

JHARKHAND RAKSHA SHAKTI UNIVERSITY, RANCHI



TENDER DOCUMENT

SUPPLY, INSTALLATION AND OPERATION

OF

LABORATORY INSTRUMENTS/EQUIPMENTS

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(1) Schedule of Tender

TENDER DOCUMENT FOR THE SUPPLY AND INSTALLATION OF LABORATORY INSTRUMENTS/EQUIPMENTS

Last Date of Submission of Tender:

Date of opening of Tender (Technical Bid):

Type of Tender: 2 Bid Systems.

NOTE:

- 1. IF THE TENDER IS NOT OPENED ON THE ABOVE DATE, DUE TO UNFORESEEN CIRCUMSTANCES, THEN IT WILL NOTIFIED BY EMAIL OR WILL BE PUT ON WEBSITE.**
- 2. THE BIDDERS WHO FAIL TO SUBMIT THE REQUIRED TENDER FEE AND EMD, THEN THEIR BIDS WILL NOT BE CONSIDERED FOR OPENING.**
- 3. BIDDER OR THEIR AUTHORIZED REPRESENTATIVES MAY ATTEND THE OPENING OF THE TENDER.**
- 4. TENDER FEE IS Rs. 1,000/- (NON-REFUNDABLE) FOR EACH CATEGORY OF EQUIPMENTS**

(2)TENDER NOTICE

TENDER NOTICE FOR THE SUPPLY, INSTALLATION OF LABORATORY AND OPERATION INSTRUMENTS/EQUIPMENTS

Jharkhand Raksha Shakti University, Ranchi, invites sealed tenders as a **“2 Bid System”** from reputable original equipment manufacturers/ authorized dealers/ Suppliers for supply, installation and operation of laboratory instruments/equipments in two parts (**Technical Bid**) and **“Part B” (Commercial/Financial Bid)**.

List of Instruments/Equipments:

Category	S. No.	Instruments	Quantity	Tender Form Fee (Rs.)	EMD (Rs.)	
I	1	Gas Chromatograph coupled with Mass Spectrophotometer	1	1,000	50,000	
II	2	Fourier Transmission Infra-Red Spectrometer	1	1,000	50,000	
III	3	UV-vis Spectrophotometer	1	1,000	10,000	
IV	4	High Performance Liquid Chromatograph	1	1,000	50,000	
V	5	Binocular Light Microscope	1	1,000	10,000	
	6	Student Stereo Microscope	20			
VI	7	Fluorescence Microscope	1		25,000	
VII	8	Comparison Microscope (binocular)	1	1,000	25,000	
VIII	9	Deep Freezer (-20 ⁰ C)	1	1,000	25,000	
	10	Magnetic Stirrer/Mixer	1			
	11	Water bath	1			
	12	Incubator cum shaker	1			
	13	Muffle furnace	1			
	14	Double distillation unit	1			
	15	pH meter	2			
	16	Table Top Centrifuge Machine	1			
	17	Digital Weighing Balance	1			
	18	Digital Incubator	1			
	19	Autoclave (Micro-Processor Controlled)	1			
IX	20	Vortex Mixer (Multi tube)	1			
	21	PCR Machine (Thermal cycler)	1	1,000	20,000	
	X	22	Sample Digestion cum Extraction	1	1,000	20,000
		23	Digital photo electric colorimeter	1		
24		Digital Densitometer	1			
	25	Digital Automatic Melting Point apparatus	1			

XI	26	Micropipette	1	1,000	5,000
XII	27	Advanced UV Cabinet with long & short UV light	1	1,000	10,000
XIII	28	Gel Electrophoresis System	1	1,000	10,000

The detailed terms & conditions, name of items etc. can be downloaded from the website of Dept. of Higher, Technical Education & Skill Development, Govt. of Jharkhand. All other amendment/modification/corrigendum in future will only be published on the website www.jrsu.in.

(3) Important Notes to the Bidder:

1. Jharkhand Raksha Shakti University, Ranchi **invites tenders under “2 Bid system”** for supply, erection, installation and commissioning and operation of various instruments/equipments as per specifications given in the instrument specifications.
2. Tender document can be downloaded from the website Link provided in the tender notice.
3. The bidders are requested to read the tender document carefully and ensure all the compliance with instructions herein. Non-compliance of the instructions contained in this document may disqualify the bidders from the tender process.
4. All offers should be written in English and price should be written in both, figures and words. The offer should be typed or written in pen ink or ball pen. Offer in pencil will be ignored. The tenderer shall certify that the rates being quoted are not higher than those quoted for any Govt. Dept. or Institution or any organization and that if during the years at any time the tenderer has quoted rates lower than those quoted against this tender, the University would be given the benefit of lower rates by the tenderer to the University. The relevant documents should be enclosed with technical bid.
5. The prescribed tender documents should be submitted in one sealed envelope duly **superscribed with** “Supply, installation and operation of laboratory instruments/ equipments to the “Jharkhand Raksha Shakti University, Meur’s Road (SKIPA Premises), Ranchi 834008”. This sealed envelope should contain 3 sealed envelopes marked A, B, & C as prescribed as under:
 - a) Envelope A containing tender form fee of Rs. 1000/ (Rupees one thousand) only for each category of equipment and the appropriate Earnest Money Deposit (EMD) separately for each equipment, both in the form of Demand Draft in favour of **Jharkhand Raksha Shakti University payable at Ranchi. Tender shall be rejected if the tender form fee and Earnest money D.D.’s** are not found in proper order.
 - b) Envelop B containing the Technical Bid along with the supporting documents. (See Terms & Conditions for more details)

c) Envelop C containing the Financial Bid.

The tender document should be sent to:

Registrar

Jharkhand Raksha Shakti University

Meur's Road (SKIPPA Premises)

Ranchi

834008

Note: Each category of equipments instrument has to be tendered separately.

6. The complete tender document is to be signed with seal & is to be placed in the separate envelope along with the necessary required documents.
7. The duly constituted committee appointed by the competent authority of Jharkhand Raksha Shakti University, Ranchi reserves the right to select certain items (in single or multiple units) and reject the others or all mentioned in the Schedule. The same committee will also reserve the right to revise or alter the specifications before acceptance of any tender with prior notice on the University website.
8. Incomplete tenders, amendments and additions to tender after opening or late tenders are liable to be ignored and rejected.
9. The Bid shall be treated as a 2 Bid System. The Technical Bid will be considered for applicants whose Earnest Money Deposit (EMD) is found in order. Financial Bid shall be opened for those bidders who have qualified in Technical Evaluation.
10. Interested Bidders may obtain further information from the office of the Registrar, Jharkhand Raksha Shakti University, Ranchi.

All bids must be delivered to the above office up to the date and time indicated above. Bids **will be opened in the presence of Bidders' authorized representatives who choose to attend** on the specified date and time. In the event of the date specified for bid receipt and opening being declared as a closed holiday **for purchaser's office, the due date for submission of bids and opening of bids will be next working day or as announced by the University in the appropriate manner.**

Any clarification regarding tender before submission of tender document can be discussed with the Registrar, Jharkhand Raksha Shakti University (0651-2285848).

Please Note that the tender document is subjected to verification with the original document and if any discrepancy is found, the tender would be rejected. Tenders (Technical Bid) will be opened first in the presence of the attending vendors.

Note:- Bidders are required to submit separate tender for each group of instruments.

Registrar

JHARKHAND RAKSHA SHAKTI UNIVERSITY
Meur's Road (SKIPA Premises)
RANCHI 834008

JHARKHAND RAKSHA SHAKTI UNIVERSITY

(To Be Filled By the Vendor/ Bidder)

1. Group number of Equipment/Instrument:

2. Name of the Vendor:

3. Full Address of the Vendor:

4. Telephone/ Mobile No.

5. Fax. No. (If any)

6. Registration No. of Firm

7. PAN

8. GSTN Registration No.

9. Details of the D.D.
 - a. For **Tender Fee(Non Refundable)** : D.D. No. _____ dated _____
drawn from the bank _____
 - b. for **E.M.D Amount (Refundable)**; D.D. No. _____ dated _____
drawn from the bank _____

Seal and Signature of the bidder/Vendor

(4) TERMS AND CONDITIONS OF THE TENDER

1) Price / Taxes:

Prices stated in this tender are firm and shall remain firm until required deliveries have been completed unless otherwise expressly agreed to, in writing by both parties. The vendor agrees that any price reduction made with respect to Material covered by this order subsequent to placement will be applied to the order. All prices specified herein include all charges for, but not limited to, inspection, and packaging. Prices set forth shall be inclusive of applicable taxes until and unless specified in the schedule.

2) Acknowledgement and Acceptance of agreement:

This agreement constitutes an offer from the university and is expressly limited to the Terms and Conditions contained herein. The Terms and Conditions of the agreement are those that apply to the purchase of materials, items, products, components or services (hereinafter referred to as "Material"). All exhibits, attachments, technical specifications, drawings, notes, instructions, or information referred in the agreement are incorporated herein by reference.

3) The Vendor as an Independent Contractor:

The Vendor shall perform the obligations of this order as an independent contractor and under no circumstances shall it be considered an agent or employee of the university. The terms and conditions of this order shall not, in any way, be construed as to create a partnership or any other kind of joint undertaking or venture between the parties hereto. The Vendor expressly waives any and all rights which may or may not exist to claim any relief under the university's comprehensive insurance policy, worker's compensation or unemployment benefits.

4) Delivery:

The equipments should be delivered to Jharkhand Raksha Shakti University and within a time period of 60 days from the date of LC opening and complete installation within 30 days after date of arrival on or in case of indigenous purchase supply should be made within 30 days & installation be completed within next 15 days. If any material is not delivered by the date specified therein, the University reserves the right, without liability, to cancel the order for undelivered material

not yet shipped or tendered, and to purchase the same from another vendor and to charge the defaulting Vendor for any loss incurred in this transaction. Any provisions thereof for delivery by instalment shall not be construed as obligatory unless agreed upon by both the parties. The University shall have the right to refuse deliveries made more than one week in advance of any delivery schedule appearing in the order unless arrangements for such early delivery have been confirmed with the receiving party.

If the vendor is unable to complete performance at the time specified for delivery, by reason of strikes, labour disputes, riot, **war, fire or other causes beyond the Vendor's reasonable control**, the university at its option, may elect to take delivery of material and to pay such proportion of the contract price as deemed reasonable by the university.

5) Reproduction of Documentation:

The University shall have the right at no additional charge to use or incorporate all or portions of material found in the Vendor's literature and/or reproduce the Vendor's applicable literature such as operating and maintenance manuals, technical publications, prints, drawings, training manuals and other similar supporting documentation and sales literature. The Vendor agrees to advise the University of any Updated Information related to the foregoing literature and documentation with timely written notice.

6) Rescheduling:

The University may without liability at least seven days prior to the scheduled delivery date appearing on the order defer delivery on any or every item under said order by giving oral notice to the Vendor (confirmed in writing within seven working days) of any necessary rescheduling.

7) Shipping, Packaging and Labelling:

All Material purchased hereunder must be packed and packaged to ensure its safe delivery in accordance with good commercial practices and where incorporated, the University's packaging specification.

The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final

destination and the absence of heavy handling facilities at all points in transit, including the final destination.

The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be provided for in the Contract including additional requirements, if any, specified in the contract and in any subsequent instructions ordered by the Purchaser.

It is the sole responsibility of the vendor to provide/replace the item/goods, if it is lost or broken during the shipping or transportation due to whatever may be the reason.

Vendor is responsible to ensure, by contacting the University, that the shipping has been properly done i.e., all the items/goods have properly reached the University.

8) Changes / Amendments:

At any time prior to the deadline for submission of tender, the Purchaser may amend the tender documents issuing by Addenda/Corrigendum. The University shall have the right at any time, by written notice, in the form of an amendment order, to make any changes, if deems necessary, including, but not limited to, changes in specifications, design, delivery, testing methods, packing or destination. If any such required changes cause an increase or decrease in the cost of or the time required for performance, an equitable adjustment shall be made in the contract price or delivery schedule, or both. Any claim by the Vendor for adjustment under this clause shall be deemed waived unless asserted in writing within ten (10) days from receipt by the Vendor of notice of change (amendment order). Price increase, extension of time for delivery and change in quantity shall not be binding on the University unless sufficiently justified by vendor and accepted by the university in a form of amendment/ modified Order issued and signed by the University.

9) Inspection and Acceptance:

Material procured from vendor shall be inspected and tested by the University or its designee at vendors cost. If deemed necessary by the University, the Vendor shall provide without charge, all reasonable facilities and assistance for such inspection and test. Any inspection records relating to Material covered by this agreement shall be made available to the University during the performance of the order.

If any Material covered by this agreement is defective or otherwise not conforming to the requirements of this agreement, the University may, by written notice to the Vendor:

- (a) Rescind the purchase/supply order as to such non-conforming Material;
- (b) Accept such material at an equitable reduction in price;
- (c) Reject such non-conforming material and require the delivery of suitable replacements
- (d) If the vendor fails to deliver suitable replacements promptly, the university, with notice of seven business days, may replace or correct such material and charge the vendor the additional cost occasioned thereby, or terminate this order for default.

No inspection (including source inspection) test, approval (including design approval) or acceptance of material shall relieve the Vendor from responsibility for defects or other failures to meet the requirements of this order. Rights granted to the University in this article entitled INSPECTION is in addition to any other rights or remedies provided elsewhere in this order or in Law.

10) Invoicing / Payments / Set-Offs:

After each completion of supply/purchase order, the Vendor shall send duplicate invoices including item number to the University's concern Department.

Payment of invoice shall not constitute acceptance of Material ordered and shall be subject to appropriate adjustment, if the Vendor failed to meet the requirements of this agreement. The University shall have right at any time to set-off any amounts due to the Vendor, (or any of its associated or affiliated companies) against any amounts owed by the university with respect to this agreement.

11) Terms of Payment and Conditions:

(A) For Indigenous/Indian equipments/stores on DDP Destination basis:-

80% of the total payment shall be released on submission of proof of delivery of complete equipments/stores (stores/consignee receipt), inspection report and on certification of satisfactory installation of the equipment at the consignee's premises and after "ensuring verification of the Performance Security" @ 5% of the Purchase Order value.

Balance 20% of the payment shall be released upon successful Test run of the equipment at least for a month and after ensuring that already furnished Performance Security is valid for a period of 60 days beyond the date of completion of all contractual obligations of the bidder / supplier including comprehensive maintenance warranty obligations.

(B) For Imported Equipments/ Stores:-

For Foreign/Principal suppliers of equipments/stores:-

For payment made through Letter of Credit (L/C)

An irrevocable letter of credit (L/C) for 100% of the value of the imported equipments/stores (excluding the value of the Indigenous / Indian equipments / stores, if any) shall be established on submission of the acknowledgement of the order by the successful bidder stating the country of origin and port of shipment, submission of Performance Security @ 5% of the Purchase Order value, four copies of the Proforma invoice and confirmed Letter of Credit (LC) opening details.

It shall be the responsibility of the bidder to ensure that all the requisite documents are provided to the purchaser including the Performance Security in original for appropriate denomination and period on priority basis, so as to ensure opening of LC on time.

Out of this, 80% of the value of the imported equipments/stores will be paid against inspection certificate (where applicable) and shipping documents to the Principal through L/C. Balance 20% will be released within 30 days after due certification by the Purchaser/Institute for successful commissioning of the equipments at the premises and also, after ensuring that the furnished Performance Security is valid for a period of 60 days beyond the date of completion of all contractual obligations of the bidder/supplier including comprehensive maintenance warranty obligations.

Price Fall Clause:-

If at any time prior to delivery of the equipments/stores, the bidder/supplier reduces the sale price of such equipments stores as covered under this tender enquiry, to any organization (including Central/State/Deemed university) at price lower than the price quoted under this contract, he shall forthwith reduce the price payable under this tender for the equipments/stores being supplied after the date of coming into force of such reduction, the price of equipments/stores shall stand corresponding reduced.

12) Selection of the Bidder:

For the purpose of selection of the bidder, a two-stage bidding process will be followed. The response to the tender should be submitted in two parts viz. Technical Bid & Commercial Bid & must be submitted in separate sealed envelopes.

(a) Technical Bid:

Technical bid should contain information regarding the company/firm registration details, Authorization letter, Clientele list (List of Users), Performance certificate from clients, self declaration not black listed, business turnover, experience and other details of the firm to judge the suitability of the bidder. Bidder must ensure the following conditions while going for the bidding:

- i. **SPECIFICATIONS:** Specifications are basic essence of the product/contract. It must be ensured that the offers must be strictly as per adhere to 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.
- ii. 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.
- iii. Detailed firm & company details, copy of registrations must be enclosed. In case of authorized dealers/distributor certificate in prescribed format from **Original Equipment Manufacturers (OEM)**, on the same should be enclosed for participation in the said tender.
- iv. Authorization letter from manufacturer in case of dealer/s for the said equipment enclosed with the technical specifications.
- v. OEM should be internationally reputed Branded Company.
- vi. Copy of mandatory test reports, national testing/reliability and endurance test reports etc., certified or conducted at the manufacturing site, granted by the bureaus/quality control departments/national testing laboratories.
- vii. A write up on service and maintenance capability, mitigation of risks or breakdown and replacement capability, with the escalation support matrix suggested for the University.

Vendors must indicate their sales and support service centre in India and their plan to address issues about services, maintaining minimum service inventory etc.

- viii. Signed & Stamped compliance sheet of the technical specification of the offered equipment with technical printed literature must be enclosed with the technical bid in the prescribed format.
- ix. Clientele list (List of the institutes/organizations, where the similar order has been executed during the last three years) and work done list. Supporting documents (couple of orders without any alteration/modification, copies of installation report) must be enclosed.
- x. (PO) to whom such items/stores have been supplied should be mentioned in the technical bid.
- xi. Performance Certificates from clients.
- xii. Self-attested photocopy of annual turnover, IT clearance Certificate, Audited Balance Sheet, etc. of the last three financial years.
- xiii. The bidder/OEM self-declaration stating that he/she is not banned/debarred or black listed by any Central/State Govt. of India/PSU/Organizations/Institutes in India or abroad in prescribed format.
- xiv. DD/ for EMD amount.
- xv. Tender form fee in case of website version.
- xvi. **The form of the “Terms and Conditions” should be duly filled and signed by authorized person.**
- xvii. It is only when the information about the company/Goods in quotation in technical bid is found satisfactory; the commercial part will be opened.
- xviii. University reserves the right to carry out a technical inspection and performance evaluation (benchmarking) of the offers, made by shortlisted vendors. The shortlisted vendors may be asked to come and give out presentation/ demonstration.

(b) Price Bid:

- a) Commercial bid should contain price of the material required to be supplied as per Price Schedule "A" as supplied by the University along with the Tender form, duly filled and signed by the authorized person.

- b) All costs should be given in figures and words. All the Govt. levies like GST, sales tax, octroi, custom duty, educational cess & service tax etc., if any, should be clearly and separately mentioned for each item or component. However, all taxes will be paid at actual rates applicable at the time of delivery.
- c) The rates quoted should be applicable to educational institutions and any cost advantage received in lieu thereof should be passed on to the University.
- d) Prices shall not be subject to escalation of any nature
- e) Prices should be FOR – Jharkhand Raksha Shakti University and supplier will be responsible for custom clearance for forwarding the same up to university campus. Custom Duty will be reimbursed on actual basis, after submission of the evidence in original.
- f) **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 UNIVERSITY to any other customer nor they will do so till the validity of offer or execution of the purchase order, whichever is later.
- g) Copies of **at least last two-supply orders** received from other customers or details of last two supplies made to other customers 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.
- h) The party must give details of identical or similar equipment, if any, supplied to any UNIVERSITY department during last three years along with the final price paid and Performance certificate from them.
- i) The Cost of the equipment should be inclusive of all taxes and statutory levies. Labour / installation charges, packing, insurance, freight etc. should be mentioned separately (inclusive of all taxes laviable on them). For imported/indigenous goods price to be quoted FOR JRSU. Unit price of each product and accessories should be quoted separately. Maximum educational discount for University as could be offered should also be mentioned. The university is exempted from payment of custom and excise duty on Scientific and Technical equipment/instruments by DSIR, Govt. of India. Necessary certificate will be issued on demand.

- j) Financial statements with net profit, duly audited / certified by Chartered Accountant (CA) of the last three financial years along with the copies of Income Tax Return (ITR) must be enclosed with the technical bid.
- k) **INSPECTION:** The inspection of the system will be done by our technical expert **/Scientist in the presence of firm's representative.**
- l) 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 University or CIF basis till satisfactory installation of the system.
- m) 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 University to ascertain the date of arrival of consignment.
- n) No commitment to accept lowest or any bid: University shall be under no obligation to accept the lowest or any other offer received in response to this tender notice and shall be entitled to reject any or all offers including those received late or incomplete offers, without assigning any reason what so ever. University reserves the right to make any changes in the terms and conditions of the bid. University will not be obliged to meet and have discussion with any vendor and or to listen to any representations.
- o) Short listing of Vendors: University will create a shortlist of technically qualifying vendors and the financial bid of only these vendors will be opened. University reserves the right to decide whether the items being quoted are as per the requirement of the University and are of standard/leading brands in the market. University reserves the right to decide which offer best suits the requirement of the university. Further, after opening financial bids of the short listed tenders, if there is a discrepancy between word and figure, the amount indicated in words will prevail.
- p) **Delivery period:** For imported goods the complete delivery, installation & commissioning of both the equipments/instruments should be made within 12 weeks from the date of issue of order. For indigenous goods it is 8 weeks.
- q) **Installation and Commissioning:** Free of cost at University. The OEM must ensure

timely installation of the complete unit with necessary support to the indenters, as per details and lists to be made available by the Stores Section or the indenting Departments/Centres/Schools.

r) **Conditional Offer** will not be accepted.

s) **Past Performance of the Vendors will be judged at the time of Technical Evaluation.**

The **OEM (Original Equipment Manufacturer)** should be an ISO-9000 or ISO-14001

certified company with due credits to energy conservation and green earth compliance.

Vendors should clearly mark on the both sealed envelopes **“Tender For supply, installation and operation of laboratory instruments/equipments”** (Jharkhand Raksha Shakti University) and **“Commercial / Technical Bid”** on the respective envelope at left corner.

While the above procedures lay down the overall guidelines, Jharkhand Raksha Shakti University reserves the right to select the vendor based on other parameters, at its discretion.

13) Delivery and Opening of Tender:

All tender documents should be sent through courier, speed post, registered post or by person. Telegraphic / fax offer will not be considered and ignored straightway. All tender documents received after the specified date and time shall not be considered.

The completed tender should be delivered at the Accounts Section of Jharkhand Raksha Shakti University, Meur's Road (SKIPPA Premises) Ranchi on or before

Date :- 16th November 2018 at 3.30 pm

The Technical Bid will be opened on 16th November 2018 at 4.00 pm

14) Performance Security:

On receipt of notification of award from the University, the successful Bidder shall furnish the performance security at 5% of the cost of the material ordered in the form of DD in favor of “Jharkhand Raksha Shakti University” or in the form of Bank Guarantee or in another form acceptable to the University. Failure of the successful bidder in this respect shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security, in which event the University may make the award to the next lowest evaluated bidder on same rate or call for new bids.

15) Rejection of Bids:

- a) If bidders give wrong information in their bid, University reserves the right to reject such bids at any stage and forfeit the Earnest Money Deposit / Performance Bank Guarantee and cancel the order, if awarded.
- b) Incomplete bids are liable to be rejected.
- c) If the technical offer contains any price information the offer will be summarily rejected.
- d) Canvassing in any form in connection with the tender is strictly prohibited and the bids submitted by the bidder who resort to canvassing are liable for rejection.
- e) Unsigned tenders/bids, unattested corrections and over writing by bidders are also liable for rejection.
- f) The schedule for accepting the tenders shall be strictly followed- late tenders shall not be accepted.
- g) Bids submitted without supporting documents as mentioned or required to submit with bids are liable to be rejected.
- h) The Tenderers must confirm in their bid acceptance in full of the terms and conditions in this enquiry. Any non-acceptance or deviations from the terms and conditions must be clearly brought out. However, tenderers must note carefully that any conditional offer or any deviation from the terms and conditions of this enquiry may render /liable the quotation for rejection.

Each page of the tender document including all annexure duly stamped and signed by the bidder must be submitted along with the tender bid and tender should be page numbered.

16) Liquidated damages for delayed supply:

If vendor fails to deliver any of or all products or does not perform the services within the period specified in the contract, the University reserves the right to, without prejudice to its other remedies under the contract, deduct from the bill, a sum equivalent to 1% of the price of undelivered stores at the agreed price for each week to maximum limit of 5% of the value of stores so undelivered. Once maximum is reached, the second party may consider termination of contract.

17) Assignment / Subcontracting /sublet:

The Vendor shall not assign the order received, any rights under this agreement or to become due hereunder neither delegated nor subcontracted /sublet any obligations or work hereunder without the prior written consent of the University.

18) Cancellations:

The University reserves Right to Accept any Bid and to Reject any Or all Bids: The Purchaser also reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or bidders or any obligation to inform the affected Bidder or bidders of the grounds for **the Purchaser's action.**

The University may cancel agreement entered with vendor in whole or in part, for no cause, upon written, FAX, or email notice to the Vendor, effective when sent, provided such notice is sent ten (10) days prior to the delivery date, specified on the face of this order.

The University may cancel order in whole or in part at any time for cause by written, FAX, or e-mail notice to the Vendor, effective when sent, in the event that the Vendor:

- (a) fails to comply with any term or condition of this order including, but not limited to, delivery terms; or
- (b) appoints a receiver, liquidator or trustee in bankruptcy or other similar officer over any or all of its property or assets; or
- (c) files a voluntary petition in bankruptcy; or
- (d) has had filed against it an involuntary petition in bankruptcy which remains in effect for thirty (30) days; or
- (e) voluntarily ceases trading; or
- (f) merges with or is acquired by a third party; or
- (g) Assigns any of its rights or obligations under the Order to a third party without the **university's prior written consent.**

Upon the occasion of any one of the aforesaid and in addition to any remedies which the university may have in Law or in Equity, the university may also cancel this order or any outstanding deliveries hereunder by notifying the Vendor in writing of such cancellation and the Vendor shall thereupon transfer title and deliver to the university such work in progress or completed material as may be requested by the university. The University shall have no liability

to the Vendor beyond payment of any balance owing for Material purchased hereunder and **delivered to and accepted by the university prior to the Vendor's receipt of the notice of termination**, and for work in progress requested for delivery to the university.

19) Warranty:

- a) Three year onsite comprehensive warranty with the statement of availability of spares for at least 5 years from the date of the installation of Goods against any manufacturing defects and also give the warranty declaration that everything to be supplied by us hereunder shall be free from all defects and faults in material, workmanship, transportation hazards, and shall be of the highest quality and material of the type ordered, shall be in full conformity with the specifications. During the warranty period, **replacement of any part of equipment's or rectification of defects of works will be free of cost.**
- b) Any deviation in the material and the specifications from the accepted terms may liable to be rejected and the bidders need to supply all the goods in the specified form to the satisfaction / specifications specified in the order / contract and demonstrate at their own cost. The payments shall be made only after receiving the material in the required specifications and quality to the satisfaction of the University authorities.
- c) Downtime: During warranty period not more than 5% downtime will be permissible. For downtime exceeding penalty equivalent to 0.50% of the F.O.R. value of the equipment for every week or part thereof may be imposed. Downtime will be counted from the date and time of the filing of complaints within the business hours of the tenderer.
- d) The Vendor warrants that any Material supplied hereunder shall conform to the generally recognized manufacturing and safety standards of the **Vendor's industry as per Indian Standard Institution (ISI) or similar standard. The Vendor's specifications on performance as detailed in the Vendor's brochures, sales literature and other specifications as may be available to the university.**

In addition to any other express or implied warranties, the Vendor warrants that the material furnished pursuant to this order will be:

- (i) Free from defects in design except to the extent that such items comply with detailed designs provided by the university; of merchantable quality and suitable for the purposes, if any, which are stated in the tender/quotation.
- (ii) If any material covered by agreement is found not to be as warranted, the University may, by written notice to the Vendor:
 - (a) Reject such defective material and require the delivery of suitable replacements.
 - (b) If the Vendor fails to deliver suitable replacements promptly, the University, with notice of seven business days, may replace or correct such material and charge the Vendor the additional cost occasioned.
 - (c) Any items corrected or furnished in replacement are subject to all the provisions of this article entitled WARRANTIES to the same extent as items initially furnished or originally ordered.
 - (d) Free maintenance and service during warranty.
 - (e) Regular upgrades to all software during the entire warranty period.
 - (f) Vendor should provide a certificate that they will provide the spares in future at least for five years.
 - (g) Vendor should provide insurance up to the delivery point (on-site and not up to the nearest international airport) and until the time of installation.

This warranty provision shall survive any inspection, delivery, acceptance, payment, expiration or earlier termination of this order and such warranties shall be extended to the employees, students, and users of the material. **Nothing herein, however, shall limit the University's rights in law or equity for damages resulting from delivery of defective goods or damage caused during the delivery of goods or provision of services.**

Rights granted to the University in this article entitled WARRANTIES are in addition to any other rights or remedies provided elsewhere in this order or in Law.

20) Consumables/spares: All hardware- & software including drivers, device interface cards/network adaptor card must be pre installed & pre configured in the computer /equipment-provided. Licensed version of system software should be provided in CD (with up gradable version).

Manual - Hard copies of instruction/operation/service manuals should be supplied List of important Consumable/ Spares and parts having sufficient shelf life for trouble free operation of three years should also be provided.

21) Shifting & Reinstallation: If required, manufacturer /supplier has to take all the responsibilities for shifting and reinstallation of the equipment from the temporary building to permanent building. This responsibility has to be given in writing by the manufacturer. All terms and conditions remain same at permanent site. Also, the performance of the instrument should be reproducible after shifting. Vendor should also provide a list of instruments where the vendor has done re-installation of such equipments in the past.

22) Training/installation:

- a) Installation testing: suppliers of the instrument must provide free installation, commissioning and testing of the equipment in the laboratory at the current temporary site and thereafter at permanent site.
- b) Comprehensive training of faculty & staff after installation should be provided, wherever deemed appropriate and an update in every six months (3-4 days) for the first two years and every year (1 week) for the next three years.
- c) On-site operation of the instruments listed in category I, II and IV by qualified person- who will be posted in Jharkhand Raksha Shakti University by the vender for 1 year from the date of commissioning of the equipments. A separate quotation should be provided for the manpower.

23) Patent Indemnity:

The Vendor shall have to indemnify, hold harmless and defend the University, its employees, and students with respect to all claims, suits, actions and proceedings of actual or alleged infringements of any Letter, Patent, Registered or Industrial Design, Trademark or Trade Name,

Trade Secret, Copyright or other protected right in any country resulting from any sale, use or manufacture of any Material delivered hereunder and to pay and discharge all judgments, decrees, and awards rendered therein or by reason thereof and bear all expenses and legal fees **(including the University's)** associated herewith. The university reserves the right to be represented in any such action by its own counsel at its own expense.

24) A.M.C.:

A separate annual maintenance contract will be executed after completion of the warranty period. On execution of the A.M.C. contract, performance security will be returned to the first party.

25) Compliance with Laws:

After acceptance of tender, successful bidder shall have to comply with the requirements of all the existing laws. The Vendor shall also have to comply with the Fair Labour Standards Act and the Occupational Safety and Health Act, and all other applicable laws, ordinances, regulations and codes in the Vendor's performance hereunder. The Vendor will have to indemnify and hold the University and its customers harmless from any loss or damage that may be sustained by the University, by reason of the Vendor's failure to comply with any laws, ordinance, regulations and codes.

26) Law of the Contract:

The agreement entered with vendor shall be governed by and interpreted in accordance with the laws in existence and the Jurisdiction of Jharkhand.

27) Site preparation:

The supplier shall inform the University about the site preparation, if any, needed for installation, immediately after receipt of the supply order. Suppliers must provide complete details regarding space and all infrastructural requirements needed for the equipment, which University should arrange before the arrival of equipment to ensure its early installation and smooth operation thereafter. The supplier may offer his advice and render assistance to University in the preparation of the site and other pre-installation requirements.

Rate quoted by vendor should be valid for at least six months from the date of receipt of quotation.

As far as possible, quotations should be given for goods of Indian manufacturer and if foreign goods quoted and proposed to be supplied should be covered by normal input quota of the dealer. This University is exempted from payment of custom duty/excise duty. Certificate of the same will be provided by the University, if needed.

I/We have read all the enclosed Terms and Conditions carefully and ready to accept and according to that I/We are submitting herewith the tender.

Seal & Signature of Vendor

(5) TECHNICAL SPECIFICATIONS SECTION

Technical Specifications: The tenderer shall meet the respective minimum technical specifications for the item that is being bid for. Any additional features or specifications in excess of these minimum specifications will be appreciated. A set of desired additional features are mentioned along with the minimum technical specifications, wherever appropriate.

I / We the undersigned am / are ready to supply & install the following instruments along with all other accessories complete as mentioned below with accepting the terms and conditions which are enclosed with this order form and quote for the same

The technical specifications for all the Instruments are being placed under this tender have been detailed in the following Annexure (one annexure for each Instrument / Equipment; this will also include all the components of a particular instrument / equipment that are being bid for).

TECHNICAL SPECIFICATIONS OF INSTRUMENTS REQUIRED

I. Gas chromatograph coupled with Mass Spectrophotometer

Bench top model Gas Chromatograph with Triple Quadruple Mass Spectrometer (GC MS MS).

1 .a. Mass Analyser Specification

SI No	Specifications/Requirements	Criterion
1	Mass Range	Mass Range upto 900 Da or better
2	Mass Analyser and Filters	Quadruple with filters to to remove neutral noise/contamination for better sensitivity Facility for active ion beam focusing Analyser Temperature upto 200 ° C or better
3	Scan Modes	Precursor, Product, Neutral Loss, SIM,SRM, MRM, Full Scan etc
4	Dynamic Range	Minimum 10 ⁵
5	Linear Response	Relative to sample concentration, for magnitude from the limit of detection
6	Ionization Modes	Electronic Ionisation (EI) and Optional positive and negative chemical ionization
7	Electron Energy	10 to 120 Electron Volt (EV) user selectable or higher
8	Probe	Direct infusion of sample to MS unit should be available or specify
9	Ion Source	Source temperature upto 300 ⁰ C or better Quick change over EI/CI mode Inert EI source with dual filament
10	Collision Cell	Mention the gas used for collision Facility to focus the ion beam for entering into the cell and exit the cell to be available Collision energy digitally controlled and specify the voltage
11	Tune	Auto tune facility and manual tuning option available
12	Resolution	Should be adjustable form 0.7 Da to 4 Da
13	Dwell Time	Minimum 1ms or better
14	Scan speed	Minimum 5000 or better
15	MRM Speed	Minimum 200 transitions/sec

16	EI scan sensitivity	S/N \geq 200 : 1 or Better with 1 pg Octafluoronaphthalene (OFN) from m/z 50 to 300 for m/z 272 or Otherwise specify the sensitivity in terms of Signal to Noise with the concentration of the chemical and injection volume and m/z
17	EI MRM sensitivity	S/N \geq 500 : 1 or better with 100 fg Octafluoronaphthalene (OFN) from m/z 272 -- - 222 transition or Otherwise specify the sensitivity in terms of Signal to Noise with the concentration of the chemical and injection volume and m/z transition
18	PCI scan sensitivity	S/N \geq 300 : 1 or better with 100 pg Benzophenone (BZP) from m/z 80 to 230 for m/z 183 or Otherwise specify the sensitivity in terms of Signal to Noise with the concentration of the chemical and injection volume and m/z
19	NCI scan sensitivity	S/N \geq 500 : 1 or better with 250 fg Octafluoronaphthalene (OFN) from m/z 50 to 300 for m/z 272 or Otherwise specify the sensitivity in terms of Signal to Noise with the concentration of the chemical and injection volume and m/z
20	Detector	Electron Multiplier Or Photo Multiplier Provisions for lesser noise by the neutral ions other contaminations. Please mention the shelf life of the detector
21	Turbo Molecular Pump	Air cooled with suitable capacity to bring fast vacuum Easy and quick change over from EI or CI Should allow system to withstand carrier gas flow rate as suitable to application and intended use
		Air cooled with suitable capacity to bring fast vacuum Easy and quick change over from EI or CI Should allow system to withstand carrier gas

21	Turbo Molecular Pump	flow rate as suitable to application and intended use
22	Total gas flow	Specify the GC gas flow in ml/min MS system can allow and Collision gas flow in ml/min
23	Library	Licensed Latest NIST/Wiley etc library with latest version including data on pesticide to be provided along with the software Must include spectral name and chemical structure
24	GC and MS operation	Operation of minimum one GC detector data while MS data acquisition is going on.

- Detector

Electron Multiplier Or Photo Multiplier Provisions for lesser noise by the neutral ions other contaminations. Please mention the shelf life of the detector

- Turbo Molecular Pump

Air cooled with suitable capacity to bring fast vacuum Easy and quick change over from EI or CI Should allow system to withstand carrier gas flow rate as suitable to application and intended use 22 Total gas flow Specify the GC gas flow in ml/min MS system can allow and Collision gas flow in ml/min

- Library

Licensed Latest NIST/Wiley etc library with latest version including data on pesticide to be provided along with the software. Must include spectral name and chemical structure 24 GC and MS operation Operation of minimum one GC detector data while MS data acquisition is going on.

- PTV Head Space auto sampler or combipal system 4 Low bleed column
- Free consumables glass liner /insert for PTV
- Uninterrupted Power Supply(UPS) 3 phase in single phase out True online UPS OF 10 KVA capacity or above with power factor correction and harmonic distortion (< 5 % THD ; < 3% Single Harmonic), Three phase 440V for the smooth running of LC-MSMS with battery with back up of 4 hr.

I b. Gas Chromatograph

Sl No	Specifications/Requirements	Criterion
1	Oven Temperature	Ambient temperature to 350°C or Better. Programmable
2	Injector	Split/split less mode functioning
3	Auto sampler	Minimum 50 vials
4	Carrier gas control modes	Constant pressure and flow modes Programmable flow
5	Electronic Pressure control	Should be available for carrier gas flow Electronic pneumatic control for auto pressure regulation for split/splitless operation, septum purge

6	Software Control	Data station system with computer suitable software control for operation Data evaluation and QC Detector ECD /FID
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- The installation Qualification, Operational qualification and Performance Qualification of the instrument (GC) has to be performed at the time of installation. The operational and performance qualification of the instrument has to be performed at least once in a year or after major breakdown of instrument. The job will be done free of cost during warranty and AMC period. At the time of supply of the instrument the IQ/OQ/PQ documents in soft and hard copies and essential validation kits for GC has to be supplied free of cost.

II. Fourier Transmission Infra-Red Spectrometer:

Optical Range	7500– 400 cm^{-1} with KBr beam splitter/Ge-KBr beam Splitter or better
Spectral Resolution	0.8 cm^{-1} or better at full range
Wave Number Accuracy	0.1 cm^{-1} or better
Wave Number reproducibility	0.05 cm^{-1} or better
Detector	High performance, high sensitivity temperature controlled DTGS/DLATGS detector to cover full range at below mentioned sensitivity
Interferometer	Permanently aligned Michelson interferometer with 10 Year warranty or better
Signal-to-noise	30,000:1 peak-peak, 1 minute or better
Source	MID IR/High intensity, temperature stabilized, long life Ceramic source or equivalent.
Beam splitter	KBr beam splitter/Ge- KBr beam splitter.
Sample Compartment	Should be compatible with all type of sample accessories
ATR accessory	Monolithic diamond ATR should be provided.
Automatic validation of Hardware & Software	Standard internal validation to provide complete reassurance of quality of measurement conforming ASTM with NIST traceable external polystyrene film
Optical system	Sealed and desiccated enclosure must offer extended intervals between desiccant replacements, at least 5 years or should provide the desiccant for 5 years from the date of installation.
Software	Suitable CFR 21 compliance software with validation for Spectral collection, Quantitative analysis, baseline correction, smoothening, derivatization, spectral deconvolution, library search etc.
Cell	Universal Demountable Cell, Rectangular Spacers, Pellet holder i.e. accessories for liquids & solids should be quoted in main and original

Library	<p>Dedicated Licensed libraries for forensic application should be provided. Pirated or copied Library will not be entertained. (With no. of spectra – approx.)</p> <p>1) OEM/Genuine Spectral Libraries compounds including below:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Georgia/Toronto State Crime Lab Drug - drugs and drug related compounds <input type="checkbox"/> Narcotic Drugs & Psychotropic Substance Canadian Forensics <input type="checkbox"/> Pharmaceutical Library - OTC and prescription drugs <input type="checkbox"/> EPA Library <input type="checkbox"/> Pesticides & Agricultural Chemicals - Bio-Rad Sadtler
Accessory recognition	The accessories should be automatically detected as soon as they are locked into the sampling area. Instrument parameters should be optimized for the installed accessory. Accessories information stored with spectral data.
Pellet making accessories	Hydraulic 15 Ton Pellet Press, KBr Die set, mortal & pestle
Cell	Universal Demountable Cell, Rectangular Spacers, Pellet holder i.e. accessories for liquids & solids should be quoted in main and original
Warranty :	The warranty of the instrument should be at least 10 years on interferometer, beam splitter, laser and source. The warranty should be comprehensive (The conditions of system should be kept on when not in use, nitrogen purging and any defects on beam splitter due to atmospheric conditions should be covered under comprehensive warranty)
Additional Items	Branded PC (i5), 19” LED Monitor, 500 GB HDD, 4 GB RAM windows 7 with Laser Printer & UPS with 2 Hr Backup & IQ OQ documents.
	<ul style="list-style-type: none"> • System should have at least three-year standard warranty. • Maintenance spares for fourth and fifth year after warranty to be quoted for each equipment. • All the modules should have GLP and GMP features like early maintenance feedback for continuous tracking of instrument. • On Site Commissioning and training of instrument for staff. • User certificate from minimum three users of R & D organizations in India. • The Vendor should provide technical compliance table addressing all the technical specifications, point by point supported with printed catalogue/literature.

III. UV Vis Spectrophotometer:

- Wavelength Setting– auto
- Photometric Display Range - 0 – 200% T, 0.3-3.0 A, 0-9999C
- Wavelength repeat – 0.5nm
- Band width -2nm
- Display -128 x 64 Dots LCD
- Power = AC 8 ~250 V
- Dimension = 420x280x180mm
- Wavelength Accuracy = +/- 1nm
- Wavelength = 90-1000nm
- Lamp - Deuterium + Tungsten Lamp
- Detector- Silicon Photodiode

IV. High Performance Liquid Chromatography:

High Performance Liquid Chromatograph with Poly Diode Array (PDA), Fluorescence detector with auto sampler, online degasser unit, column holding chamber and software aided fully automatic operation is required. The equipment and its accessories are to be operated through Interface controlled by software. All the components of HPLC have to be communicated through communication ports and Interface which then controlled by software. The latest configuration PC, LCD/LED monitor and LaserJet printer etc are to be provided along with the above mentioned equipment.

IV.a. Solvent Delivery Unit

Sl No	Specifications/ Requirements	Criterion
1	Pump	Binary/ Quaternary Gradient with Dynamic gradient mixer Should be capable of operating with 3-4 Solvents at a time during gradient operation
2	Composition Range	0 – 100 % among the 3 - 4 solvent lines
3	Gradient mixing accuracy	± 0.5 %
4	Gradient curve	Linear and Exponential (Positive and Negative)
5	Flow range	0.1 to 5 ml/min or better
6	Flow Increment	0.1 ml
7	Flow accuracy	± 1 %
8	Flow Precision	RSD < 0.5 % or better
9	Retention time reproducibility	RSD < 0.5 % or better

10	Pumping System	Software controlled
11	Maximum Pressure	5000 psi or better
12	Plunger	Pump should be micro-volume double plunger pump Capacity : 10 µl or Specify
13	Plunger Rinsing mechanism	Automatic
14	pH of operation	1 – 9
15	Operating environmental condition	Temp : 22 – 40 ° C and Humidity – 20 -80 % RH
16	Safety Measures	Sensors for leak detection and auto cut off at high pressure should be provided as safety measure
17	Communication Port	Available

IV .b. Degasser

Sl No	Specifications/Requirements	Criterion
1	Degasser	Online Vacuum No of degassed solvents should be 3 – 4 and degasser flow line capacity 300- 500 ul
2	Maximum flow rate	10 ml/ min
3	Number of channels	4 - 5 (3 - 4 for line and 1 for auto sampler rinsing) or specify
4	Internal volume	Typically 12 ml per channel
5	Material in contact with solvent	PTFE, PEEK
6	Communication Port	Available

IV.c. Auto sampler

Sl No	Specifications/Requirements	Criterion
1	Tray Capacity	Not Less than 50 vials to accommodate 1.5 – 2 ml vials/ tubes and 3 - 5 Nos of 10 ml vials for rinsing and dilution options
2	Replicate injections	1 - 99 injections
3	Vial Detection	Through Sensor
4	Injection Volume Range	Total sample injection or variable injection volume (no sample loss)
5	Loop volume	Specify
6	Injection volume accuracy	± 1 %

7	Injection volume repeatability	≤ 0.5 % RSD
8	Injector Linearity	>0.999 (r ²)
9	Sample Syringe Sizes	250 µl or able to inject 5–50 ul volume
10	Injection Cycle time	2 – 3 samples per minute
11	Sample Probe	Pressure Assisted injection
12	Needle Rinsing	Before and after each injection, outer and inner of needle
13	Sample Carry over	Nil or < 0.02 %
14	Flush Cycle	User selectable
15	Sample Rack cooling facility	8 – 35 ° C
16	Flush volume	0- 2000 µl, User selectable
17	Max Operable Pressure	Upto 5000 psi
18	Valve Material in contact with sample	Stainless steel, Vespel, Ceramic, Peek
19	Ambient Temperature of operation	4 – 40°C
20	Ambient Relative Humidity limits of operation	20- 80 %
21	pH of operation	1 – 9
22	Communication Port	Available
23	Safety	Stop operation when pressure is more than 3500 – 5000 psi as per setting

IV.d. Column Oven

Sl No	Specifications/ Requirements	Criterion
1	Operation Range	10 to 50 °C or better
2	Temperature accuracy	± 1 °C
3	Control	Heating / Cooling automatic sensor based
4	Post column derivatisation	Loop should be provided to carry out post column derivatisation. The suitable pump to be provided for flow of derivatisation liquid. Minimum 2 flow lines
5	Safety	Auto stop of pump in case leakage or failure of temperature controlling system. Liquid leakage sensor
6	Communication Port	Available

IV.e. Photo Diode Array Detector

SI No	Specifications/ Requirements	Criterion
1	Light Source	Deuterium and Tungsten – Halogen Lamp. Long Life Deuterium lamp with 1000 – 2000 hrs operation
2	Number of Photo diodes Elements	Minimum 512
3	Wave length range	190- 700 nm, Increment of 1 nm
4	Wave length accuracy	± 1 nm
5	Wavelength Precision	± 0.1 nm
6	Signal Noise	1×10^{-5} AU or Less at 250 nm
7	Linear Range	Not more than 5 % deviation
8	Signal Drift	1.0×10^{-3} / hr or less at 250 nm
9	Calibration of Optics	Auto calibration for GLP compliance
10	Flow Cell	Appropriate
11	Ambient Temperature of operation	22- 40°C
12	Ambient Relative Humidity limits of operation	20- 80 %
13	Signal Processing	A/D or D/A converter
14	Functions	Contour output, Scanning single or multi wavelength at a time, MAX plotting, spectrum library, Multichannel signal acquisition
15	Safety	Liquid leakage detection and auto put off of pump. Easy cleanable flow cell.
16	Communication Port	Available

IV. f. Fluorescence Detector

SI No	Specifications/ Requirements	Criterion
1	Source	Xenon Lamp
2	Spectral acquisition	Excitation and Emission Septra, Scan speed 25 – 30 ms per data point
3	Cell volume	8 -16 ul
4	Excitation Wave length range	200- 700 nm
5	Emission Wave length range	210- 900 nm
6	Wave length accuracy	± 4 nm or Better
7	Wave length repeatability	± 0.5 nm or Better

8	Sensitivity Range	1,2,4,8,16,32,64,128,256
9	Gain	x 1, x 10, x 100, x 1000
10	Response	Fast, Standard, Slow
11	Band width for Excitation and Emission	20 nm or less
12	Pressure Limit	140- 150 psi
13	Function	Dual wavelength detection, Wavelength Scanning
14	Calibration of Optics	Auto calibration for GLP compliance
15	S/N	Water Raman Peak S/N> 1000 Or Better
16	Ambient Temperature of operation	20- 40°C
17	Ambient Relative Humidity limits of operation	20- 80 %
18	Signal Processing	A/D or D/A converter
19	Safety measure	Liquid leakage Sensor. Auto put off pump on leak
20	Communication Port	Available

IV.g .Spare and Consumables

Columns: RP -18 (4.6 mm ID x 250 mm, 5 u SS or Equivalent) – 1 No RP
-18 (4.6 mm ID x 150 mm, 5 u SS or Equivalent) – 1 No RP
- 8 (4.6 mm ID x 150 mm, 5 u SS or Equivalent) – 1 No
Security Guard Cartridges for the above columns

Universal Guard Holders Solvent sonication system

Vials – As suitable 2 Packs (Each pack containing 100 vials) Pump Maintenance Kits/line frits/filters etc – Minimum 2 sets Pump Seal – 2 Sets D 2 Lamp – 1 No

V. A. Binocular light microscope:

- a. Body: - Made of rust free aluminum with all critical movements based on a ball bearing and wire guides ensuring smooth and precise manipulation.
- b. Nose Piece: - Quadruple revolving nose piece with position click stop.
- c. Eye Piece: - Wide field 10 X (F. N. 20)
- d. Optics:- Universal infinity system optics. E. Objective:- Plan achromatic and anti fungus, parcentred & parfocaled- 4X, 10X, 40X and 100X. F. Condenser: Abbe type with aperture iris diaphragm NA: 1.25. G. Stage: Mechanical with right hand low drive 120mm X 132-145 mm with travelling range 76 mm X 30 mm. H. Observation head: 30-45 degree inclined & inter pupillary adjustment 48-75 mm. I. Illumination: built in 6V 20W halogen bulb. J. Focusing: coarse & fine (20 mm and 2.5 μ m). K. Option to attach a mirror unit. L. Protective aluminum/wooden case. M. Replacement light bulb should be available. N. Must include operating instruction immersion oil, dust cover and filter. O. The manufacturers must provide 2 years onsite warranty. P. ISO/CE/USFDA Certified.

V B. Student Stereo Microscope (Portable):

Eye Piece -Wide field eyepiece WF 15x
Objective-Fixed Achromatic, 3x

VI. Fluorescence Microscope:

- 6 filter Turret – 4 fluorescent filter blocks
- UV – DAPI
- Violet Infinite Optical System
- G – TRITC
- Epifluorescent 100W HG Lamp with Turret filter tube cube holder including blue, green, UV and Violet filters
- Infinity optical system IOS with plan 4x, 10x, 40x, 100x oil objectives.
- Trinocular head with 100:0; 0:100 light distribution camera port.
- Bright field transmitted bottom LED illumination.
- Quintuple nose piece.
- Large 145x130 mm Mechanical Stage.

VII. Comparison microscope (Binocular):

Total optical magnification	400x
Eyepiece	Two 19mm 10x wide field eyepieces with humidity and climate protection coating
Objective lenses	2x, 4x, 10x, 40xS, DIN achromatic
Viewing configuration	Seidentopf binocular with 30 degree incline, 360 degree rotation, and interpupillary adjustment
Nosepiece	Reverse 4-hole with 4-position ball-bearing actions stop and 360 degree rotation
Illumination	Upper and lower LED cool lighting with on/off switch and lower-level dimmer control
Focus	Low position coaxial fine and coarse focus knobs, rotating mechanism and torque adjustment of one coarse rotation from minimum to maximum stage height, 0.002mm fine focusing scale value
Stage	Floating stage with two spring-loaded clips
Gearing	Rack and pinion
*Overall dimensions	53 x 39.4 x 21.6 cm/21 x 15.5 x 8.5 inches (H x W x D)
Weight	11.2kgs/24.6lb.
Illumination power source	Low voltage external power supply 120 ~ 240V 500mA, detachable with rechargeable battery
Certificates	ISO:9001 – 2000, CE, CSA, RoHS

VIII. A. Deep freezer (-20 °C):

Microprocessor controlled with low battery, power failure alarm, high-low temp. alarm. Digital display set and present temperature. Voltage checking system. Stainless steel chamber. Dual layered air insulated inner doors . Hermetically sealed cooling system with durable low noise level compressor & low energy consumption, proper insulation.

Capacity : Approx 200-300 ltrs
Temp. : -20°C to - 40°C
Refrigerator : Cascaded design
Refrigeration : CFC Free refrigerants

Note: The deep freezer should include accessories as storage racks, boxes and cell dividers etc.

VIII. B. Magnetic Stirrer/ Mixer:

Technical parameters:

1.Maximum stirring capacity: 1000ml
2.Size: 20.5*13.5*11.5cm
3.Heating power: 150W
4.Mixing power: 25W
5.Power supply: 110V 50HZ
6.Speed: 0-2400r / min
7.Temperature range: liquid -100 °C
8.Tray material: Aluminum alloy
9.Power Plug: US Plug
10.Plat Diameter: Approximate 12cm

VIII. C. Water bath (Temperature = 95°C):

Part Number	WB20A11B
Number of Items	1
Brand Name	Poly Science
Capacity	20 liters
Item Weight	25.0 pounds
Model Number	WB20A11B
Reservoir Capacity	20.00 liters
Temperature Range	5/99 ° C
Temperature Uniformity	+/- 0.2 ° C
UNSPSC Code	41103706
Voltage	120 volts

VIII. D. Incubator cum shaker:

- Shaking Frequency : 30 - 350 RPM
- Shaking Deviation : ± 2 rpm
- Shaking Indication : Digital LED
- Speed change via : Potentiometer
- Shaking Motion : Orbital
- Diameter of Orbital Motion : 25 mm
- Tray Dimension : 420 x 420 mm
- Universal tray to hold ^ 36 Nos of 50 ml flasks (or) 36 Nos of 100 ml flasks (or) 25 Nos of 250 ml flasks (or) 16 Nos of 500 ml flasks (or) 9 Nos of 1000 ml flasks (or) 4 nos of 2000 ml flasks
- Temperature Range : Amb +7° C to 70° C * Temperature Accuracy1 : $\pm 0.1^\circ$ C
- Temperature Sensor : PT 100
- Temperature Indication : Digital LED
- Temperature change via : Soft touch key pad OTHER SPECIFICATIONS:
- Material of Construction: Interior SS and Exterior MS Powder coated
- Internal Dimensions (W x D x H) : (490 x 500 x 412) mm
- External Dimensions (W x D x H) : (525 x 700 x 660) mm
- Thermostat cut-out for run away safety
- Deviation alarm for temperature available
- Drive : DC motor * Heater Power : 500 W
- Electrical Requirement : 230V, 6 Amps, 50 Hz, 1 \square
- Thermostat cut-off for runaway safety
- Provided with RCCB to prevent from electrical hazard
- Non Volatile Memory with automatic Power failure restart
- Unit has facility of proximity sensor to control the shaker on/off position
- Electrical Requirement : 230V,6 Amps, 50 Hz, 1 Φ

VIII. E. Muffle furnace:

Size	9" X 4" X4" with Watt: 2000		
Heating Element	Kanthal A-1	Silicon Carbide (SiC)	Molybdenum Silicide (MoSi2)
Temperature Accuracy	+/- 1°C (+/- 1.8°F)		
Temperature Controller	PID controller		
Display	LED / LCD Display		

External Chamber Construction	MS w/ Powder Coating / 304 Grade Stainless Steel (Optional)
Internal Chamber Construction	Ceramic Board & Grooved Refractory Chamber as per Temp. Requirement
Insulation	Ceramic wool insulation
Alarm	Audible & Visual type
Power Supply	220 / 440 Volts
Certification	ISO, CE & GMP
Stabilizer	As standard
Optional Accessories	<ul style="list-style-type: none"> - Provision for Printer - Data logger - Safety switch on door - Temperature Chart Recorder - Extra port for gas - Extra heating element & rod with clips - Extra thermocouple - Tongs - Gloves

VIII F. Double distillation Unit:

Serial No.	Description of goods and allied services	Amounting Unit	Quantity
1	Quartz Double Distillation Apparatus (Specification attached with following specification)		
	i. Silica or Quartz Heater	Nos.	6
	ii. Quartz Condenser	Nos.	1
	iii. Quartz Boiler	Nos.	2
	iv. Water Softener	Nos.	1
Material	Quartz glass		
Model type	Horizontal, Distillation apparatus comprises flask with heating elements, comes with metallic stand rings as well as clamps to hold flasks		
Operation	Fully automatic with sensor in both the boilers and must be easy to use		
Out put	2-4 litter per hour		
Electrical power	220-240 Volt, 50/60 Hz, single phase		
Heater type	Silica or Quartz heater		
Distilled water quality (pH& conductivity)	pH ~ 6.0-7.0, & conductivity around 1.0 µS/cm		
Distillate quality	Pyrogen free		
Unique feature	Unit must be switch off if water level in the boiler falls below the heater		

Safety	Drain nozzle must be provided for easy cleaning, Fuse must be provided for safety in case of voltage fluctuations and short circuit
Stand	Stand must be powder coated for rust free operation.

VIII G pH Meter:

- Microprocessor based for fast and accurate pH measurement with soft touch control panel
- 3 point calibration
- pH range (0-14)
- Auto-calibration with up to 3 buffers
- Built-in Auto buffer recognition
- pH and Temperature display
- Refillable Triode 3-in-1 epoxy body combination pH electrode
- Power 220-240 V; 50/60 Hz, Automatic temperature compensation (0-100°C)
- CE, ISO 9001, ISO13485 Marked or equivalent marked
- Accessories:
- Standard buffers 4,7, 10 pH 250 ml each
- Electrode 1 set extra
- 3M KCl solution – 250ml
- electrode storage buffer
- electrode cleaning solution – 250ml
- ISO or equivalent certified
- Warranty period of 3 years, subsequent 5 years comprehensive AMC

VIII H. Table Top Centrifuge Machine:

- Refrigerated Centrifuge capable of accommodating fixed angle for 50ml, 15ml and 1.5ml tubes and micro plate rotor
- Automatic rotor recognition device
- Motorized lid latch
- Automated imbalance detection
- Temperature range: -10°C to +40°C
- Maximum speed : 35,000 rpm
- Maximum RCF: 20,000 x g
- Built in drain in the rotor chamber to eliminate condensed water
- Inbuilt programmable timer and memory
- Acceleration time to max. rpm: <60 s
- Braking time from max. rpm: <60 s
- Very low noise level
- Dimension (W x D x H): < 750 x 700 x 400 mm
- Weight: < 100 kg

- Voltage requirement: 220V/50-60Hz
- ISO certified and FDA approved safety standard.
- 3 years comprehensive warranty and 2 years non comprehensive warranty.

VIII I . Digital Weighing Balance:

- Monopan Balance with Glass partitions on all sides
- Capacity : 300 to 320 GM
- Readability : 0.1 MG
- Repeatability : 0.2 MG or better
- Linearity : 0.3MG or better
- Average response time : 3 seconds or better
- Tare Range : Full to capacity
- Display : LCD with backlit display
- Weighing pan : Three side triangular weighing pan with at least 80mm dia.
- Weighing modes: In grams, milligrams, Kilograms, oz, lb
- Selectable application programs: Mass unit conversion by toggling, tare memory, net total, weighing in percent, counting, averaging
- Internal Calibration
- Must have RS232 port
- Balance must be ISO certified

Warranty of at least two years must

VIII J. Digital Incubator:

- Temperature range ambient +5 to60°C.
- Temperature Adjustment Accuracy $\pm 0.5^{\circ}\text{C}$ or better.
- Temperature distribution : accuracy $\pm 1.5^{\circ}\text{C}$ (at 37°C) or better
- Microprocessor based control with LED displays for time and temperature.
- Should have inbuilt mercury less thermometer.
- Adjustable shelves (flexible) with minimum two trays.
- Minimum 37 liters chamber volume or better.
- Programmable adjustable timer.
- Interior should be of stainless steel with perforated stainless steel shelves.
- Inner chamber should be fabricated with ribs for adjustable shelves for convenient height adjustment.
- Should have transparent door for sample observation without temperature drop.
- Exterior should be made of corrosion resistant powder/melamine coated steel.
- Over temperature protection with visible & audible alarms.
- Should have provision for auto start, auto stop and calibration offset
- System should have ISO certifications.

- System should have at least three-year standard warranty.
- User certificate from minimum three users of R & D organizations in India.
- The Vendor should provide technical compliance table addressing all the technical specifications, point by point supported with printed catalogue/literature.

VIII K. Autoclave (Micro-processor controlled):

Fully Automatic Horizontal Digital type Microprocessor controlled Autoclave having

- Self – diagnostic System
- Working Process display
- High Precision microprocessor temp. and cycle controller

TECHNICAL SPECIFICATION

Capacity	: Approx. 40 ltrs or more
Reservoir Capacity	: Approx.7 ltrs or more
Material Exterior	: Epoxy resin powder coated stainless steel
Material Chamber	: Stainless steel with Stainless Steel Tray
Sterilization Temp.	: Approx. 110°C -130°C
Pressure	: Max. 0.26 Mpa (2.65kgf/cm ²)
Display Timer with PC Communication	: LCD Display with Temp., Timer, Program cycle
Door	: One touch hinged door / Inter lock door locking system
Safety	: Over Temp., Over Pressure release safety valve and Over temp/ heating Protector.

Note : The quotation should be submitted along with required necessary consumables/ accessories (if any) for the same.

VIII L. Vortex mixer (Multitube)

- Multi tube vortexing at time.
- Vortexing speed , Rpm: upto 3000 rpm
- Power supply: 100- 240 V/ 50- 60 Hz
- Adaptor for vortexing of plate and tube
- Non linear control of vortex speed,
- Speed control knob to be provided,
- Provision to operate touch on and continuous mode,
- Operator manual to be provided.

IX. PCR Machine (Thermal Cycler):

- Should have a Universal Block for 96 x 0.2ml PCR Tube, 71 x 0.5 ml PCR Tube, One 8x12 PCR plate.
- Should have heating and cooling via peltier technology.
- Should have temperature control range: from 4 °C to 99°C.
- Should have temperature Control Mode: Fast, Standard and Safe.
- Should have lid Temperature range from 37 - 110 °C.
- Should have block temperature accuracy: $\pm 0.2^{\circ}\text{C}$.
- Should have block Homogeneity: 20° C to 72° C: $\leq \pm 0.3^{\circ}\text{C}$, 95° C: $\leq \pm 0.4^{\circ}\text{C}$.
- Should have temperature control speed: approx. 3 °C/s during heating.
- Should have temperature control speed: approx. 2 °C/s during cooling
- Should have lid descent and closing pressure with Flexlid technology and thermal sample protection
- Should have intuitive Graphic programming with larger display
- Should have administrator and user login with or without PIN for enhanced security
- Should have preprogrammed template for easy selection
- Should have time or temperature increment with cycles in PCR program
- Should have adjustable ramp rate from 0.1° C to 3.0° C to meet critical amplification conditions
- Should have customized programming that allows a maximum of 20 steps and 99 cycles
- Should have auto restart facility with user defined time interval
- Should have instrument status indicating the step, cycle and remaining runtime
- Should have runtime display
- Should have system memory of more than 100 user folders and more than 700 programs
- Should have two USB ports: for Protocol transfer, Self-test, USB, printer / mouse
- Should have log book function for error messages and new calibration
- Should have Power save Standby function
- Should have cooling vents at bottom and rear
- Should have option to connect up to TWO more 96 well non gradient thermal cyclers for ultimate throughput
- Should have optional Self-test dongle to check functionality of all 6 peltier elements
- Should have calibration according to NIST (USA), DKD/PTB (Germany) UKAS/NPL (UK), UL/CUL listed
- Should be provided with two year warranty

X. A. Sample Digestion cum Extraction Analyzer

Specifications for Microwave Assisted Digestion cum Extraction System Microwave assisted multimode digestion cum extraction system that should be able to handle the reactions involving routine digestion, as well as organic, organometallic, nano materials synthesis, biomass, extraction, etc.

- **Specifications of Microwave Oven: A: General**

Microwave digestion system must have a unpulsed delivered power output of 1500 Watts or more to full fill USEPA or equivalent requirement. Delivered from 2 magnetrons for homogeneous heating- to ensure equal product yields.

System must have a built in operating system with high resolution fluorescent touch screen Display for entry of operating parameters and sample. In addition, System must have built-in high performance vessel cooling system. The airflow must be variable and controlled by system software.

To ensure user safety during handling, vessels must be cooled inside the oven. Removal of hot, pressurized vessels and the use of external cooling devices like water baths are not acceptable. In addition, system must identify the type of vessels & number of vessels automatically, system should be able to operate stand alone & should have facility to take the printout of the programmes, suitable software to be offered in main system software must automatically adjust the power delivery based upon sample. Load and preprogrammed control settings. System must have a device to protect the magnetron from back reflected energy.

System should have in built programmes & methods such USEPA or equivalent methods in such fashion that user has to select the type of sample only & system should load the programme corresponding to the type of sample selected & start automatically. As well system should have facility to make the user defined programmes.

Multi mode Rotor/turntable system Rotor /turntable must be capable of processing 8- 12 or more reaction vessels simultaneously. Sensor System - Should have both IR and internal temperature sensor to measure accurate internal temperature of each vessel. System must have active pressure control mechanism or equivalent on each vessel to avoid any explosion. - The Pressure and Temperature sensor for measuring the internal temperature and pressure on one reference vessel must be able to transfer the data wirelessly without any need of cables to be connected to the instrument to avoid any damage to the cables during operation at high temperature and pressure conditions in presence of acid / solvent vapors.

If the vendor does not have wireless data transfer, minimum 01 SETS of internal temperature and pressure sensors MUST be offered along with the instrument to ensure smooth operation during next 3-5 years.

In addition, if any problems arise with Pressure and Temperature sensor for measuring the internal temperature and pressure for the transfer the data using wireless communication, in such cases, the vendor must replace/repared the sensor free of cost to ensure smooth operation during next 3-5 years.

- **Vessel system System should have following types of vessels system**

System should accommodate 8-12 high pressure vessels or more at time with following specification to be offered in main Vessel Specifications - Volume: 80-100 ml or more - Maximum temperature: 300⁰ C or more - Maximum pressure 80-100 bar or more - The maximum operating temperature and pressure specifications must be available at the same time. MOC: TFM/Quartz Number of vessels 8-10 or more

1. All vessels should have simple hand tightening closure. No special tools must be required to close the vessel for ease of operation. 2. Each pressure vessels must be individually tested & deliverance with pressure test certificate.

Door system: Door should have see through window to visualize inside happening if not alternative such as Camera option to be offered in the main quotation

Safety Feature1. System must have magnetically resealing safety door for safe release of overpressure. 2. Should have software safeguards for rotor identification and over-pressure settings. 3. Should have adequate protection for magnetron protection from reflected energy.

System should have facility to take printout and necessary software as well hardware to be offered in the main quotation Warranty: Three year from the date of Installation Following accessories to be offered in option

1) One Temp probe 2) Solvent Extraction accessory with magnetic stirrer
 Demonstration of the instrument offered. Vendors to carry out demonstration of the instrument (quoted model with the accessories/ Rotor/ Vessel/ Sensors/ etc.) at the department, free of cost, to show that the quoted instrument / model meets all the technical specifications. The demo will have to be carried out during technical evaluation within stipulated time frame. Non-compliance with this requirement will result in disqualification of the tender bids.

X B. Digital photo electric colorimeter:

- A. Must be a photoelectric digital colorimeter.
- B. Filters:- Must have 5 to 8 filters ranging from 400-700 nm with peaks at wavelengths 420, 440, 490, 520, 540, 570, 600 & 700nm.
- C. Measuring Mode: % of transmission, Absorbance and concentration.
- D. Cuvette Capacity-- 1 ml Reagent
- E. Light Source – White LED
- F. Detector: -- Photodiode G. Power—230 V +/- 10%
- H. The manufacturers must provide one year onsite warranty.
- I. ISO/CE/USFDA Certified.

X C. Digital Densitometer:

- Density Meter for determination of density, Specific Gravity, Concentration of Gases and liquids and API of Petroleum products.
- Method: Oscillating U Tube method
- Integrated reference cell oscillator in the same thermostate unit as the main U-tube for best temperature compensation performance.
- Instrument to display Density (Viscosity corrected and viscosity non-corrected), Apparent Density Brass, Density Steel, Concentration of Acid and Alkali
- Density Accuracy: 5×10^{-5} g/cm³ or better
- Temperature Accuracy: 0.03 deg C or better
- Temperature Range: 0 to 95 deg C or better
- Density Repeatability: 1×10^{-5} g/cm³ or better
- Temperature Repeatability: 0.01⁰ C or better
- The unit should conform to latest ASTM D 4052 test method.
- The unit should be fully automatic and having touch screen display..
- It should measure the density of petroleum based fractions (at least up to diesel range) and crude oil samples too.
- It should have provision of rinsing with at least 2 different solvents after each analysis.
- The instrument to be able to automatically detect filling errors or gas bubbles in the filled in sample. It should alert the operator of potential measurement deviations and document the incident. It should not be necessary for operator to manually check the bubbles.
- The instrument should display live image of the complete U-Tube Oscillator and the entire filled in sample, in one picture, upto the bow of U-tube. The

image of the U-Tube, for every sample, should be stored in the memory for later review and verification.

- The pictures from the U-tube should be printed directly on to the measurement report.
- Instrument should have built in pressure sensor for automatic determination of local air pressure for accurate air density adjustments.

Instrument should have facility to send notification via E-mail when a service interval, check interval or audit trail intervals is due.

- Instrument should be upgradable for density measurement at temperature up to 200 Deg. C and pressure up to 700bar.
- Instrument should be upgradable for Viscosity measurement.
- Up to 80 user functions and 200 methods should be possible.
- Instrument should have built-in soft-keys for operating instrument in harsh environment and handling beside graphical touch-screen.
- In built calculator with function like trigonometric, sine, cos, tan, insqrt.
- It should be supplied with suitable printer
- Communication Interface: USB drive enables data to be transferred to PC
- The system should be quoted with online UPS of 30 minute backup.
- System should have at least three-year standard warranty.
- Maintenance spares for fourth and fifth year after warranty to be quoted for each equipment.
- All the modules should have GLP and GMP features like early maintenance feedback for continuous tracking of instrument.
- On Site Commissioning and training of instrument for staff.
- User certificate from minimum three users of R & D organizations in India.
- The Vendor should quote separately for all necessary spares (which are not covered under warranty) and consumable items including calibration standards required for 3 years of trouble free operation.
- The Vendor should provide technical compliance table addressing all the technical specifications, point by point supported with printed catalogue/literature.

X.D. Digital Automatic Melting Point Apparatus:

- Positions for melting point capillaries 3 2. Magnification of lens 2.5 x
- Determination temperature range ambient + 30°C to 350°C
- Temperature resolution 0.1°C
- Accuracy +/- 0.5°C
- Repeatability +/- 0.2°C
- Temperature gradients (°C/min) 0.1, 0.2, 0.5, 1, 2, 5, 10, 20
- Electrical supply 100-240V (+/-10%), 50 Hz.

XI. Micropipette:

- A. The volume of the pipettes should be clearly shown through the hand grip window.
- B. The digits should be completely visible in the display in the display window.
- C. Pipettor should have a tip ejector to help eliminate the safety hazards associated with contamination.
- D. The tip cones of pipettor should allow the use of a removable filter as option to prevent liquid and liquid vapour from entering the pipettor. The filter should not affect the calibration of pipettor.
- E. Pipettor should have thumb button for aspiration and dispensing of the liquid.
- F. During aspiration of a liquid, the operating thumb button should be depressed to the first stop and while dispensing the liquid the thumb button should be first depressed to first stop and then after a short delay continue to be depressed to second stop so as to ensure accurate delivery of the liquid.
- G. Pipettor's calibration should be factory checked and certified.
- H. A complete repair and calibration service should be provided by the manufacturers as and when required.
- I. Pipettes must be auto clavable.
- J. ISO/CE/USFDA Certified.
- K. Fixed volume Micropipette- 10 μ l, 20 μ l, 500 μ l and 1000 μ l
Variable volume Micropipette- I. 5 - 50 μ l II. 20 – 200 μ l III. 50 – 500 μ l IV. 100 – 1000 μ l.

XII. Advanced UV Cabinet with long and short UV Light:

- should incorporate 2 kinds of UV Light sources for different requirements
- should have software UV light Wavelength : 254nm
- should have Long wave UV light Wavelength :365nm
- Should have Fluorescent light.
- should have safe for the user
- should have Glass filter for eye protection of reflected UV light
- should be easy to open window for quick insertion of TLC plates.
- Should be convenient & user friendly design easy to maintain
- Should be simple and easy to use
- Should have voltage : AC 220V \pm 10V ; 50Hz
- Should have external size: 325 x300x290 mm approx

XIII. Gel electrophoresis systems (Both Horizontal and Vertical systems with Power Pack):

➤ A. Vertical gel electrophoresis

- Should run one to four precast or hand cast mini gels in less than an hour.
- Dimension of gel should be of approximate size 7.3 x 8.3 cm.
- Should have thermoplastic casting gaskets to form a tight seal with the glass plates to ensure leak-free casting.

- Should provide casting frames with simple cam closure to provide precision alignment on any flat surface.
- Should have side-by-side casting stand which allows access to both gels simultaneously, and a spring-loaded lever creates a tight seal against the thermoplastic rubber gasket.
- The tank should hold a buffer volume of approximately 700-1000 ml.
- The approximate dimension of the tank should be 12x16x18cm.
- The short plate and spacer plates size should be approximately 10.1 x 7.3 cm and 10.1 x 8.2 cm respectively.
- **B. Horizontal gel electrophoresis**
- Should have a buffer tank, a safety lid with cables, and a leveling bubble.
- Should be provided with removable electrodes for ease of cleaning.
- Should have arrow on the side of the base indicates the direction of the run and ensures proper orientation of the gel.
- Should have colour-coded, labelled electrodes and labelled base.
- Should be provided with tabs on the base to permit easy removal of the lid.
- Should come with reverse-compatible design Clear plastic construction for easy sample visualization.
- Should be provided with UV-transparent gel trays with fluorescent ruler.
- Should be provided with gel-casting gates to cast gels right in the cell.
- Should be provided with combs to fit every need.
- Dimension of the tanks should be approximately 9.2x25.5x5.6 cm (WxLxH) and provided with two gel trays of approximate dimensions as 7x7 cm and 7x10cm and should be able to run 8-30 samples in a single run and provided with both fixed and preparative 8 well and 15 well combs and 18x40.5x9.4 cm (WxLxH) and provided with four gel trays of approximate dimensions as 15x10, 15x15, 15x20 and 15x25cm and should be able to run 30-120 samples in a single run and provided with both fixed and preparative 15 well and 20 well combs.
- Should be supplied with micropipettes, variable range 2-20µl, 20-200 µl and 100-1000 µl as essential accessories.

➤ **C. Power Pack**

- Should have a programmable output range of 10-300V, adjustable in 1V steps, 4-400mA and adjustable in 1mA steps with a maximum of 75 Watts.
- Should have four pair recessed output terminals in parallel.
- Should come with a timer ranging from 1min -99 hr 59min.
- Should come with pause/resume function.
- Should come with a output which could be constant voltage or constant current with automatic cross-over.
- Should come with a 3 digit LED display.
- Should be provided with a EN-61010,CE regulatory compliance.
- Should include safety features such as no load detection, sudden load change detection, overload/short circuit detection and over voltage protection.
- Should be provided with fuse on both hot and neutral for input protection.
- Should be able to operate at temperatures from 0-40 C and 0-90% humidity.

- Should be a space safer design with approximately 21x24.5x6.5 cm (WxLxH).

Should be able to take an input power range of 90-120 Or 198-264 VAC, 50/60Hz, auto switching.