely.
- (vi) It is certified that the rate quoted is not over and above (higher side) the rates under RC with the DGS&D or GeM.

Signature:

Name:

Designation:

Seal of the Firm/Agency

## CHECK LIST

SI No	(A) Qualifying documents	Yes/No	Page No.
1.	Whether <b>TENDER FEE</b> in shape of <b>Demand Draft</b> in favour of Director, Forest Research Institute, Dehradun OR Signed copy of Exemption certificate like MSME, KVIC, NSIC etc with mentioning the validity date, is Attached?		
2.	Whether <b>EMD</b> for applicable item No. (s) of Amount(s) in shape of <b>FDR</b> in favour of Director, Forest Research Institute, Dehradun attached OR Signed copy of Exemption certificate like MSME/ NSIC/KVIC etc with mentioning the validity date, is Attached?		
3.	Whether Signed copy of <b>AUTHORIZATION</b> certificate issued by the manufacturer, if applicable, Attached?		
4.	Whether Signed copy of <b>PAN card</b> Attached?		
5.	Whether Signed copy of <b>GST certificate</b> , if applicable, Attached?		
6.	Whether Signed copy of Affidavit of <b>PARTNERSHIP DEED</b> , if applicable, Attached?		
7.	Whether Signed <del>and Scanned</del> copy of <b>AUDITED BALANCE SHEET</b> of last two years, Attached?		

SI No	(B) Technical Documents	Yes/No	Page No.
1.	Whether duly Signed/ Stamped copy of tender document along with all Annexure (I, II, III, V and VI) by the authorized signatory Attached?		
2.	Whether <b>CATALOGUE</b> of the quoted item(s) Attached?		
3.	Whether <b>USER LIST OF INSTITUTES/ORGANIZATIONS</b> where the quoted model of item(s) supplied by the bidder in India along-with supportive documents from the users for the satisfactory performance and after sales service, is Attached?		
4.	Whether the firm uploaded the last two supply orders for Reasonability of Rates?		
5.	Whether scanned copy of supportive documents from the Principal regarding all specifications certified and guaranteed for <b>GENUINENESS &amp; BRAND NEW ITEM</b> and that the model of the equipment is <b>NOT GOING TO BE OBSOLETE</b> in near future (5 years) is Attached?		
6.	Whether supportive documents from the Principal regarding <b>AVAILABILITY OF SPARES/PARTS</b> for next five years are Attached?		

**Note:**

- It is compulsory to fill the above check list with pagination.
- The document should be submitted/uploaded **online** in CPP portal in the above order of the check list and place the check list as cover page with pagination of documents. If **offline** tender (**e-Publishing mode**) the tender fee and EMD should be submitted physically with tender document in a separate sealed cover super-scribed as Tender Fee and EMD for Tender No. & Item Name, addressed to: Purchase Officer, Purchase Section Forest Research Institute, Dehradun-248006
- In the absence of any of the qualifying documents, the bid shall be rejected.

Signature:

Name:

Designation:

Seal of the Firm/Agency

**Financial Bid**  
(To be submitted by the vendor/firm on its official letter head)

Ref. No X-78/POFRI/CHEM/AICRP/2019-20

Dated: 27/02/2020

Rates:						
Sr. No.	Name of item / Specifications/	Qty.	Unit Rate (Rs.)	Amount (Rs.)	GST etc. @.....%	TOTAL (Rs.)
1.						
2.						
Total						
Grand Total Rs.						

- 1) Price of the items should be clearly mentioned if supplied Free of Cost.

**Term & Conditions:**

Prices (if quoted in Rs.):

FOR FRI, DEHRADUN

1. Payment:
2. Validity:
3. Delivery period:
4. Other Charges:
5. **Warranty:** **Onsite 01 & 2 Years as given on 1<sup>st</sup> page of this Tender Document**
6. Rejection: Equipment if found not as per the required specification would be rejected.
7. Penalty Clause: As per clause-E of enquiry letter.  
In case of the non-supply of the item after the acceptance of the work/supply order, EMD will be forfeited by the Institute.
8. PBG: 5% of the cost price in the form of Bank Guarantee or FDR pledged in favour of "Director, Forest Research Institute, Dehradun" is required at the time of installation of the equipment which should remain valid at least during the warranty period plus sixty days.

It is certified that the rate quoted is not over and above (higher side) the rates under RC with DGS&D or GeM.

**Signature:**

Name:

Designation:

Seal of the firm/Organisation





## Item No. 1 Flash Chromatography System

## Specification

One automated Flash Chromatography System with preparative facility (Low to high pressure preparative chromatography) is required for separation, purification, and isolation of compounds including closely related compounds (isomers) in a natural extract. The unit must comply to the following capabilities and features. All the systems, accessories and parts should be from the same manufacturer and same make. Used or remanufactured equipment will not be considered for award.

1.	Gradient System	Microprocessor controlled binary gradient facility having two solvents or four solvents binary gradient with gradient mode: Linear, Step, Isocratic. The system should have change of solvent from one binary gradient to other binary gradient without switching off the system.
2.	Flow Rate	5-200ml/min or better
3.	Flow Rate Accuracy:	±5% or better
4.	Pressure	3200 psi or better (High pressure System)
5.	Column compatibility	System should have compatibility to use following columns: <ul style="list-style-type: none"> <li>Flash column (4gm to 800 gm preferably 1500gm) as well as Preparative SS Columns up to 20mm/30mm ID for the silica, alumina and reverse phases</li> <li>Other glass columns and polypropylene prepacked / refillable columns of C18, normal silica, alumina, etc. of different sizes using own packing material in laboratory.</li> <li>Flash and preparative columns of any standard make and system should work as per there standard parameters without any restriction.</li> </ul>
6.	TLC to gradient	System should be capable to create solvent and time saving gradient automatically on the basis of TLC data.
7.	Detector	PDA Detector Dual Wavelength with wavelength range of 200-800nm. Full wavelength scanning mode with spectral view of chromatogram & peak purity indicator. Lamp source: Deuterium lamp with built in lamp life counter.
8.	Detector compatibility	System should be compatible to connect external detector like ELSD or MS if required in future.
9.	Fraction collector	<ul style="list-style-type: none"> <li>Automatic with facility of auto rack detection, and fraction tracking with peak to tube graphical interface</li> <li>Fraction collection modes: Peak, Window, Manual.</li> </ul>
10.	Racks	Minimum number of fractions should be collected in one operation of 150 or more with normal laboratory tube size of capacity 20-25 mL or as per the rack capacity
11.	Column holder for flash columns and Preparative columns.	
12.	Column packing tools for different size columns (4gm, 12gm, 20gm, 40gm, 80gm, 220g) must provide with the system.	
13.	Sample loading	<ul style="list-style-type: none"> <li>Samples in form of solid, liquid and slurry should be loaded.</li> <li>Empty loaders of suitable size must be provided along with the system. (10 nos. each)</li> <li>Standard sample loading loop for preparative samples.</li> <li>Facility to add auto injector &amp; auto sampler for prep sample injection if required in future.</li> </ul>
14.	Columns with all fittings and connections	<ul style="list-style-type: none"> <li>Normal phase silica flash columns 4gm, 12gm, 20gm, 40gm, 80gm, 220 gm (10nos each)</li> <li>Spherical C 18 flash columns 4gm, 12gm, 20gm, 40gm, 80 gm, 220 gm (1nos each)</li> </ul>

		<ul style="list-style-type: none"> <li>• Empty columns 4gm, 12gm, 20gm, 40gm, 80gm, 220 gm (10nos each)</li> </ul>
15.	Safety Features	Solvent sensor, Solvent level sensor, Waste Solvent sensor, Over pressure sensor, Leak sensor, Rack sensor (to stop of flow if rack is not in exact position, rack not in the fraction collector, rack nor replaced after fraction collection and pressure moderation), System auto cleaning etc.
16.	Computer Software and Hardware	<ul style="list-style-type: none"> <li>• Branded PC with latest windows, touch screen monitor with remote access, 500 GBHDD, 4 GB RAM or built in touch screen monitor with built in hard disk &amp; RAM and a latest Laser Printer</li> <li>• Software for instrument control, data acquisition, data storage and data processing</li> </ul>
17.	Power	100-240 VAC, 15A, 50-60 Hz.
18.	Additional accessories	Extra tubing, fittings, fuses, ferules, connectors, septa holders, adapters, solvent filters must be provided along with the system for future use for a period of at least five years.
19.	Tool kit for self maintenance	
20.	Installation & Training	Free installation and training on site
21.	Warranty	<ul style="list-style-type: none"> <li>• Extended comprehensive warranty for 2 years from the date of successful installation and commissioning of the equipment on the letter head of Principal.</li> <li>• During warranty period software up gradation, if any, should be free of cost.</li> </ul>
22.	AMC	Two years after completion of the extended warranty period.
23.	The system should be upgradable in future as and when necessary.	
24.	While giving the compliance the quoted specifications must be marked or highlighted on Brochure / Flier.	
25.	The quoted model should have at least 03numbers of installations in India. List of such users with copy of PO, contact numbers of faculty Incharge and copy of their installation report of should be enclosed.	
26.	All the specifications quoted must match with the manufacturer's international website and published literature (Brochure/ Flier).	
27.	A letter from Principal confirming the availability of all essential spares for the next 10 years from the date of installation..	
28.	Should be offered support free of cost in form of application notes, laboratory method development, and frequent training.	
29.	Delivery : FOR Dehradun	
30.	Optional items	<ul style="list-style-type: none"> <li>• Normal phase silica flash columns 110 gm, 330gm, and 750 gm/ 800 gm - one each</li> <li>• Spherical C 18 flash columns 110 gm, 220 gm, 330gm, and 750 gm/ 800 gm-one each</li> <li>• Preparative SS column of 5 micron, 10 micron with 250mmx21.2/ 20 mm or equivalent- one each</li> <li>• Spare rack: 01</li> </ul>

**Item No. 2 Flash Rotary Evaporator**

**Specification**

One Flash Rotary Evaporator (Rotavapor) is required to meet the evaporation needs and will consist of Rotary Evaporator, Vacuum Controller and Vacuum Pump. The unit must comply to the following capabilities and features. All the systems, accessories and parts should be from the same manufacturer and same make. Used or remanufactured equipment will not be considered for award.

<b>A. Rotary Evaporator</b>		
1.	Lift for raising and lowering of the flask	Electronic lift with provisions for automatic lifting and manual lifting by hand in case of power failure. Lift extension Up to 100 mm allows use of bump traps and glass extenders
2.	Rotation speed	Up to 280 rpm or better with microprocessor control.
3.	Bath and its capacity	Shielded thermostatic bath of capacity 4 Liter or better
4.	Heating bath temperature range and display	20 – 95°C with an accuracy of $\pm 1$ °C or better; Digital temperature display of both set and actual temperature simultaneously
5.	Over-temperature protection	Automatic power cut off when actual temperature exceeds set temperature or by rapid temperature increase
6.	Immersion angle	10 – 50°
7.	Heating capacity	1000 W or higher
8.	Condenser	Vertical glass assembly plastic & glass coating with cooling surface area of 1400 cm <sup>2</sup> or better and Continuous Vapor Ducting with high quality inert 3.1 mm borosilicate glass wall thickness
9.	50ml, 100ml, 250 ml, 500 ml, 1000 ml evaporating Flask and 1 liter Receiving Flask should be provided in standard scope of supply.	
10.	Evaporating flask from 50 – 4000 ml can be used on the same joint adapter without additional connections	
11.	Multifunctional Combi-Clip tool for evaporating flask fixation and removal as well as vapor duct release	
12.	Additional accessories: Extra tubing, fittings, connectors, etc. must be provided along with the system for future use for a period of at least five years.	
<b>B. Vacuum controller</b>		
1.	<ul style="list-style-type: none"> <li>• Vacuum controller unit with with LCD display for centrally controlling all process parameters of the Rotavapor</li> <li>• Manual management of pressure settings and aeration with timer function</li> <li>• Clock-wise and anti-clockwise rotation of evaporating flask for a defined time range.</li> <li>• Integrated aeration valve and precision pressure sensor.</li> <li>• Automatic aeration when pressure is above 1400 bar.</li> <li>• Integrated solvent 43 database methods for setting up dynamic distillation conditions.</li> <li>• Integrated wear part library for common wear parts with order code.</li> <li>• Integrated leak test to check possible leaks</li> </ul>	
2.	Measuring range	1400- 1 mbar
3.	Control range	1100 – 1 mbar.
4.	Measuring Accuracy	$\pm 2$ mbar ( $\pm 1$ digit)
<b>C. Vacuum Pump</b>		
	Single stroke diaphragm vacuum pump 2 stage / steps diaphragm made of PTFE The pump should consumes less electrical power and works under reduced stress.	
	Suction capacity	1.8 m <sup>3</sup> /h

	Ultimate vacuum	5 mbar
	Maximum speed	1500 rpm
	Protection Class	IP20
	Measuring Accuracy	± 2 mbar
	Inspection window	A large glass window at front side allows to observe the two pump heads and membranes for eventual dirt particles
	<b>Warranty</b>	One year from the date of successful installation and commissioning of the equipment
	<b>Delivery</b>	FOR, Dehradun
	All the specifications quoted must match with the manufacturer's published literature (Brochure/ Flier)	
	A letter from Principal confirming the availability of all essential spares for the next 10 years from the date of installation.	