



**NATIONAL INSTITUTE OF TECHNOLOGY
RAIPUR – 492 010, CHHATTISGARH**

**Advertised (Open) Tender Enquiry for Purchase of Lab Equipments for
Chemical Department**

Department: Chemical Department

Enquiry No: NITRR/Central Store/CH/OT/2016/2222

Date: 30/11/2016

Important Dates

To

Event	Date	Time
Last Date of submission of quotation	28/12/2016	Up to 03:00
Technical bid Opening date	28/12/2016	At 03:30
Price (financial) bid Opening	To be informed to technically successful bidder by mail and phone.	

Dear Sir,

We intend to purchase the commodities specified in this document and invite quotations in accordance with the terms and conditions detailed in the bid document. If you are interested, kindly send your offer with prices and complete terms within the time mentioned above.

Please send your quotation to:

REGISTRAR
NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR
G. E. ROAD, RAIPUR – 492 010, CHHATTISGARH

Yours sincerely,

Registrar

National Institute of Technology,
Raipur

Enclosed:

- (1) Bid Document - Instruction to bidder - containing detail terms and conditions.
- (2) List of Equipment's/machines/commodity etc.- Annexure 1
- (3) Technical Specification – Annexure 2
- (4) Technical Compliance Format- Annexure 3
- (5) Price Bid Format in INR – Annexure 4
- (6) Price Bid Format in of imported items in currency other than INR -Annexure 5
- (7) Deviation statement form - Annexure 6
- (8) Bidder information & check list- Annexure 7

BID DOCUMENT**INSTRUCTION TO BIDDER**

1. Please go through the enclosed "bid document" carefully for other bidding instructions.
2. **IMPORTANT NOTE:** Being a Two-Part Tender (techno-commercial and price bid), fax quotations will not be accepted. Please ensure your offers are received on or before tender due date and time. Bidder/ Tenderer are requested to download the tender documents from our website (www.nitr.ac.in) and please submit the Demand Draft of Rs. 1000/- towards Tender fee not refundable (in favor of Director NIT Raipur, Demand Draft should not be dated prior to the date of advertisement. Separate request letter and separate Demand Draft shall be sent for each tender document.) in a separate cover along with a covering letter duly marked on the cover "Tender fee in respect of Tender No". please note carefully that;
 - **Quotations received without tender fee will not be considered.**
 - No request for extension of the due tender date will be considered.
 - In the event any date indicated above is declared as holiday, the next working day at Institute shall be considered as the due date for receiving & opening of tenders.
 - The bids shall be opened on date and time as mentioned above. The bidders may send their authorized representatives to attend the bid opening, if they so desire.
 - Bids received after the deadline of receipt indicated above, shall not be taken in to consideration.
3. The bid should remain valid for a period of **180 days** from the date of opening. In case your offer has a different validity period that should be clearly mentioned in the quotation. Validity period may also be extended without change in bid prices ,if required on mutually agreed basis only.
4. The bids may be drop in the Tender Box kept in the office of Registrar, NIT Raipur in normal working day that is Monday to Friday except holidays (from 11 AM to 5 PM) of the Institute. Please do not hand over the quotation to any person by hand.
Speed post/Registered Post and Other Courier Services is not acceptable.
5. **Clarification of bidding documents:** If a prospective bidder requires any clarification in regard to the bidding documents, they may mail to asstreg.str@nitr.ac.in at least 15 days before the deadline for receipt of bids.

6. Amendment of Bidding Documents

- o Corrigendum, if issued any for the tender, shall form part of the Tender Document. Corrigendum will be posted on NIT RAIPUR website (www.nitr.ac.in). Bidders/Tenderers are requested to visit NIT RAIPUR website regularly and note the corrigendum / amendments to the tender without fail and submit the offer accordingly. NIT RAIPUR will not be responsible for ignorance of corrigendum.
- o At any time prior to the deadline for submission of bids, the Institute may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder/Tenderer, modify the bidding documents by amendment. The same would also be hosted on the website of the Institute and all prospective bidders/tenderer are expected to surf the website before submitting their bids to take cognizance of the amendments. Bidder/Tenderer who has submitted bids before publishing the amendment may revise their bid incorporating the amendments before the last date of tender.
- o In order to allow prospective Bidder/Tenderer's reasonable time in which to take the amendment into account in preparing their bids, the Institute, at its discretion, may extend the deadline for the submission of bids and host the changes on the website of the Institute.

- 7. **Excise Duty/Custom duty:** The NIT Raipur have Excise Duty/Custom duty exemption certificate.
- 8. **VAT/CST:** The Institute is not authorized to give C or D form. CST or VAT should be charged according to applicable rates.
- 9. **Entry Tax:** The State of Chhattisgarh may charges entry tax on all goods entering the State. Please include it in your quotation as a separate item. Entry Tax will be reimbursed on production of proof of payment.

10. Bid Security (BS)/(Earnest Money/ EMD)

- I. The Bidder/Tenderer shall furnish, as part of its bid, a bid security (BS) of **3 % of gross bid value** has to be submitted as Bid Security (Earnest money Deposit/ EMD).
- II. In the case of foreign bidders/tenderers, the BS shall be submitted either by the principal or by the Indian agent and in the case of indigenous bidders/tenderers; the BS shall be submitted by the manufacturer or their specifically authorized dealer/Bidder/Tenderer.
- III. The bid security shall be in Indian Rupees. The bid security shall be in one of the following forms at the Bidder/Tenderers' option:
 - (a) A Banker's cheque or demand draft in favour of the Director, NIT Raipur.
 - (b) FDR in favour of the Director, NIT Raipur
- IV. The bid security should be submitted in its original form. Copies shall not be

accepted.

- V. *Any bid without EMD or bid not secured in accordance with above will be rejected by the Institute as non-responsive.*
- VI. The bid security of unsuccessful Bidder/Tenderer will be discharged /returned as promptly as possible but not later than 30 days after the expiration of the period of bid validity or placement of order whichever is later.
- VII. The successful Bidder/Tenderer's bid security will be discharged upon the Bidder/Tenderer furnishing the performance security.
- VIII. The firms registered with DGS&D & NSIC, if any, are exempted from payment of BS provided such registration includes the item they are offering which are manufactured by them and not for selling products manufactured by other companies.**
- IX. The bid security may be forfeited:**
- (a) If a Bidder/Tenderer withdraws or amends or impairs or derogates its bid during the period of bid validity specified by the Bidder/Tenderer on the Bid Form; or

11. Sealing and Marking of Bids:

In a two bid system All Bidders/Tenderers are requested to follow carefully the following instructions before preparing their offer.

Part I: Technical & Commercial Bid

Part - (a) Technical

- i. This part should contain detailed specifications of the items quoted by you along with technical literature and leaflets.
- ii. A compliance statement showing the compliance of the item quoted by you with that of item tendered by us should be prepared and enclosed to this.
- iii. Any other information called for in the tender related technical and commercial specifications can also come in this part.
- iv. Prices should NOT be indicated in this cover.

Part - (b) Commercial terms: (WITHOUT PRICE)

- i. The commercial terms applicable for the items quoted by you should be indicated in this part.
- ii. If any compliance statement is called for the commercial terms/contractual terms and conditions, the same is to be attached in this part.
- iii. ***Prices should NOT be indicated in this part. However a copy of the price bid (without prices) must be enclosed in this part to enable to understand whether all the items required to be quoted by you have been quoted in the price bid.***
- iv. The Commercial terms such as delivery terms, delivery period, payment terms, Warranty, validity of the offer, installation & commissioning, duties and taxes etc., shall come into this.
- v. The required EMD should be enclosed.
- vi. The Tenderer/ bidder need to submit the following certificates along with

the Tender Documents to confirm their eligibility in this part :

- Proof of establishment of Firms/shop/business/ manufacturing unit etc. and Dealership certificate from the principals etc.
- Proof of registration with any other central government organization (if any)
- Photocopies of purchase orders received from any central govt. organization to the firm (if any).
- The Sales Tax/Commercial Tax/Service tax certificate should be enclosed
- The bidder should enclosed proof of turnover by way of Audited Balance Sheet/Auditor's certificate, if required.
- The bidder should Photocopy of PAN card issued un the name of the bidder's firm.

Note:

- Technical Specifications and terms & conditions as above should be very clearly reflected item-wise with reference to the items called for in the tender.
- Please note that the PRICE SHOULD NOT BE indicated in this part.
- Technical and Commercial part as described above shall be prepared and put it in a sealed cover.

Part II: Price Bid

The prices applicable for the items, item-wise in response to the tender shall come into this part in the prescribed format only. ***Bid will be rejected if rates are not quoted in the prescribed format.***

- i. Tenderer shall indicate very clearly item-wise prices with reference to their technical offer.
- ii. Price Bid prepared as above shall be enveloped and marked as follows:

The Technical & Commercial envelope (Part I) and Price cover (Part II) prepared as above along with 'Tender fee' which should be inserted in another envelope and marked as tender fee:

All envelop should be addressed to Registrar NIT RAIPUR and top of all envelop should be super scribed with (Tender No/ Department and due date of opening.). Part I: TECHNICAL BID with EMD & COMMERCIAL BID, Part II: PRICE BID should also be mentioned on respective envelop.

12. The bidders should quote their offer /rates in clear terms without ambiguity.
13. The rates should be quoted both in figures and words and legibly written without any over-writings. In case of any correction, the same must be attested by the bidder with full signature. However, no over-writing is permissible. Manufacturer's price-list, where applicable, should be submitted along with the bid.
14. In case of any discrepancy between the rates in figures and that in words, the rate in words will be accepted as correct.

15. Each bidder shall submit only one bid. A bidder, who submits more than one bid, shall be disqualified and considered non-responsive.

16. The bidder has to sign in full at all pages of the bidding document.

17. Bid Prices

- (i) The Bidder/Tenderer shall indicate **unit prices in the prescribed format only**.
- (ii) Prices indicated on the price-schedule form shall be entered separately in the following manner:
 - (a) **For Goods being offered from India/ abroad in INR**
 - i. The price of the goods quoted should be FOR NIT RAIPUR inclusive of all taxes(Excise duty, VAT/ST, etc), charges for inland transportation, insurance and other local services required for delivering the goods at the desired destination as specified in the price schedule form, installation, commissioning, training charges etc , if any. **(Annexure V)**
 - (b) **For Goods being offered from abroad in currency other than INR**
 - i. The price of the goods, quoted on FCA (named place delivery abroad) or FOB (named port of shipment), as specified in the price schedule form. The price should be FOR NIT RAIPUR inclusive of all taxes, charges for insurance and transportation of the goods, agency commission, installation, commissioning, training charges etc if any. **(Annexure VI]**
 - ii. The terms FOB, FCA, CIF, CIP etc. shall be governed by the rules prescribed in the current edition of the Incoterms published by the International Chambers of Commerce, Paris.
 - iii. Prices quoted by the Bidder/Tenderer shall be fixed during the Bidder/Tenderer's performance of the Contract and not subject to variation on any account.

18. Conditional discount, if any, offered by the bidder shall not be considered at the time of evaluation.

19. Responsiveness of Bids

- (i) Prior to the detailed evaluation, the Institute will determine the substantial responsiveness of each bid to the bidding documents. For purposes of this clause, a substantive responsive bid is one, which conforms to all terms and condition of the bidding documents without material deviations, reservations or omissions. A material deviation, reservation or omission is one that:
 - (a) affects in any substantial way the scope, quality, or performance of the Goods and Related Services specified in the Contract; or

- (b) limits in any substantial way, inconsistent with the Bidding Documents, the Institute's rights or the Bidder/Tenderer's obligations under the Contract; or
 - (c) if rectified, would unfairly affect the competitive position of other bidders/tenderers presenting substantially responsive bids.
- (ii) The Institutes' determination of a bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence.
- (i) If a bid is not substantially responsive, it will be rejected by the Institute and will not subsequently be made responsive by the Bidder/Tenderer by correction of the material deviation, reservation or omission.

20. Evaluation and comparison of bids

- (i) The Purchaser shall evaluate each bid that has been determined, up to this stage of the evaluation, to be substantially responsive.
- (ii) To evaluate a Bid, the Purchaser shall only use all the factors, methodologies and criteria defined below. No other criteria or methodology shall be permitted.
- (iii) The bids shall be evaluated on the following basis which shall be arrived as under:

For goods being offered from India.

Goods price will be calculated FOR NIT Raipur. Lowest bid (L1) will be deciding by the price of the goods quoted should be FOR NIT RAIPUR inclusive of all taxes (Excise duty, VAT/ST, etc), charges for inland transportation, installation, commissioning, training charges, insurance and other local services required if any for delivering the goods at the desired destination as specified in the price schedule Price Bid format

For goods being offered from Abroad

- (i) In case of goods being offered from abroad, Lowest bid (L1) will be decided based on total cost at NIT Raipur, that include basic price of goods, freight and Insurance up to Indian Airport/port (CIF/CIP value up to Indian airport/port), custom duty and other taxes as applicable etc., Inland transportation and insurance up to NIT Raipur, packaging, forwarding, agent commission for custom clearance and installation, commissioning and training charges if any.
- (ii) **Conversion to Single Currency:** To facilitate evaluation and comparison, Bids quoted in foreign currency will be converted into Indian Rupees at the selling exchange rate established by Reserve Bank of India on its website, on the date of price bid opening.
- (iii) In case charges for packing, forwarding, transportation inside India, custom clearance charges or other incidental charges are quoted extra in addition to the quoted rates, the amount thereof must be specified. Packing, forwarding, freight, entry tax etc., when quotes separately are

reimbursable at actuals after production of original receipts/invoices. If external agencies are employed, their receipts must be enclosed with the invoice.

- (iv) *If vender wishes, he/they may alternatively, quote price of imported items in Indian rupees. In this case item may be treated as offered from India. Payment will be released accordingly.*

Note: *Where there is no mention of packing, forwarding, freight, transportation, insurance charges, taxes etc. such offers shall be REJECTED as incomplete.*

21. Clearance and delivery

On arrival of shipment/consignment, the supplier is required to arrange custom clearance and transportation of the consignment up to NIT RAIPUR premises. The Tenderer/ bidder will do all types of clearance work and **formalities to deliver/provide the equipment at the site of installation. The expenses incurred will be reimbursed on actual basis not exceeding the quoted amount.** Institute will provide all types of documentary support including Customs Duty exemption certificate. The custom duty, demurrage (in case of delay in release of custom duty to the custom department by NIT Raipur) and government taxes/levies (if any) will be paid extra by the buyer after as per term of payment. Please note that the State of Chhattisgarh may charge entry tax on all goods entering the State. This may be included in your quotation as a separate item. Entry Tax will be reimbursed on production of proof of payment. **Principals will themselves have to procure any requisite permission from the Govt. of country of origin of equipment.**

22. Agency Commission/other charges

Agency commission, if any, should be clearly mentioned by the Bidder/tenderer and will be paid in Indian Currency. Please note that actual reimbursement will not exceed the quoted amount in any circumstances.

23. The Institute reserves right to conduct pre-dispatch inspection of goods and the vender must facilitate it at NIT Raipur's cost for pre-dispatch inspection.

24. **Warranty Period:** The warranty period should be minimum **1 year** with spares or as mentioned in technical specifications (whichever is higher) from the date of installation with satisfactory performance as per specifications. For standard items which carry warranty of more than one year, standard warranty shall be applicable.

25. **Terms of Payment:** The method and conditions of payment to be made to the Supplier under this Contract shall be as follows:

(i) **Payment for Goods and Services offered from India:**

Payment for Goods and Services supplied from within India shall normally be made in Indian Rupees, as follows: 100% payment will be made in account

payee cheque or Draft/ online Transfer using RTGS to the Supplier normally within thirty (30) days after the successful installation and commissioning of equipment's subject to submission of performance security, if any.

(ii) Payment for Goods and services offered from abroad:

Payment of foreign currency portion shall normally be made in the currency of contract in the following manner:

a) **On Shipment:** Ninety (90) percent of the Contract Price of the Goods shipped shall be paid through irrevocable letter of credit (L/C) opened in favor of the Supplier in a bank in its country, upon submission of following documents specified as below:

Within 24 hours of dispatch, the supplier shall notify the purchaser the complete details of dispatch and also supply following documents by Registered Post/ courier and copies thereof by FAX.

- i. Two copies of supplier's Invoice giving full details of the goods including quantity, value, etc.;
- ii. Packing list;
- iii. Certificate of country of origin;
- iv. Manufacturer's guarantee and Inspection certificate/test report;
- v. Inspection certificate issued by the Purchaser's Inspector, if any.
- vi. Insurance Certificate, if required under the contract;
- vii. Name of the Vessel/Carrier;
- viii. Bill of Lading/Airway Bill;
- ix. Port of Loading;
Date of Shipment;
- x. Port of Discharge & expected date of arrival of goods and
- xi. H S code of classification of goods.
- xii. Any other document(s) as and when required in terms of the contract.

Note:

1. The nomenclature used for the item description in the invoices(s), packing list(s) and the delivery note(s) etc. should be identical to that used in the contract. The dispatch particulars including the name of the transporter should also be mentioned in the Invoice(s)
2. The above documents should be received by the Purchaser before arrival of the Goods and, if not received, the Supplier will be responsible for any consequent expenses.

b) **On Acceptance:** Ten (10) percent of the Contract Price of Goods received shall be paid within thirty (30) days of receipt of the Goods and successful installation & commissioning upon submission of claim supported by the acceptance certificate issued by the Purchaser along with the Performance security, if any.

- The L/C will be confirmed at the suppliers cost, if requested specifically by the supplier. If L/C is requested to be extended/ reinstated for reasons not attributable to the purchaser, the charges thereof would be to the suppliers' account. All bank charges in India to the account of the opener and all bank charges outside India to the account of the beneficiary. Payment of local currency portion shall be made in Indian

Rupees within thirty (30) days of presentation of claim supported by a certificate from the Purchaser declaring that the Goods have been delivered and that all other contracted Services have been performed. The L/C for 100% value of the contract shall be established after deducting the agency commission payable, if any to the Indian agent from the CIF/CIP value.

26. **Performance Security (PS):** The successful bidder has to furnish "**Performance Security of 10% of the ordered value in Indian Rupee**", in the form of Account Payee Demand Draft, / Fixes deposit and/or unconditional Bank guarantee encashable on demand from the Director, NIT, Raipur, from a nationalized Bank with validity period of sixty (60) days beyond the date of completion of all contractual obligations of supplier including guarantee/ warranty obligations. The Performance Security is to be furnished in favor of the Director, National Institute of Technology, Raipur, within ten days of intimation, failing which his bid security will be forfeited.

The performance security will be discharged by the Purchaser and returned to the Supplier not later than 60 days following the date of completion of the Supplier's performance obligations, including any warranty obligations.

27. **Delivery period:** Delivery should be made within **150 days** from the date of order of placement of goods offered from India or opening of the LC in case of goods offered from abroad.
28. **The Insurance** shall be for an amount equal to 110% of the CIF or CIP value of the contract from within "warehouse to warehouse/installation site (NIT Raipur)" on "all risk basis" including strikes, riots and Chemistry commotion.
29. **Delayed delivery:** Maximum one month extension in delivery period may be given on the receipt of written request of the successful vendor; however liquidated damage at the rate of 5% per month or part thereof will be recovered from the firm of the value of undelivered goods. Request for extension in delivery period should be made before the last date of supply as mentioned in Purchase Order.
- Non delivery beyond extended period:** If the Tenderer fails to execute the order within the delivery period as mentioned above the order will be cancelled and EMD will be forfeited by the institute.
30. **Installation time:** The Company must install the equipment within a period of two months from the date of delivery of the equipment at NIT Raipur failing which order will be cancelled and EMD will be forfeited. However, necessary requirement for installation of goods/equipment will be provided by institute.
31. **Copy Right:** The copyright in all drawings, documents, and other materials containing data and information furnished to the Purchaser by the Supplier herein shall remain vested in the Supplier, or, if they are furnished to the Purchaser directly or through the Supplier by any third party, including suppliers of materials, the copyright in such materials shall remain vested in such third party.

32. Insurance:

- a. Should the purchaser elect to buy on CIF/CIP basis, the Goods supplied under the Contract shall be fully insured in Indian Rupees against any loss or damage incidental to manufacture or acquisition, transportation, storage and delivery.
- b. Where delivery of the goods is required by the purchaser on CIF or CIP basis the supplier shall arrange and pay for Cargo Insurance, naming the purchaser as beneficiary, initiate & pursue claims till settlement, on the event of any loss or damage.
- c. With a view to ensure that claims on insurance companies, if any, are lodged in time, the bidders and /or the Indian agent, if any, shall be responsible for follow up with their principals for ascertaining the dispatch details and informing the same to the Purchaser and he shall also liaise with the Purchaser to ascertain the arrival of the consignment after customs clearance so that immediately thereafter in his presence the consignment could be opened and the insurance claim be lodged, if required, without any loss of time. Any delay on the part of the bidder/Indian Agent would be viewed seriously and he shall be directly responsible for any loss sustained by the purchaser on the event of the delay.

33. Right to use Defective Goods: If after delivery, acceptance, installation and within the guarantee and warranty period, the operation or use of the goods proves to be unsatisfactory, the Purchaser shall have the right to continue to operate or use such goods until rectifications of defects, errors or omissions by repair or by partial or complete replacement is made without interfering with the Purchaser's operation.

34. Site preparation and installation: The Purchaser is solely responsible for the construction of the equipment sites in compliance with the technical and environmental specifications defined by the Supplier. The Purchase will designate the installation sites before the scheduled installation date to allow the Supplier to perform a site inspection to verify the appropriateness of the sites before the installation of the Equipment, if required. The supplier shall inform the purchaser about the site preparation, if any, needed for installation, of the goods at the purchaser's site immediately after notification of Award / Purchase Order / Agreement.

37. Force Majeure:

- (i) Notwithstanding the Clauses relating to extension of time, penalty and Termination for Default the Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

- (ii) For purposes of this Clause, "Force Majeure" means an event or situation beyond the control of the Supplier that is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of the Supplier. Such events may include, but not be limited to, acts of the Purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.
- (iii) If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof within 21 days of its occurrence. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
- (iv) If the performance in whole or in part or any obligations under the contract is prevented or delayed by any reason of force majeure for a period exceeding 60 days, either party may at its option terminate the contract without any financial repercussions on either side.

38. Defective Equipment:

- (i) If any of the equipment supplied by the Tenderer is found to be substandard, refurbished, unmerchantable or not in accordance with the description /specification or otherwise faulty, the institute will have the right to reject the equipment or its part. The prices of such equipment shall be refunded by the Tenderer with 18% interest if such payments for such equipment have already been made to him.
- (ii) All damaged or unapproved goods shall be returned at suppliers cost and risk and the incidental expenses incurred thereon shall be recovered from the supplier. Defective part in equipment, if found before installation and/or during warranty period, shall be replaced within 45 days on receipt of the intimation from this office at the cost and risk of supplier including all other charges.

39. Any disputes arising out of this enquiry shall be dealt in the Raipur jurisdiction.

40. Bidder has to sign all the pages of this tender and enclose it with the bid.

Registrar
NIT-Raipur

List of Annexure

1. List of Equipments – Annexure 1
2. Technical Specification of equipments/goods – Annexure 2
3. Technical Compliance of the bidder with reference to the 'Specification of Equipments :Annexure 3
4. Price Schedule for goods being offered from India - Annexure 4
5. Price Schedule for goods being offered from Abroad. - Annexure 5
6. Deviation statement form - Annexure 6
7. Bidder information & check list – Annexure 7

Annexure 1**List Of Equipments To Be Procured Under Tender**

Sr. No.	Name of Equipments	Quantity
1.	Heat Exchanger Unit	01
2.	Nephelometric Turbidity Meter	01
3.	Electrodes for Ion Meter	01
4.	Sound/Noise Level Meter	01
5.	Hot Air Oven	01
6.	Lab Centrifuge	01
7.	COD Reactor	01
8.	Digital Bomb Colorimeter (With Safety Device)	01
9.	Interacting & Non-Interacting System	01
10.	Millipore Water Catridge	01
11.	Rotary Evaporator	01
12.	Tube Furnace	01

Annexure 2

Technical Specification of equipments/goods

1. **Heat exchanger unit:**

Qty: 1 No.

Specifications:

The complete experimental setup should consists of main supply and control unit along with the following units

- (i) Tubular heat exchanger
- (ii) Plate Heat exchanger
- (iii) Shell & tube Heat exchanger
- (iv) Jacketed vessel with stirrer and coil
- (v) Water chiller should maintain temperature between -10 °C to ambient temperature .
- (vi) Laboratory Trolley
- (vii) Suitable branded Desktops PC with i5 or higher processor.

Water will be used as the medium. The heat exchanger as mentioned above will be (one at a time) investigated connect to the supply unit. The hot water flows through the heat exchanger. Unit should be equipped to investigate the parallel and counter flow heat exchange.

The main unit will provide the required cold and hot water circuits. The unit should be equipped with a stable heated tank and pump for the hot water circuit, connections for the cold water circuit and a switch cabinet with displays and controls. A temperature controller controls the hot water temperature. The flow rate in the hot water and cold water circuit is adjusted using valves. The cold water circuit can be fed from the laboratory mains or water chiller.

Suitable software should be provided for data acquisition and educational software with explanatory texts and illustrations to aids the understanding of the theoretical principles. Suitable sensors should record the temperatures and flow rates. The measured values can be read from digital displays and can be transmitted simultaneously via USB directly to a PC where they can be analyzed using the software.

Unit shall be able determine the following

- To determine the mean heat transfer coefficient.
- Compare all the above mentioned heat exchanger type
- Plot the temperature curve for parallel and counter flow

Flow rate of hot water and cold water measuring range up to 250 liter per hour.

Water connections should be with quick release coupling.

Hot water circuit should consist of suitable tank, heater, temperature controller, pump and protection against lack of water.

Digital display of 6 temperature and 2 flow rate sensors. Additional sensors may be provided as per requirement

Hot water temperature measuring range ambient to 100°C.

Pump

- power consumption: 120W +_ 10%
- max. flow rate: 600L/h +_ 5 %
- max. head: 30m (min)

Heater

- power output: 3kW (min)
- thermostat: 0...70°C

Hot water tank: approx. 10L (SS)

Measuring ranges

- temperature: 6x 0...100°C
- flow rate: 2x 20...250L/h
- Approximate weight of the supply unit: 65 +_ 10 Kg
- Approximate LxWxH : 1000x670x550 +_ 10%

The data acquisition software should be able the following for all the four type of heat exchanger.

Temperature curves along the heat exchanger.

- Selectable parallel flow or counter flow operation.
- Calculation of heat flows
- Calculation of mean heat transfer coefficient
- Calculation of efficiency.

Convenient connection to any PC or laptop via USB

Specification for Tubular heat exchanger:

Minimum Heat transfer area: 250cm². Inner tube should be of stainless steel and outer tube should be transparent (PMMA). Two additional temperature sensors on the tubular heat exchanger should be provided after half of the transfer section for measuring and recording the temperature.

Inner tube, stainless steel

- outer diameter: 12mm , wall thickness: 1mm

Outer tube, transparent (PMMA)

- outer diameter: 20mm , wall thickness: 2mm

Temperature Measuring range: 0...100°C

Approximate weight : 4 +_ 1 Kg, Approximate Dimension LxWxH : 480x230x150+_ 10%

Specification for Plate Heat Exchanger:

Minimum Heat transfer area: 480cm². Minimum number of plates (SS) : 6 soldered plate (SS)

Approximate weight : 3+_ 1 Kg, Approximate Dimension LxWxH : 400x230x85+_ 10%

Specification for Shell & Tube Heat Exchanger:

The shell and tube heat exchanger should consist of minimum seven tubes, surrounded by a transparent outer shell. The hot water should flows through the tube space and the cold water through the space in the shell. Materiel of construction of Tube bundle should be stainless steel.. Cross parallel flow and cross counter flow operation should be possible. Shell should be transparent (PMMA) and tube bundle should be visible.

Minimum number of tubes and baffles should be 7 and 4 respectively.

Minimum Heat transfer area: 200cm²., tube bundle (SS), OD of tube 6 ± 0.5 mm, wall thickness 1 mm

Shell OD Appx 50 ± 1 mm, wall thickness 3 mm

Approximate weight : 3 ± 1 Kg, Approximate Dimension LxWxH : 400x230x110± 10%

Specification for Jacketed vessel with stirrer and coil:

The jacketed heat exchanger should consist of a tank surrounded by a jacket. The tank should be fitted with a coiled tube. In heating mode with jacket the hot water flows through the jacket and transfers a part of the thermal energy to the cold water in the tank. In heating mode with coiled tube the hot water flows through the coil and heats the cold water in the tank. A stirring machine can be used in all modes. Valves on the supply unit are used to adjust the flow rate of hot water. The temperature sensors for measuring the inlet and outlet temperature should be located at the supply connections on main unit. An additional temperature sensor should measure the temperature in the tank. During experiments, time curves should be plotted and displayed graphically. Additionally, the measured values should be recorded and processed using data acquisition software.

- Minimum Heat transfer area for jacket (stainless steel): approx. 500cm² and coil (stainless steel): approx. 500cm².

Tank

nominal value: approx. 1200mL

Stirring machine

- speed: 0 to 330 rpm ± 5%
- Temperature Measuring range: 0 to 100°C
- Approximate weight : 8 ± 1 Kg, Approximate Dimension LxWxH : 400x230x400± 10%

Variable stirrer speed through main unit.

Specification for water chiller unit:

The unit should be equipped with an integral refrigeration system, water tank and circulating pump. In the water tank. Electronic controller should keep the water temperature constant. Water chiller should maintain temperature between -10 °C to ambient temperature with suitable water tank (SS) and complete accessories. Refrigerant should be eco friendly (R134a or equivalent)

Centrifugal pump :Max. flow rate: 600L/h(min), Max. head: 30m(min)

power consumption: 120W ± 10%

Refrigeration system

- refrigerating capacity: 833W (min) at -10/32°C
- power consumption: 367W ± 10%

Tank: 15L (min)

Approximate weight : 76 ± 7 Kg, Approximate Dimension LxWxH : 1000x630x530± 10%

Laboratory trolley for experimental unit:

The laboratory trolley enables to easily store experimental units and, when needed, moving it comfortably to another place. Accessories like specimens, tools or manuals should be stored in three

drawers. Three retractable sockets should be used for the current supply of the experimental unit and of an external data acquisition, for example.

Note:

1. 2 Set of manual for each unit should be supplied.
2. Previous purchase order and latest performance report must be supplied with complete detail of end user and specification of equipment. At least three year of satisfactorily performance certificate for the units should be provided with the bid/ offer from any end user from central educational / research institute or other reputed organization, failing which bid will not be considered.
3. Proper teaching manual of equipment with reading must be enclosed with the bid.
4. Information brochures with photograph / Product Catalogue, must be accompanied with the quotation clearly indicating the model quoted for.
5. Detailed Technical Information about the equipment must be on company's website.
6. The Bidder(s) should be ISO 9001.

2. **Equipment Name** **NEPHELOMETRIC TURBIDITY METER**
Qty : 1 No

Specifications

Technical Details:

- **Principle**-Nephelometric non-ratio/ISO 7027 and DIN 27027 Compliant
- **Range:** 0 to 2000 NTU
- **Resolution:** 0.01 NTU (0 to 19.99 NTU); 0.1 NTU (20.0 to 99.9 NTU); 1 NTU (100 to 2000 NTU)
- **Accuracy :** 0.01 (0-19.99 NTU),0.1 (20-99.9 NTU),1.0 (100-1000NTU); +2% of reading (0 to 500 NTU) +3% of reading (501 to 1000 NTU)
- **Repeatability:** $\leq \pm 1$ % of reading.
- **Calibration:** up to 4 points.
- **Calibration Standards:** 0.02 NTU, 20.0 NTU, 100 NTU, 800 NTU.
- **Response Time:** < 6 secs for full step change.
- **Sample Volume:** 10 ml.
- **Light Source:** Infra-red emitting diode (850 nm wavelength).
- **Operating temperature range:** 0 to 50° C.
- **Power:** 4 x 1.5V 'AAA' alkaline batteries (>1200 readings)
- **Warranty:** Minimum 1 year

3. **Equipment Name:** **ELECTRODES FOR ION METER**
Specifications:

Technical Details:

Following Electrodes for EUTECH-ECPH210042S model ion meter

- Nitrate ion selective electrode with standards and strength adjuster
- Fluoride ion selective electrode with standards and strength adjuster
- Lead ion selective electrode with standards and strength adjuster
- **Warranty:** Minimum 1 year

Note: All 3 electrodes technical & Price bid should be quoted separately in tender. As per available budget 2 or 3 electrodes will be purchased.

- | | |
|--------------------------|---|
| 4. Equipment Name | SOUND/NOISE LEVEL METER |
| Specifications | Qty No.: 1 No. |
| | <u>Technical Details:</u> |
| | <ul style="list-style-type: none"> • Measuring Range : +32 to +130 dB • Accuracy : Class 2 ± 1.0 dB • Resolution : 0.1 dB • Maximum and minimum value memory • Warranty: Minimum 1 year |
| | |
| 5. Equipment Name | HOT AIR OVEN |
| Specifications | Qty : 1 No. |
| | <u>Technical Details:</u> |
| | <ul style="list-style-type: none"> • D x W x H: 60 x 60 x 60 cm (approx.) • Power rating Watt: Min. 2.5 KW • Min. No. of shelves: 3 • Material: Inside (SS) & Outside (Powder Coated Mild Steel) • Temp Range: 5 deg above ambient to 250 deg.C • Air Circulation Fan with motor inside for uniform temperature • Digital timer with temperature controller for 999 minutes. • Warranty: Minimum 1 Year |
| | |
| 6. Equipment Name | LAB CENTRIFUGE |
| Specifications | |
| | <u>Technical Details:</u> |
| | <ul style="list-style-type: none"> • Digital speed Indicator • Steeples speed regulator • 0-60 minutes digital countdown timer • Safety lid interlock to prevent cover opening during centrifugation • Max speed: Minimum 5250 rpm • Max RCF: 3600g • Max Capacity - 400ml • W*D*H-365*415*350 mm |
| | |
| 7. Equipment Name | COD REACTOR |
| Specifications | Qty: 1 No. |
| | <u>Technical Details:</u> |
| | <ul style="list-style-type: none"> • The digester will be used for potassium dichromate-sulphuric acid digestion of water/waste water samples • Type of heater: Aluminium Solid Block Heater should be provided for uniform heating • Max working Temperature: 200 deg. C • Temperature controller: Temperature controlled by microprocessor based PID Temp. Controller. • Control panel/display: Digital display • Capacity: 25 vials (dia 16 x 100 mm) • Warm-up Time: Around 10-15 minutes, depending on selected temperature |
| | |
| 8. Equipment Name | DIGITAL BOMB CALORIMETER (with safety device) |
| | Qty: 1 No |

Specifications**Technical Details:**

- Supplied with Bomb Calorimeter Vessel with Bomb Support, Water Jacket Combined Lid for Calorimeter Vessel and PUF Jacket, Stirrer, Connecting leads, connecting tube to connect bomb and pressure gauge.
- Connecting tube with fine adjustment valve to connect pressure gauge and oxygen cylinder pressure gauge on stand Spanner for oxygen tube connection, ignition wire (2 meters) Nichrome, Cotton Reel, stand for Unit, Pellets Press, and Digital Beckman Thermometer.
- Bomb Capacity of 300 ml approx. a provided with a high pressure Schroder valve. Tested as per the requirement of Institute of petroleum (IP 12/63T).

9. Equipment Name**INTERACTING AND NON-INTERACTING SYSTEM (COMBINED UNIT)****Specifications****Technical Details:**

- Process Tank : Material Stainless Steel, Circular, with level scale(3Nos.) capacity 2.5 to 3.5 litres.
- Supply Tank: Material Stainless Steel, Capacity 20 litres.
- Overhead Tank: Material Stainless Steel, Capacity 5 litres.
- Water Circulation: FHP Pump, Tullu/Standard Make.
- Piping: SS/PVC, size ¼”
- Flow Measurement: Rotameter.
- The whole unit is assembled rigidly on a base plate.
- Most of the parts are powder coated and rests are painted with auto paints.

10 Equipment Name**MERCK - MILLIPORE ELIX WATER PURIFICATION SYSTEM CARTRIDGE****Specifications****Technical Details:**

1. FPHP 5µ Cartridge - 3 Nos.
 2. 1 µ Cartridge – 1 No.
 3. Progard TS2 – 1 No.
- Installation of above cartridges is required.

11 Equipment Name**ROTARY EVAPORATOR****Specifications****Technical Details:**

- Bath Temp Range: ambient +5 Deg.C to 99 Deg.C
- 3 L pear shaped evaporating flask
- Diagonal model
- AC motor with assured speed regulation
- Digital Temperature Controller for Water Bath
- Drive Speed with assured speed control from 50 to 250 RPM
- Power supply 230V

12.	Equipment Name	TUBE FURNACE Qty: 1 No.
	Specifications:	Technical Details:
	Cabinet:	Outer body made out of thick mild steel sheet finished with powder coated paint, inner and outer walls filled by thick mill board and ceramic blanket to resists temperature loss. Furnace should hollow in center to insert and remove of quartz tube easily. The furnace may be vertical or horizontal.
	Furnace Tube:	2 No's of high purity Quartz Tube (Transparent) able to beer 1200 °C temperature having 10 mm (ID), 40 cm length and thickness 1-2 mm. Provision should make to feed liquid and gas in the silica tube through T joint. At after 25 cm from the inlet the tube should be tapped (4-6 mm ID), after that the diameter of tube will be 10 mm uniformly up to 15 cm. Provision should made that outlet of tube could be connected by bent (Borosil made glass) to laboratory glass condenser (Borosil made). Tube could be easy inserted and removed from the furnace.
	Thermocouple:	Suitable high quality thermocouple to measure temperature up to 1200 °C.
	Temperature Uniformity:	Within +/- 5°C centre of hot zone after 30 min soak at maximum working temperature.
	Heating Elements:	Silicon Carbide (SiC) solid rod, distributed along both side of the Quartz tube.
	Power rating:	Electric Power rating 230 V AC single phase 50 Hz operation.
	Temperature Controller:	Temperature controlled by Digital / Microprocessor Temperature Indicator Cum Controller with accuracy +/- 2 °C.
	Power control:	Thyristorised full automatic with current limit provision.
	Warranty:	Warranty of 2 years with 1 year AMC must be provided at no cost with the high temperature furnace (especially for tube and controller).
	After-sales Service:	The supplier should offer after-sales services such as regular instrument maintenance, troubleshooting and fixation, whenever required, without much delay.
	Spares:	An undertaking that the vendor will supply all the required spares (heating elements, thermocouple, tube, etc) and commit the same price for next 1 year (provided the equipment is purchased from you). These prices may be quoted under optional item. Any additional optional accessories (e.g. Quartz tube) should be mentioned separately along with their price (including taxes).
		Note: Price bid for Digital and Microprocessor may be given separately

Annexure 3

Technical Compliance of the bidder with reference to the
'Specification of Equipments'

Name and model no of offered goods/equipment:

Item	Technical specification from NIT Raipur	Features available in equipments Yes or No	Any deviation from Specification, if any	Corresponding part number /datasheet/page no in broacher in support of specification	Comment of Technical Committee , NIT Raipur

Signature of Bidder

Annexure-4

Price Schedule form: Price Schedule for Goods Being Offered from India/Abroad in INR
(Separate form to be used for each item offered)

Name of the Bidder/Tenderer:

Name & Model No of offered good:

Tender No.:

S. No.	Details	Price per Unit in INR
1	Ex-works, Ex-warehouse, Ex-show room off the shelf price (inclusive of all taxes already paid)	
2	VAT & other taxes like excise duty* payable, if contract is awarded	
3	Packing & forwarding up to station of dispatch, if any	
4	Charges for inland transportation, insurance to ultimate destination i.e. NIT, Raipur, if any	
5	Installation, Commissioning and training Charges, If any	
6.	Any other charges (Please specify)	
Total Price (Sum of S. No 1 to 5) FOR NIT RAIPUR		

**** NIT Raipur have custom/exsices exemption certificate.**

Total Bid price in Indian currency _____

In words: _____

Name _____

Business Address _____

Note:

(a) The cost of optional items shall be indicated separately.

Signature of Bidder

Annexure-5

Price Schedule Form: Price schedule for goods being offered from abroad in currency other than INR

(Separate form to be used for each item offered)

Name of the Bidder/Tenderer:

Name & Model No of offered good:

Tender No.:

S. No.		Price per unit in ()
1	Country of origin	
2	FOB (named port of shipment) Or FCA (named place of delivery)	
3	Freight and Insurance up to Indian Airport/port	
4	Total Price at Indian Airport /port (2+3)	
5	**Custom charges (please mentioned %)	
6	Custom clearance and other charges if any (with breakup)	
7	Inland Charges for Insurance & transportation to NIT Raipur	
8	Installation, commissioning and training Charges, if any	
9	If any other charges (Please Specify)	
	Total Price (FOR NIT Raipur) (Sum of S. No 1 to 9)	

**** NIT Raipur have custom/exsices exemption certificate.**

Total Bid price in foreign currency: -----words: _____

(a) Indian agents name & address _____

(b) The cost of optional items shall be indicated separately-----

Signature of Bidder

Annexure-6**DEVIATION STATEMENT FORM**

The following are the particulars of deviations from the requirements of the tender specifications:

CLAUSE	DEVIATION	REMARKS (INCLUDING JUSTIFICATION)

Signature of Bidder

Annexure-7 (Please put this annexure at the top of the tender document)**Bidder's information & Check list**

1. Name of the Firm:

2. Type of the firm: (Proprietorship, Pvt Ltd, Public Ltd, Partnership etc.)

3. Address of the firm:

4. Contact detail: Phone No.:

Mob No. :

Fax No.

E mail:

5. Name of the authorised signatory:

6. EMD detail : Instrument No.

Date :

Amount:

Issuing Bank name & branch detail:

Check List (Please enclose the copy of the following & tick as per applicability)

1. Proof of registration of the firm:

2. Authorisation certificate of dealership:

3. PAN card in Firm's name:

4. Sales tax certificate:

5. Commercial tax certificate:

6. Service tax certificate:

7. Proof of registration with any central govt . organisation :

8. Purchase orders issued by any central govt organisation.

Signature of Bidder