



Guru Gobind Singh Indraprastha University

Sector 16C, Dwarka, New Delhi -110078

Website: <http://ipu.ac.in>

Dated:01.12.2015

TENDER NO. 13/PUR/GGSIPU/2015-16

E-TENDER (NIT)

Registrar, Guru Gobind Singh Indraprastha University invites items rate tenders from reputed and eligible contractors/firms in two bid systems for the **Supply and Installation of Lab Equipments/Instruments** for USCT, Sector 16C, Dwarka, New Delhi-110078. Tender document can also be downloaded from Delhi Govt. e-procurement website i.e. www.govtprocurement.delhi.gov.in. The tender document can also be viewed on University website i.e. www.ipu.ac.in.

1.	Name & Scope of the work	Supply and Installation of Lab Equipments/Instruments for USCT at Guru Gobind Singh Indraprastha University, Sector 16 C, Dwarka, New Delhi – 110078
2.	Last date, time and venue for submission of EMD and Technical bids documents	15.01.2016 Upto 02.00 p.m. in the office of Dy. Registrar (Purchase), Ground Floor, Library Block, GGSIPU, Sector 16 C, Dwarka, New Delhi – 110078
3.	EMD	Item wise EMD mentioned in the Annexure-G of the tender document in favour of Registrar, GGSIP University payable at Delhi.
4.	Date and time for opening of Technical bid	15.01.2016 at 02.30 p.m.
5.	Financial Bid	After evaluation of technical bid/time notified thereafter on e-tender website www.govtprocurement.delhi.gov.in
6.	Cost of Works	Rs.210 Lacs (approximately)
7.	The bids shall be submitted in two stages viz.(i) <i>Technical bid</i> (ii) <i>Financial bid</i> . Detailed specifications of the item(s) to be supplied are mentioned at Section-III Annexure-G of the tender document. The Technical & Financial bid should also be uploaded on e-procurement website i.e. www.govtprocurement.delhi.gov.in	

(REGISTRAR)



GURU GOBIND SINGH
INDRAPRASTHA
UNIVERSITY

TENDER DOCUMENT

FOR

Supply & installation of Lab Equipments/Instruments for USCT

AT

Guru Gobind Singh Indraprastha University
[A state University under Govt. of NCT of Delhi]
Sector 16 C, Dwarka, New Delhi 110 078

Dy. Registrar (Purchase)
Room No. L 010, Ground Floor, Library Block,
GGSIPIU, Sector 16C, Dwarka, New Delhi 110078
Contact Nos.011 25302149-150
Email :purchaseipu@gmail.com.

NOTICE INVITING TENDER

TENDER NO. /PUR/GGSIPU/2014-15

Registrar, Guru Gobind Singh Indraprastha University (GGSIPU) invites item rated e-tender (in two bid system – Part I & II) from reputed and experienced contractors/suppliers for the following stores on Supply & installation basis:

1. **Particulars of Items:** Details of the items with specification is mentioned at annexure-G
2. **Quantity:** Quantity is mentioned at annexure-G
3. **Earnest Money Deposit (EMD) in the form of DD/FDR:** The details of the item wise EMD is mentioned at annexure-G.
4. **Completion period:** Supply within 90 days from the date of issue of award of the tender/issue of Letter of Credit, whichever is later and installation within 30 days' after the receipt of material at University.
5. **Availability of Tender Document:** Tender Documents with detail terms & conditions can be downloaded from Delhi govt. e-procurement website.
6. **Qualification of the Tenderer:** To qualify for award of the work, the intending tenderer must have in its name as a supplier/prime contractor experience of having successfully completed atleast three number of work order/purchase order of Lab Equipment last three years.
7. **Validity Period of Offer:** The rates offered in Part II (Financial bid) should be valid for one hundred and eighty (180) days from the date of opening of Part I (Technical bid) of the Tender.
8. **Receipt and opening of Tenders:** The Technical bid along with EMD should reach to this office on or before 15.01.2016 before 02.00 PM. The Technical Bid will be opened on the same day at 02.30 pm.
9. The required EMD (**separate for each bid**) as mentioned at Annexure-G in the form of DD or FDR must be enclosed with the technical bid failing which the offer will be treated as non-responsive.
10. GGSIPU reserve the right to accept or reject any or all the tenders wholly or partially without assigning any reason thereof.

INSTRUCTIONS TO BIDDERS

11.0 Scope

The work consists of:

- 11.1 **Supply and Installation of Lab Equipments/Instruments for USCT** at University Campus at Sector-16C, Dwarka, New Delhi as per specification in **Section-III, Annexure-G**.
- 11.2 Comprehensive on-site **warranty** for a period of **36 months** from the last date of completion/ installation for all the items supplied as certified by the University.

12.0 Definitions:

- 12.1 **GGSIPIU** means Guru Gobind Singh Indraprastha University, Delhi
- 12.2 **University** means Guru Gobind Singh Indraprastha University, Delhi
- 12.3 **Employer** means the Registrar, GGSIPU and his successor
- 12.4 **Bidder** means the Manufacturer or his direct authorized distributor (dealing at first point), proprietary firm, partnership firm, limited company private or public or corporation
- 12.5 **“Year”** means “Financial year” unless stated otherwise.

13.0 Who can apply:

- 13.1 If the bidder is a proprietary firm, the application shall be signed by the proprietor with his full typewritten name and the full name of his firm with its current address, contact details etc.
- 13.2 If the bidder is a firm in partnership, the application shall be signed by all partners of the firm with their full typewritten names and current addresses, or alternatively, by a partner holding power of attorney for the firm. In the latter case a certified copy of the power of attorney should accompany the application. In both cases, a certified copy of partnership deed and current address of all the partners of the firm should accompany the application.
- 13.3 If the bidder is a limited company or a corporation, the application shall be signed by a duly authorized person holding power of attorney for signing the application accompanied by a certified copy of the power of attorney. The bidder should also furnish a certified copy of the Memorandum and Articles of Association duly attested by a Public Notary.
- 13.4 Joint Venture/ Consortiums are not accepted.

14.0 Sealing and Marking of Bids

- 14.1 Technical Bid shall be submitted for each item along with EMD.
- 14.2 The bidder shall place two separate envelopes (called inner envelopes) marked **“Technical Bid”** and **“Earnest Money Deposit”** in one outer envelope. The inner envelopes will have marking as follows:-
 - a) Technical Bid
 - b) Earnest Money Deposit (EMD)
- 14.3 The sealed inner and outer envelopes containing the technical bid and EMD shall be addressed to Dy. Registrar (Purchase), Guru Gobind Singh Indraprastha University, Sector 16C, Dwarka, New Delhi – 110078.
- 14.4 The sealed tender shall bear the name and identification number of the Tender on the cover of the Envelope(s).

- 14.5 In addition to the identification required as above, **each** of the envelopes shall indicate the name and address of the bidder to enable the bid to be returned unopened in case it is declared late or is declared non-responsive.
- 15.0 **Bid Submission:**
- 15.1 The envelop named “**Technical Bid**” shall comprise of all documents as per **Clause-16 (Separate bid for each item)**. All the documents as per the Clause-16 must also be uploaded on the e-tender website.
- 15.2 The “**Financial Bid**” shall comprise of the price bids should be uploaded on e-tender website i.e. www.govtprocurement.delhi.gov.in only (Not to be submitted in hard copy).
- 15.3 Each page of the Technical Bid, Tender Document must be sealed and signed by the authorized signatory of the bidder.
- 15.4 Duly signed tender document along with all corrigenda, addendum issued, if any, should also be sealed as part of technical bid.
- 15.5 Conditions other than those laid down in the Tender document will not be entertained.

16.0 Eligibility Criteria for Technical Bid

All eligibility documents with EMD must also be submitted in hard copy as per the date and time mentioned above.

The formats/Annexure for the documents to be submitted, with Technical bids are placed at **Section –II (Annexure – A, A1, A2, A3 to Annexure E)**:

16.1	Letter of Transmittal	Annexure – A
	Declaration by Bidder	Annexure – A1
	Compliance to Bid Requirement	Annexure – A2
	A declaration by the manufacturer as to the probable date of manufacture of the item for which financial bid has been made.	Annexure – A 3
16.2	Organizational Structure: - Legal status of the company/ organization with legal proof along with certified copies.	Annexure - B
16.3*	Income Tax Registration (PAN No.),	Attach certified copies
	DVAT Registration/ TIN Number	
16.4	Average financial turnover of Rupees Two Crore during the immediate last three consecutive financial years, duly audited, signed & stamped by a Chartered Accountant in case if the bidder is quoting for all the requisitioned items else he must have atleast turnover of twice the estimated cost of quoted item.	Must attach Annexure C
	The bidder should not have incurred losses in more than two years in the last 3 consecutive financial years, duly certified by Chartered Accountant, along with copies of audited profit and loss account of last three years	
16.5	Firm should have executed atleast one of the following in the last three years:	Annexure D
	One single order of similar kind or equivalent Lab Equipment having value of 80% of the estimated cost of the item.	
	OR	
	Two order of similar kind or equivalent Lab Equipment having value of 60% of the estimated cost of the item.	
	OR	
	Three order of similar kind or equivalent Lab Equipment having value of 40% of the estimated cost of the item.	
	Explanation: Similar kind or equivalent lab equipment means the work of supply and installation of similar or equivalent lab equipments mentioned at Annexure-G in public sector undertaking, Govt. department, Educational Institutions, Research	

	Institutional or in reputed private sector. This should be certified by an authorized officer of the client organization on its letter-head.	
16.6	That the bidder/ organization has not been blacklisted/debarred by any of the government/ public sector agencies in India in the last 3 years. A declaration of fair business practice by the Bidder.	Annexure – E
16.7	The intending bidder must submit compliance report of the each item of the bid.	
16.8	The Manufacturer should have a authorized service centre in India only	Attach copy of proof
16.9	Printed and proper circulated catalog for the quoted similar items be submitted along with the tender document	Attach copy of proof
16.10	User list with supply/purchase order of the similar field in the Govt./ reputed organization	Attach copy of proof
16.11	Comprehensive on-site warranty for a period of 36 months from the last date of completion/ installation for all the items supplied as certified by the University.	Attach copy of proof

* Wherever applicable.

17.0 Opening of Technical Bids & Evaluation:-

- 17.1 The details submitted by the bidders will be evaluated in the following manner:
- 17.2 The “initial eligibility criteria” prescribed in para 17.1 to 17.11 above in respect of experience in similar class of works completed, financial turnover, profitability and valid registrations will first be scrutinized.
- 17.3 Examination of the specification of all the items will be done by Technical Committee.
- 17.4 Even though any bidder may satisfy the above requirements, he/she would be liable to disqualification if he/she has:-
- 17.5 Made misleading or false representation or deliberately suppressed the information in the forms, statements and enclosures required in the eligibility criteria document.
- 17.6 Record of poor performance such as abandoning work, not properly completing the contract, or financial failures/weaknesses etc.

18 Opening of Financial bid and evaluation:

After the Technical evaluation of the bids, the University will open the ‘Financial Bids’ of all the bidders who have qualified in the technical evaluation of the specification criteria as per Clause 18.3 and eligibility criteria as per Clause 16, at notified time, date and place, if any. The lowest financial bidder shall only be considered for award of work.

19.0 Earnest Money Deposit:

- 19.1 The Earnest Money Deposit (EMD) must be attached with the technical bid. The Earnest money shall be accepted in the following forms and shall be in favour of “Registrar, GGSIPU”, payable at Delhi:-
1. Fixed deposit receipt (FDR)
 2. Bank Draft /Demand Draft
- 19.2 Tender(s) with no earnest money deposit will summarily be rejected. In case of successful bidder of the financial bids, the earnest money will be returned after obtaining the required 10% Performance Security in the form of FDR/BG (FDR/BG should be valid for a period of 18 months from the date of installation). However, the successful bidders will provide the Comprehensive Irrecoverable Warrantee of 12 months from the date of final installation of the product.
- 19.3 In the case of unsuccessful bidders, the Earnest Money Deposit will be refunded without any interest.

20.0 Financial Bid:

- 20.1 The bidder shall quote unit item rates in INR/USD/British Pound/Euro etc., as the case may be, both in words and figures in the Financial Bid only. Exchange Rate on the date of opening of financial bid will be taken into account for evaluation purpose only. No alterations in the form of tender, in the schedule of quantities or additions (Financial Bid) etc. shall be permitted. In case of difference between the rates of items written in figures and in words, the rates of items written in words shall be taken as correct. No changes in unit rates shall be allowed. The rates quoted in schedule of quantity (Financial Bid) are for finished and completed items and no extra amount for cartage or transporting material, labour etc. shall be paid. The rates should be inclusive of all loads and lifts for all materials for the completed items and also include all taxes, insurance, royalties etc. as applicable. Indian Supplier has to quote the all inclusive of rate product i.e. freight, insurance, packing, handling, assembling, installation, commissioning upto the University or as given in the work order.

In case of foreign manufacture, supplying the equipment through its authorized agent in India CIP Delhi Airport will be considered in financial bids. However, custom duties as applicable against production of custom duty exemption certificate will be borne by the University including the transportation and insurance charges, if any. However, the handling of the equipment will be strictly in the supervision of authorized agent in India. No liability in case of any damage, miss handling will be accepted by the University in any case.

21.0 General:

- 21.1 All information called for in the enclosed forms should be furnished against the relevant places in the forms. If for any reason, information is furnished on a separate sheet, this fact should be mentioned against at the relevant place. Even if no information is to be provided in a column, a "Nil" or "No Such Case" entry should be made in that column. If any particular/query is not applicable in case of the bidder, it should be stated as "not applicable". The bidders are cautioned that incomplete information called for in the tender document or deliberate suppression of any information may result in the bid being summarily disqualified. Bids received after the expiry of the stipulated date and time mentioned in the tender document will not be entertained.
- 21.2 The bid document should be legibly written and serially numbered with proper tagging and binding. The bidder should sign each page of the bid.
- 21.3 Overwriting should be avoided. Correction, if any, should be made by neatly crossing out, initialing with date and rewriting. Pages of the eligibility criteria document are to be numbered. Additional sheets, if any added by the bidder, should also be numbered. Bid should be submitted as a package with signed letter of transmittal.
- 21.4 References, information and certificates from the respective clients certifying suitability, technical knowledge or capability of the bidder should be signed by officer of the client organization with name & designation.
- 21.5 The bidder may furnish any additional information which he thinks is necessary to establish his capabilities to successfully complete the envisaged work. He is, however, advised not to furnish superfluous information. No information shall be entertained after submission of tender document unless it is called for by the University.
- 21.6 Any information furnished by the bidder found to be incorrect either immediately or at a later date, would render him liable to be debarred from tendering/taking up of any work in GGSIPU **which may also result in forfeiture of EMD/performance security.**
- 21.7 The successful bidder shall have to work in co-ordination and co-operation with any other agencies appointed by the University to work simultaneously in the same or adjoining area. The decision of the University in case of any dispute between the different agencies appointed by the University shall be final and a binding.

- 21.8 Income tax, Works Contract Tax and any other tax at the rates in force during the progress of contract / **award of work** that will be in force from time to time shall be recovered / deducted from the released payment amount.
- 21.9 Sales Tax, purchase Tax, turnover tax or any other tax on material applicable on the date of submission of bid in respect of this contract shall be payable by the contractor and University will not entertain any claim whatsoever in respect of the same.
- 21.10 The bidder shall have to make his own arrangement at no extra cost to the University for water Supply & Installation, sanitation and electric Supply & Installation etc. at the site of work.
- 21.11 On acceptance of the tender, the name of the accredited representative(s) of the contractor who would be responsible for taking instructions from the University shall be communicated in writing to the Registrar.
- 21.12 The contractor shall furnish a list of University employees related to him, if any in the “Technical Bid”.
- 21.13 If the bidder shall obtain a contract with GGSIPU as a result of wrong tendering or other non-bonafide methods of competitive tendering, the University reserves the right to terminate the contract without any liability to the contractor, which may also result to forfeiture of EMD/performance security.
- 21.14 Without prejudice to any of the rights or remedies under this contract if the contractor dies, the University shall have the option of terminating the contract **without** compensation to the legal heir of the contractor.
- 21.15 Escalation: Increase in rates of material / Labour shall not be payable on any account. Price quoted shall be firm and no escalation will be allowed on any account.

22.0 Scope of Works

The Scope of work shall consist, Supply & Installation, erection and placing in position at site, complete in all respects, and its maintenance during warranty period for items mentioned at Annexure-G as per specification given under Section III.

22.1 Specification for Work and Quality

The procurement of various materials shall be either from the manufacturers or their main authorized dealers to ensure that no duplicate/spurious makes are used in the works. The entire work shall be warranted for a period of **36 months** against defective material with liability of replacement or to the satisfaction of the University.

22.2 Safety and Security

Safety and Security of workers/staff, material, equipments, etc. will be the responsibility of the contractor. The university will not be held responsible on this account

22.3 The University reserves the right, without being liable for any damages or obligation to inform the bidder, to:

- (a) Amend the scope and value of contract to the bidder.
- (b) Reject any or all the applications without assigning any reason.

22.4 Any effort on the part of the bidder or his agent to exercise influence or to pressurize the University would result in rejection of his bid. Canvassing to any kind is prohibited.

23.0 Final decision making authority

The University reserves the right to accept or reject any bid and to annul the process and reject all bids at any time, without assigning any reason or incurring any liability to the bidders. No claim whatsoever will be entertained / paid by the university to the bidder (s).

24.0 Summary Rejection of tender:

24.1 The tenders not accompanied with Earnest Money Deposit shall be summarily rejected. Similarly, if the bidder proposes any alternation in or additions to the prescribed form of tender or decline to carry out any work of the tender document; or any conditions mentioned, etc., his tender is liable to be rejected.

25.0 Particular provisions

25.1 The University reserves the right to execute the work or reject the tender without assigning any reason or incurring any liability to the bidder.

25.2 The University has the power to make alteration in, omission from, addition of or substitution for the original specifications, drawings, designs.

27.0 Amendment of tender document:

27.1 Before the deadline for submission of tender, the University may modify the tender document by issuing addenda.

27.2 Any addendum thus issued shall be a part of the tender document and shall be uploaded on the e-procurement website (www.govtprocurement.delhi.gov.in). Prospective bidders must visit the website before filling and submission of Tender Document for such information.

28.0 Validity of Tender:

One hundred and Eighty days from the date of opening of **Financial Bid** of the tender. During this period no bidder shall be allowed to modify/withdraw his tender. In case of withdrawal, the EMD submitted by the bidder shall be forfeited and no claim shall be entertained in this regard.

29.0 Performance Guarantee:

29.1 The successful bidder shall be required to furnish a Performance Guarantee of 10% of the total tendered value after successful installation of the product at site. The Performance Guarantee should be valid up to 40 months. The Performance Guarantee shall be accepted in the following form and shall be in favour of "Registrar, GGSIPU", payable at Delhi with a validity of months as under:-

- i. Fixed deposit receipt (FDR) of a nationalized bank (40 months validity)
- ii. Bank Guarantee (As per Annexure-F) (40 months validity)

29.2 Performance Guarantee will be refunded after completion of the warrantee period as per clause 30.

29.3 In case of non submission of Performance Guarantee within specified time, the earnest money will be forfeited and the University may consider to black list/de-bar the contractor.

29.4 In case a fixed deposit receipt/ Bank Guarantee of any bank is furnished by the contractor to the University as part of the Performance Guarantee and the Bank is unable to make payment against the said instrument, The loss caused thereby shall fall on the supplier and the supplier shall forthwith on demand furnish additional security to the University to make good the deficit.

30.0 Warranty

The bidder shall provide **comprehensive on-site warranty for a period of 36 months or as provided by the bidder, which ever is more** for all items from the last date of completion / installation as certified by the University and shall be responsible for any defects that develop in the item. They shall also replace any defective part of the product supplied and other accessories, without any exception and recourse, free of cost.

The bidder is responsible for all packing, unpacking, assembly, installation of units. The bidder will test the products and accomplish the adjustments necessary for successful and continuous operation of the products supplied at all installation sites and shall ensure maintenance of the supplied products during the warranty period. All the repairing / replacing of defects shall be done by the bidder totally free of cost.

31.0 Duration

The items covered under this tender are required to be delivered and installed in the University Campus at Sector 16C, Dwarka, New Delhi **within 90 days**, as specified in delivery schedule submitted by bidder.

32.0 Payment Terms

- 32.1 100% irrevocable & confirmed Letter of Credit will be opened in the bank, LC will issued only incase of foreign suppliers. However, incase of material manufactured indigenously in India, the payment will be released after complete installation, training and receipt of performance guarantee of the product.
- 32.2 Each invoice should be submitted in duplicate clearly specifying contract no, goods description, quantity, unit price, total amount along with warranty certificate, etc.
- 32.3 No advance payment will be made under any circumstances.

33.0 Delay and Non Conformance

- 33.1 If the bidder fails to Install the Equipment with in the period specified in the Purchase Order, University shall without prejudice to its other remedies under the Purchase Order, deduct from the contract price, as liquidated damages, a sum equivalent to 1% (one percent) of the contract price of the delayed goods weekly or part thereof of delay until actual delivery. The penalties will be maximum of 10% of the contract amount / awarded value.
- 33.2 In case of extraordinary delay or beyond 90 days of stipulated delivery period, University reserves the right to terminate the contract, without any liability to cancellation charges, forfeit/en-cash the submitted Performance Guarantee and blacklist/debarred the defaulting firm.

34.0 Services during warranty period

- 34.1 The maximum response time for maintenance complaint during warranty period (i.e. time required for bidder's maintenance engineer to report at the installation after a request call/telegram is made or letter is written) shall not exceed 07 days.
- 34.2 The period for correction of defects in warranty period is 30 days.
- 34.3 In case an item is not useable beyond the stipulated maximum downtime the contractor will be required to arrange for an immediate replacement.
- 34.4 In case the rectification of defects is not carried out within 30 days and replacement of defective items are not provided, a penalty of sum equivalent to 5% per week of the delivered price of that defective item(s) shall be levied. This penalty is applicable up to a maximum of 4 weeks (maximum 10%)

35.0 Packing and Marking

- 35.1 All packing should be strong enough to withstand rough handling during loading/ unloading and transporting. Fragile articles should be packed with special precaution and should bear the marking like Fragile, handle with care, This side up etc.

36.0 Substitution and Wrong Supplies

Unauthorized substitution or materials delivered in error of wrong description or quality or supplied in excess quantity or rejected goods shall be returned to the contractor at contractor's cost and risk.

37.0 Insurance, Freight and Deliveries

- 37.1 The supplier shall make his own arrangements towards safe and complete delivery including insurance, freight, state level permits etc. as applicable at the designated locations indicated by University in the Purchase Order. However additional actual cost toward applicable custom duty against exemption

certificate, local freight, transportation from Airport to GGSIP University shall be borne by the University but the handling the product under the guidance/supervision by the manufacturer.

37.2 The contractor will keep University informed about changes, if any, in various stages of deliveries, installation.

38.0 Arbitration and Settlement of Disputes:

38.1 University and the contractor shall make every effort to resolve amicably by direct information negotiation by difference or dispute arising between them under or in connection with the University order.

38.2 If after thirty (30) days from the commencement of such informal negotiations, University and the supplier are unable to resolve amicably the dispute, either party may require that the dispute be referred for resolution to the formal mechanisms as specified hereunder:

38.2.1 Any dispute or differences whatsoever arising between the parties out of or relating to the manufacturing, meaning, scope, operation or effect of this contract or the validity or the breach thereof shall be settled by arbitration in accordance with the provisions of the Arbitration & Conciliation Act, 1996 and the award given by sole arbitrator shall be final and binding upon the parties. The sole arbitrator shall be appointed by the Vice Chancellor, GGS Indraprastha University and it shall be no ground to contest the award on the ground that arbitrator was appointed by the University.

38.2.2 The performance under this contract shall not stop for any reason whatsoever during the said dispute/proceedings, unless the contractor is specifically directed by University to desist from working in this behalf.

38.2.3 The venue of arbitration shall be Delhi/ New Delhi. The language of proceedings shall be English. The Law governing the substantive issues between the parties shall be the Laws of India. All disputes are subject to the jurisdiction of the Delhi Courts only

38.2.4 It is also a term of that if any fees are payable to the arbitrator, these shall be paid equally by both the parties. It is also a term of the contract that the arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the parties calling them to submit their statement of claims and counter statement of claims.

39.0 Force Majeure For purpose of this Clause, Force Majeure shall mean fires, floods, natural disasters or other acts, that are unanticipated or unforeseeable, and not brought about at the instance of the party claiming to be affected by such event, or which, if anticipated or foreseeable, could not be avoided or provided for, and which has caused the non-performance or delay in performance, such as war, turmoil, strikes, sabotage, explosions, quarantine restriction beyond the control of either party. A party claiming Force Majeure shall exercise reasonable diligence to seek to overcome the Force Majeure event and to mitigate the effects thereof on the performance of its obligations under this Supply Order.

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

SECTION II

INFORMATION REGARDING TECHNICAL ELIGIBILITY
(Annexure A, A1, A2, A3 to E)

(Separate information for each items of tender is be given)

LETTER OF TRANSMITTAL

From:

To

The Registrar
GGS IPU
Sector 16C, Dwarka,
Delhi

Sub: Submission of Tender Document for the work of **“Supply and Installation of Lab Equipment/Instruments for USCT at GGSIPU Campus, Sector 16C, Dwarka, New Delhi”**.

Sir,

Having examined the details given in Tender document for the above work, I/we hereby submit the relevant information:-

1. I/we hereby certify that all the statement made and information supplied in the enclosed annexure / forms accompanying statement are true and correct.
2. I/we have furnished all information and details necessary for eligibility and have no further pertinent information to Supply & Installation.

Name & Signature(s) of Bidder(s) with seal

DECLARATION BY THE BIDDER

We _____ (Name of the Bidder) hereby represent that we have gone through and understood the Bidding Document (which in two parts) in Part-I (Commercial Section & Technical Section) and Part-II (Schedule of Quantities) and that our Bid has been prepared accordingly in compliance with the requirement stipulated in the said documents.

We are submitting a copy of Bidding Document marked “Original” as part of our Bid duly signed and stamped on each page in token of our acceptance. We undertake that Part-I and Part-II of the Bidding Document shall be deemed to form part of our bid and in the event of award of work to us, the same shall be considered for constitution of Contract Agreement. Further, we shall sign and stamp each page of this Part-I and Part-II as a token of Acceptance and as a part of the Contract in the event of award of Contract to us.

We further confirm that we have indicated prices in Schedule of Quantities and submitted in Price Bid in separately sealed envelope. We confirm that rate quoted by us includes price for all works/activities/supply etc. as mentioned in item description of the items in Schedule of Quantities.

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL : _____

Note : This declaration should be signed by the Bidder’s representative who is signing the Bid.

COMPLIANCE TO BID REQUIREMENT

We hereby agree to fully comply with, abide by and accept without variation, deviation or reservation all technical, commercial and other conditions whatsoever of the Bidding Documents and Addendum to the Bidding Documents, if any, for subject work issued by GGSIPU.

We hereby further confirm that any terms and conditions if mentioned in our bid (Un-priced as well as Priced Part) shall not be recognized and shall be treated as null and void.

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL : _____

DECLARATION BY THE BIDDER

We _____ (Name of the Bidder) hereby declare that the lab item for which we have quoted our price in the Financial Bid would not be an item used so far for demo/any other purposes and will be unused (brand new).

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL : _____

Note: This declaration should be signed by the Bidder's representative who is signing the Bid.

ORGANISATION STRUCTURE

1. Name & Address of the Bidder :
2. Telephone No./Fax No./ e-mail :
3. Legal status of the Bidder (attach copies of original document defining the legal status)
 - a) An Individual
 - b) A proprietary firm
 - c) A firm in partnership
 - d) A limited company or Corporation
 - e) A Public Sector Undertaking
4. Particulars of registration with various Government Bodies (Attach attested Photo Copy)

Organization /Place of registration	Registration No
-------------------------------------	-----------------
5. A. PAN No. -----
 B. DVAT No. -----
 C. Service T No. -----
6. Names and Titles of Directors & Officers with designation to be concerned with this work. :
7. Name & Designation of individuals authorized to act for the organization :
 (Pl attach power of attorney in favour of authorized representative duly signed by authorized signatory)
8. Has the Bidder ever required to suspend work for a period of more than six months continuously after you commenced the business? If so, give the name of the project and reasons of suspension of work. :
9. Has the Bidder, or any constituent partner in case of partnership firm, ever abandoned the awarded work before its completion? If so, give name of the project and reasons for abandonment. :
10. Has the Bidder, or any constituent partner in case of partnership firm, ever been debarred/ black listed for tendering in any organization at any time? If so, give details. :
11. Has the Bidder, or any constituent partner in case of partnership firm, ever been convicted by a court of law? If so, give details. :
13. Any other information considered necessary but not included above. :

(Stamp, Name & Signature of Bidder)

DETAILS OF ANNUAL TURNOVER

A. FINANCIAL DETAILS

Financial Years	Gross Annual Turnover (In Lakhs)	Profit/Loss (In Lakhs)
2014-2015		
2013-2014		
2012-2013		

B. Audited balance sheet and profit & loss account for above three years to be submitted. Must be attested by the Chartered Accountant.

Signature & stamp by Chartered Accountant

(Stamp, Name & Signature of Bidder)

DETAILS OF SUPPLY OF LAB ITEMS (AS PER SPECIFICATION GIVEN IN SECTION III BELOW) IN LAST 03 (THREE) YEARS

S. No.	POSTAL ADDRESS OF CLIENT WITH CONTACT NUMBERS	STARTING DATE	SCHEDULED COMPLETION DATE	ACTUAL COMPLETION DATE	REASONS FOR DELAY, IF, ANY

(Stamp, Name & Signature of Bidder)

DECLARATION FOR FAIR BUSINESS BY THE BIDDER

This is to certify that We, M/s _____ in submission of this offer confirm that:-

- i) We have not made any misleading or false representation in the forms, statements and attachments in proof of the qualification requirements;
- ii) We do not have records of poor performance such as abandoning the work, not properly completing the contract, inordinate delays in completion, litigation history or financial failures etc.
- iii) Business has not been banned with us by any Central / State Government Department/ Public Sector Undertaking or Enterprise of Central / State Government.
- iv) We have submitted all the supporting documents and furnished the relevant details as per prescribed format.
- v) The information and documents submitted with the tender by us are correct and we are fully responsible for the correctness of the information and documents submitted by us.
- vi) We understood that in case of any statement/information/document furnished by us or to be furnished by us in connection with this offer is found to be incorrect or false, our EMD in full will be forfeited and business dealings will be banned.
- vii) We have not been punished / penalized by way of imprisonment in last three years.
- viii) We have not been blacklisted/debarred by any of the Government/Public Sector Agency in last three years.

SEAL, SIGNATURE & NAME OF THE BIDDER

Signing this document

CHECK LIST FOR SUBMISSION OF BID

Bidder is requested to fill this check list and ensure that all details/documents have been furnished as called for in the Bidding Document along with duly filled in, signed & stamped checklist **with each copy of the "Un-priced bid (Part – I)"**.

Please tick the box and ensure compliance:

- 1 EMD
- 2 Bid Forwarding Letter
- 3 Power of Attorney in Favour of the person who has signed the bid on stamp paper of Appropriate value.
- 4 Partnership Deed in case of partnership firm and Article of Association in case of limited company.
- 5 Compliance to Bid Requirement
- 6 Declaration by the bidder
- 7 All pages of the bid have been page numbered in sequential manner.
- 8 Annexure(s) – A, A1, A2, A3 to E
- 9 Valid, PAN, DVAT, Service Tax, Excise Registration

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL : _____

**Form of Performance Guarantee
Bank Guarantee Bond**

1. In consideration of the GGSIPU (hereinafter called “The University”) having offered to accept the terms and conditions of the proposed agreement between ----- and ----- (hereinafter called “the said Contractor(s)”) for the work ----- (hereinafter called “the said agreement”) having agreed to production of a irrevocable Bank Guarantee for Rs.----- (Rupees ----- only) as a security/guarantee from the contractor(s) for compliance of his obligations in accordance with the terms and condition in the said agreement.

We, ----- (indicate the name of the Bank) ----- (hereinafter referred as “the Bank”) hereby undertake to pay to the University an amount not exceeding Rs.----- (Rupees ----- only) on demand by the University.

2. We, ----- (indicate the name of the Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demure, merely on a demand from the University stating that the amount claimed is required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.----- (Rupees ----- only).
3. We, the said bank further undertake to pay the University any money so demanded notwithstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Contractor(s) shall have no claim against us for making such payment.
4. We, ----- (indicate the name of the Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the University under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till Project-in-Charge on behalf of the University certified that the terms and conditions of the said agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee.
5. We, ----- (indicate the name of the Bank) further agree with the University that the University shall have the fullest liberty without our consent and without affecting in any manner our obligation hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the University against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor(s) or for any forbearance, act of omission on the part of the University or any indulgence by the University to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.
6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).
7. We, ----- (indicate the name of the Bank) lastly undertake not to revoke this guarantee except with the previous consent of the University in writing.
8. This guarantee shall be valid upto ----- unless extended on demand by the University. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs.----- (Rupees ----- only) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee all our liabilities under this guarantee shall stand discharged.

Dated the ----- day of ----- for ----- (indicate the name of the Bank)

SECTION III**TECHNICAL SPECIFICATIONS**

S. No.	Item	Technical Specification	Qty.	Estimated cost (in Lacs)	EMD in Rs.
1.	Dynamic Light Scattering Instrument for Measurement of Size and Zeta Potential of Nanoparticle	<ol style="list-style-type: none"> 1. Instrument principle should be based on dynamic light scattering. 2. Particle size measurement range should be in between 0.5 nm to 5 μm or better. 3. Minimum Sample volume requirement: 20 μl. 4. Temperature range: 0°C to 90°C; Accuracy: \pm 0.1°C 5. Size Measurement Angle: 90° and forward scattering. 6. Zeta Potential measurement should be based on PALS (Phase analysis light scattering) principle only. 7. Zeta potential range should be \pm350 mV or more 8. Size range for zeta potential: 3 nm to 100 microns or better 9. Conductivity range: 0 to 150 mS/cm or more 10. Internal Sample temperature control facility should be available. 11. Low power laser should be 4 mW power or higher with auto attenuation feature. 12. Detector should be high sensitivity APD detector. 13. Standard Software should include capability to measure and report size, zeta potential, and their distribution along with Trend Analysis methods. It should use standard algorithms such as NNLS, CONTIN and Cumulant etc. 14. The software should have facility to export measured data and result into ASCII format, so that data can be further processed. 15. Sample Cells should include glass cuvette (one in number), disposable cuvettes (100 number) for size and disposable cuvettes (100 number) for zeta potential measurement. Zeta potential standard for the verification of the system should be provided with the system 16. It should have latest branded PC (compatible with software) & black and white HP laser Jet printer. <p>System should preferably be upgradeable for</p> <ol style="list-style-type: none"> 1. Concentration capability to measure Zeta Potential up to 40%. 2. Addition of autotitrator to automate the measurement of size & zeta potential as a function of pH, conductivity etc. 	1	30	60000/-
2.	High Performance Liquid Chromatography (HPLC)	<p>A. Solvent delivery pump</p> <ol style="list-style-type: none"> a. Number of Eluents: 4 b. Flow range: 0 – 10 ml/min. c. Accuracy: \pm2% or better. d. Pressure range: at least 5000 psi for entire flow rate range or better. e. Mixing system: Solenoid valve opening/closing time control system f. Gradient system must be installed preferably inside the pump. g. Degasser system for all the solvent flow path must be installed preferably inside the pump. <p>B. Photo diode array detector:</p> <ol style="list-style-type: none"> a. Wave length range: 190 to 700 nm or better. b. Noise: 0.9×10^{-5} AU or better. c. Drift: 0.7×10^3 AU /hr or better d. Linearity: at least >1.7 AU upper limits or better. e. Leak detection and safe leak handling design must be incorporated in the module housing. f. Lamp: Deuterium lamp, Tungsten-halogen lamp and any suitable lamp for checking wave length. g. Wavelength accuracy: \pm 1nm or better <p>C. Column Compartment:</p>	1	15	30000/-

		<p>a. Ambient to 65 °C or more. b. Temperature stability: ±0.2 °C or better</p> <p>D. Auto sampler :</p> <p>a. Injection Volume : 2 – 500 µl b. Carryover: 0.01% or better c. Tray capacity : 100 nos (or more) x 1.5 ml or better d. Integrated washing facility for needles before and after the injection. To enable reproducible results, injection timing of auto sampler must be synchronized with the operation timing of the pump.</p> <p>E. HPLC Column</p> <p>a. C8 Coulmn (1 nos). b. C18 Coulmn (1 nos).</p> <p>F. Software: Suitable software for controlling HPLC, detector and for data processing. Capable of doing integration, calculations, graph etc. Essential spares and consumables are required to be provided for at least 5000 runs. It should have latest branded PC (compatible with the software) & black and white HP laser jet printer.</p>			
3.	Fourier Transform Infrared Spectroscopy (FTIR)	<ol style="list-style-type: none"> Spectral range of (FAR-IR,MID-IR & NIR) 14,000 cm⁻¹ – 50 cm⁻¹ or better range with exchangeable MIR,NIR & FIR beam splitter. Necessary source, beam splitter and detector should be quoted to cover the above mentioned range. Detectors: DLa TGS/DTGS detector for MID IR range, DLaTGS/DTGS (or similar) for FAR IR range and InGaAs/similar type detector for NIR Range. Beamsplitters: KBr Beam splitter for MID IR range, solid substrate/silicon/mylar beamsplitter for FAR IR range and CaF₂ beamsplitter for NIR Range. The beamsplitters should be moisture resistant and capable of working in high humidity area. Optics should be gold/Al coated. Sealed and desiccated optical unit with provisions for purging facilities. Optical system should also be compatible for all the accessories and detectors. Resolution 0.3 cm⁻¹ or better. Signal to noise ratio: Equal or better than 45000:1 peak to peak (4cm⁻¹ resolution, 1 min measurement time) System should have automatic accessory recognition facility to identify, optimize the accessory once it is mounted in the sample compartment. System/Software should have facility to minimize the effect to atmospheric water and CO₂ on the sample spectra without the need for reference or calibration spectra. Sealed and desiccated Interferometer with built-in provision to protect from moisture. Spectrometer components like source, laser, detector, interferometer must be continuously monitored and the software must offer detailed information about the nature of any failure and suggest possible remedy. ATR with Monolithic Diamond crystal for direct Powder, Liquids, Polymer, Films sample analysis without any sample preparations. For MIR and N IR range from 350cm⁻¹ to 10000 cm⁻¹. Diffuse reflectance accessory with temperature range upto 910°C. Accessory should be capable of measuring catalyst sample with size as small as 3mm total diameter (including powders). Accessory should have capability to operate in vacuum from 133mPa to 10⁻⁶Torr. Accessory should have options to take in external gases like CO/N₂/CO₂/He etc. Instrument should operate in entire FTIR range and should come with IR transparent window. System should be supplied with latest branded PC and Printer. Oil free, imported Hydraulic press with Agar pestle and mortar. Liquid cell holder and demountable cell with NaCl windows for viscous/Semi Solid samples, KBr die set, Assorted Rectangular 	1	24	50000/-

		<p>Teflon Spacers, KBr Circular and rectangular Windows, Universal KBr pellet Holder, KBr (4X250g) should be supplied with instrument.</p> <p>16. Sealed cell with NaCl plates for recording transmission spectra.</p> <p>17. Additional 20 NaCl plates for recording transmission spectra.</p> <p>18. The quoted system should be certified as complete for carrying out the measurement:</p> <ul style="list-style-type: none"> • FT-IR spectra of a variety of samples such as solids, liquids, gel etc. • FTUR spectra of organic, inorganic, organometallic compounds • Study of kinetics, catalytic reaction and changes, structural changes of nano material in exposure to any chemical, gas etc. <p>19. The supplier should invariably quote all such accessories or parts which are required to perform all of the above types of experiments.</p> <p>20. High purity nitrogen cylinder (ioloa grade) with double stage double meter gas regulator with stainless steel diaphragm and pressure gauge to be quoted.</p> <p>21. Installation and Training to be provided at installation site. Installation requirement to be submitted in advance.</p> <p>22. Manuals: One set of manuals with all details of parts should be supplied.</p> <p>23. Available Input power :220V one phase/three Phase, 50Hz</p> <p>24. Optional Items: Options for spectra search by single or multi region and feature for library generation & management. Following Libraries should be quoted optionally.</p> <ul style="list-style-type: none"> • ATRFTIR Aldirch-ICHEM Package 30001 (For ResPro) • ATRFTIR Aldirch-ICHEM Pkg VOL 1 30001-1 (For ResPro) • ATRFTIR Aldirch-ICHEM Pkg VOL 2 30001-2 (For ResPro) • Polymers+Polymer Additives (ATR) 30002 (For ResPro) • Solvents (ATR) 30004 (For ResPro) • Organometallics +Inorganic (ATR) 30005 (For ResPro) • Forensic (ATR)30014 (For ResPro) • Hazardous + Toxic chemical (ATR)30018 (For ResPro) • Pharmactcls Drugs + Antibiotics (ATR) 30020 (For ResPro) 			
4.	Thermogravimetric Analyzer (TGA)	<p>The operating temperature range: Room Temperature to 1100 °C Temp. Accuracy: ±1°C Temp. Precision: ± 0.4°C Heating rate: 0.02 - 250 °C/min (K/min) up to 1100 °C Cooling time: 20 min for 1100 °C – 100 °C Furnace design: Design to give stable weight signal Balance Design: Micro Balance. Weight change measurements should not be dependent on sample positioning. Should have Thermo stated balance Housing. Balance capacity : 1 gm Resolution: 1µg should offer real resolution and should not be digital resolution for complete measurement range. Balance Repeatability:0.9 µg Balance Linearity: 4 µg Weighing accuracy:0.005% Weighing precision:0.0025% Sampling rate:10 values/second Blank curve/ Baseline reproducibility:± 10µg over the whole temperature range Thermostat for balance: Water cooled Calibration of Balance: Should have fully Automatic Calibration capability with built-in calibration weights. Calibration: <i>System should not need recalibration when changing crucible, gases and heating rates.</i></p>	1	14	30000/-

		<p>Calibration of temperature: Performed using Curie point standards up to 1100 °C. Standards should be supplied with the instrument</p> <p>Crucibles: Supply 20 pcs of Alumina crucibles 70µL or higher</p> <p>Hyphenated techniques: TGA can be up-gradable to MS,FTIR of any standard make for EGA applications / requirements</p> <p>Software: Running on Windows7 version with multitasking, PEAK TEMPERATURE, STEP CALC. with horizontal or tangential regression lines, tables, blank curve subtraction, normalisation, signal deconvolution, X-scaling with respect to time, temperature, sample temperature; result documentation settings using single step, multi-step or multi-limit, auto-limit; choice of different baselines for interpretation (line, tangential, integral) etc.</p>			
5.	Computer Controlled Liquid Mass transfer Coefficient and Diffusion Coefficient	<p>Bench-top type:</p> <p>Anodized aluminium structure and panels in painted steel.</p> <p>Main metallic elements in stainless steel.</p> <p>Diagram in the front panel with similar distribution to the elements in the real unit.</p> <p>Transparent liquid tank (experimentation vessel), capacity: 2.5 litres.</p> <p>Magnetic stirrer (computer controlled) (range: 0-300 r.p.m.) and magnet.</p> <p>Conductivity cell and conductivity sensor:</p> <p>Measurement: 0.1 µS-19.99 mS.</p> <p>Resolution: 0.1 µS.</p> <p>Accuracy: ±2%.</p> <p>Temperature measurement range: 0-60°C.</p> <p>Temperature sensor.</p> <p>Diffusion cell:</p> <p>Capillaries number (N) = 317.</p> <p>Capillary length (x) = 5 mm.</p> <p>Capillary diameter (D) = 1 mm.</p> <p>Thermostatic bath, including:</p> <p>Water bath, capacity: 8 litres.</p> <p>Heating resistance (500 W), computer controlled.</p> <p>Level switch.</p> <p>Temperature sensor, “J”, range: -40 to 750°C.</p> <p>Required Features:</p> <p>The complete equipment should include the following features:</p> <p>Advanced Real-Time SCADA and PID Control.</p> <p>Open Control + Multicontrol + Real Time Control.</p> <p>Specialized Control Software based on Lab view.</p> <p>National Instruments Data Acquisition board (250 KS/s kilo samples per second).</p> <p>Calibration exercises, which should include, to teach how to calibrate a sensor and the importance of checking the accuracy of the sensors before taking measurements.</p> <p>Projector and/or electronic whiteboard compatibility allows the equipment to be explained and demonstrated.</p> <p>The equipment should Capable of doing applied research, real industrial simulation, training courses,</p> <p>The equipment should supply along with PID Control system and necessary software.</p> <p>Experiment Capability</p> <ol style="list-style-type: none"> 1- Fick’s law application to calculate the diffusivity. 2.- Direct measurement of mass transfer rates. 3.- Determination of molar density rate. 4.- Effect of concentration of diffusion coefficients. 5.- Simple analysis of a first order unsteady state process. 6.- Concentration and conductivity relation. 7.- Study the effect of the temperature on diffusion coefficients. <p>The equipment should be supplied with necessary installation and exercise manuals</p>	1	10	20000/-
6.	High Temperature and High Pressure Reactor	<p>The reactor is to be used for high pressure liquefaction/supercritical reactions at 300 bar 450 deg C. All components should be compatible for acidic reactions.</p> <ol style="list-style-type: none"> 1. Volume: 500 ml SS316 Fixed head vessel with lid rated for 5000 psig at 500 deg centigrade with ASME test certificate. 	1	23	50000/-

		<p>2. 2.5" ID 6.6" Depth, Split rings with eight compression bolts of grade 4140, split ring holder, Vessel stand with provision to fix the lid Unless specified, all ports on Lid should be with metal to metal cone fitting with NPS compression nut.</p> <p>3. Metal (diamond shape) gasket.</p> <p>4. SS Magnetic drive 16 in-lb torque, Variable speed 0.25 HP motor with 1700 rpm pulley,</p> <p>5. Up-down pneumatic movement for vessel, with 60~80 psig N2 line</p> <p>1. Head to include:</p> <ul style="list-style-type: none"> • Gage adaptor with 5000 psig pressure gauge SS gas release (vent) valve • Valve adaptor with SS gas inlet valve with A cone connector with liquid • sampling valve mounted on common dip tube • Thermo-well with type K thermocouple, • Cooling loop with solenoid valve module • Rupture disc burst pressure 5000 psig <p>6. Power 230V 50 hz. Ceramic fiber Heater: The heater should be able to attain 500 deg. C, with a minimum heating rate of 15°C/min.</p> <p>Options:</p> <ul style="list-style-type: none"> • Spares and consumable, gasket, torque wrench, rupture disk, gas line and other recommended spares and consumable for one year. • USB interface cable for computer interface, with necessary software for WINDOW 7pro operating system. • 2~3 ml liquid sampling device • Catalyst basket assembly 			
7.	Vertical & Horizontal condenser	<p>The experimental set-up offers a comparative study of Vertical & Horizontal condenser, which can be operated one at a time. Condenser consists of Stainless steel shell, with stainless steel tubes. Cold fluid flows through inside the tubes and steam flows through the shell. Valves are provided to control the flow rates of cold fluids.</p> <p>Flow rate of cold water is measured using a Rotameter. Shell is fitted with steam traps from where condensate is collected in measuring cylinder. Temperature of inlet and outlet of both hot & cold fluids are measured by temperature sensors.</p> <p>SCOPE OF EXPERIMENTATION To determine the overall Heat Transfer Co-efficient and film co-efficient for vertical and horizontal condenser</p> <p>TECHNICAL DETAILS: System : Steam to Water Condensers : 2 Nos. (Vertical & Horizontal) Insulated with Ceramic wool and cladding with aluminium foil. Shell : Material stainless steel. Inner Dia 100 mm, Length 500 mm (Approx.) Tubes : OD 12.7mm, Length of tubes 500mm Condensate Measurement : Measuring Cylinder & Stopwatch Water Flow Measurement : Rotameter Steam Generator : Made of stainless steel fitted with level indicator, pressure gauge, safety valve, drain and insulated with ceramic wool & cladding with Aluminium foil. Heaters : Nichrome wire heater Control panel comprising of: Digital Temperature Controller : 0-199.9°C (For Steam Generator) Digital Temperature Indicator : 0-199.9°C, with multi-channel switch Temperature sensors : RTD PT-100 type. With Standard make On/Off switch, Mains Indicator etc. A good quality painted rigid MS Structure is provided to support all the parts.</p>	1	2	5000/-
8.	Shell and Tube Heat Exchanger	<p>Objective of the experimental setup is to study the following at various flow rates:</p> <p>(i) LMTD (ii) Heat transfer rate</p>	1	2	5000/-

		<p>(iii) Overall Heat Transfer Co-efficient</p> <p>The apparatus consists of fabricated shell, inside which tubes with baffles on outer side are fitted. The present set up is a 1-2 heat exchangers, with cold water flows through shell. Valves are provided to control the flow rates of hot and cold water. Flow rates of hot and cold water are measured using Rotameters. A magnetic drive pump is used to circulate the hot water from a re-cycled type water tank, which is fitted with heaters and Digital Temperature Controller.</p> <p>TECHNICAL DETAILS:</p> <p>System : Water to Water. (1 – 2 shell & tube type)</p> <p>Shell. : Material Stainless steel. Insulated with ceramic wool and clad with aluminum foil. Dia. 220 mm, Length 500 mm 25% cut baffles</p> <p>Tube : OD 16mm approx., Length 500mm</p> <p>Water Flow Measurement : Rotameters (2Nos.) one each for cold & hot fluid.</p> <p>Hot Water Tank : Made of Stainless steel Insulated with ceramic fibre wool.</p> <p>Hot Water Circulation : Magnetic Pump</p> <p>Heaters : Nichrome wire heater</p> <p>Control panel comprising of:</p> <p>Digital Temperature Controller: 0-199.9°C, (For Hot Water Tank) Digital Temperature Indicator : 0-199.9°C, with multi- channel switch</p> <p>Temperature sensors: RTD PT-100 type. With Standard make On/Off switch, Mains Indicator etc.</p> <p>A good quality painted rigid MS Structure to support all the parts.</p>			
9.	Double Effect Evaporator	<p>Long tube evaporators are usually used for the concentration of foamy liquids. The set-up consists of two evaporators fitted in series. Each is made up of Stainless Steel tubes surrounded by a Stainless Steel jacket and fitted with accumulator. Dilute solution is fed to the first evaporator. Steam from a steam generator is supplied to evaporator to concentrate the dilute feed solution to a desired level. The jacket is fitted with a steam trap and the condensate is collected at the end of trap. The vapours of volatile solvent produced in first evaporator are supplied to the second evaporator. The vapours of volatile solvent are condensed in a shell & tube type condenser and the balance non-volatile solute collected in the accumulator is recycled through the evaporator.</p> <p>SCOPE OF EXPERIMENTATIONS:</p> <p>To concentrate a solution and to evaluate the following at steady state :</p> <ol style="list-style-type: none"> Material and Heat Balance. Economy and the capacity of the evaporator for different feeding arrangement. Overall heat transfer co-efficient. <p>TECHNICAL DETAILS:</p> <p>Evaporator (1st) : Shell Dia - 75mm, Length - 500mm, Made of Stainless Steel Tubes Dia - 12mm , Length - 500mm</p> <p>Evaporator (2nd) : Shell Dia - 75mm, Length - 500mm, Made of Stainless Steel Tubes Dia - 2mm, Length - 500mm</p> <p>Feed Tank : Material Stainless Steel, Capacity 30 Ltrs.</p> <p>Flow measurement : Rotameters (One each for feed & cold water).</p> <p>Steam Generator : Made of Stainless Steel provided with Pressure Gauge & Level Indicator, Safety valve and drain etc. & insulated with ceramic wool and cladding with Aluminium foil.</p> <p>Piping : Stainless Steel and PVC, size ¼”.</p> <p>Condenser : Shell & Tube type made of Stainless Steel.</p> <p>Bottom product tank : Made of Stainless Steel, capacity 10 Ltrs.</p> <p>Water supply tank : Made of Stainless Steel, capacity 50 Ltrs. for condenser</p> <p>Pump : FHP capacity</p> <p>Heaters : Nichrome wire Heater</p> <p>Control panel comprises of : Digital Temp. Controller : 0-199.9°C. (For Steam Generator) Digital Temp. Indicator : 0-199.9°C, with multi-channel switch. Temp. Sensors : RTD PT-100 type With Standard make On/Off switch, Mains Indicator etc.</p> <p>Air Compressor ½ HP, 2 CFM for compressed air supply.</p> <p>The whole set-up is well designed and arranged in a good quality painted structure</p>	1	3.5	70000/-

10.	Finned Tube Heat Exchanger	<p>Finned tube Heat Exchanger is a Tube-in-tube type heat exchanger. The inner tube is of Stainless steel with fins on its outside surface. Hot water flows through inner tube and cold fluid flows through the outer tube. The flow rate of hot & cold fluid is measured with the help of rotameters. Inlet and outlet temperatures of fluids are measured with the help of digital temperature indicators. A magnetic drive pump is used to circulate the hot water from a re-cycled type water tank, which is fitted with heaters and Digital Temperature Controller.</p> <p>SCOPE OF EXPERIMENTATION:</p> <ol style="list-style-type: none"> To calculate the LMTD To find Heat transfer rate To find out overall heat transfer co-efficient. <p>TECHNICAL DETAILS:</p> <p>System : Water to Water, concentric tube type Inner Tube : Dia 32 mm approx., Length 500mm. (Made of Stainless Steel) Longitudinal Fins : Width 20mm, Length 500mm, 6 Nos. (Made of Stainless Steel) Water Flow Measurement : Rotameters for hot and cold fluid Hot Water Tank : Made of Stainless steel Double Wall, insulated with ceramic Wool. Hot Water Circulation : Magnetic Pump made of Polypropylene to circulate Hot water Maximum working temperature is 85°C. Heaters : 2 kW Nichrome wire heater Control panel comprising of: Digital Temperature Controller : 0-199.9°C. (For Hot Water Tank) Digital Temperature Indicator : 0-199.9°C, with multi-channel switch Temperature sensors : RTD PT-100 type. A good quality painted rigid MS Structure is provided to support all the parts.</p>	1	1.5	5000/-
11.	Tray Drier	<p>A tray drier suitable for laboratory use should have computer control of temperature and air flow rate, with sophisticated data logging and analysis software.</p> <p>Materials of construction: Stainless steel. Capacity: up to 1.8 Kg of wet material Flow rate: 0.45 to 1.9 m/s Temperature: up to 75 °C at 0.45 m/s (less than higher flows) Should have integrated electronic weight measurement to determine drying rate, Should have electronic measurement of temperature and humidity before and after the drying. Should have electronic measurement of air flow.</p>	1	5	10000/-
12.	Electrochemical Workstation	<p>The Electrochemical Analyzer/Workstation should be equipped with suitable Electrochemistry Software, Latest Windows Based Acquisition Software along with power supply 220V/50Hz, Interface for USB Port, and Cell Cable. The system should contain a fast digital function generator, a direct digital synthesizer for high frequency ac waveforms, a high-speed dual channel data acquisition circuitry, a potentiostat, and a galvanostat. The potential control range is ± 10 V and the current range is ± 250 mA. The instrument is capable of measuring current down to picoampere individually and/or down to sub-picoampere with some add-on unit. The function generator should be update at a 10 MHz rate. High-speed dual-channel data acquisition circuitry should allow both current and potential (or external voltage signal) to be sampled simultaneously at 1M Hz rate, with 16-bit resolution. The instrument should provide very wide dynamic range on experimental time scales. For instance, the scan rate in cyclic voltammetry can be up to 1000 V/s with a 0.1 mV potential increment or 5000 V/s with a 1 mV potential increment. The potentiostat / galvanostat should be of 4-electrode configuration, which will allow to be used for liquid/liquid interface measurements and will also eliminating the effect of contacting resistance of connectors and relays for high current measurements. The data acquisition systems also allow an external input signal (such as spectroscopic signals to be recorded simultaneously with the electrochemical data). It is also mandatory that the equipment will also be able to perform the full range of measurements giving below:</p> <ul style="list-style-type: none"> • Cyclic Voltammetry (CV) • Linear Sweep Voltammetry (LSV) with stripping • Staricase Voltammetry (SCV) with stripping 	1	10	20000/-

- Tafel Plot (TAFEL) potentiodynamic deactivation, pitting corrosion, corrosion rate, linear Polarisation, Corrosion current etc.
- Chrono Amperometry (CA)
- Chrono Coulometry (CC)
- Differential Pulse Voltammetry (DPV) with stripping
- Normal Pulse Voltammetry (NPV) with stripping
- Differential Normal pulse Voltammetry (DPNV) with stripping
- Square Wave Voltammetry (SWV) with stripping
- AC Voltammetry (ACV) with stripping
- Second Harmonic AC Voltammetry (SHACV) with stripping
- Amperometric i-t Curve (i-t)
- Differential Pulse Amperometry (DPA)
- Double Differential Pulse Amperometry (DDPA)
- Triple Pulse Amperometry (TPA)
- Integrated Pulse Amperometry Detection (IAPD)
- Bulk Electrolysis with Coulometry (BE)
- Hydrodynamic Modulation Voltammetry (HMV)
- Sweep-Step Functions (SSF)
- Multi-Potential Steps (STEP)
- AC Impedance (IMP)
- Impedance – Time (IMPT) (Mott-Scottsky)
- Impedance – Potential (IMPE)
- Chrono Potentiometry (CP)
- Chronopotentiometry with Current Ramp (CPCR)
- Multi-Current Steps (ISTEP)
- Potentiometric Stripping Analysis (PSA)
- Open Circuit Potential – Time (OCPT)
- Galvanostat
- RDE control (0-10V output)
- Full version of CV simulator
- Impedance Simulator
- IR Compensation
- External Potential Input
- Auxiliary Signal Measurement Channel

AC Impedance Plots with Simulation

- Bode : $\log Z$ vs $\log(\text{freq})$
- Bode : Phase, vs $\log(\text{freq})$
- Bode : $\log Z''$ & Z' vs $\log(\text{freq})$
- Bode : $\log Y$ vs $\log(\text{freq})$
- Nyquist ; Z'' vs Z'
- Admittance; Y'' vs Y'
- Warburg: Z'' & Z' vs $\omega^{1/2}$ ω -angular frequency
- Z' vs $\omega Z''$
- Z' vs Z''/ω
- $\cot(\text{phase})$ vs $\omega^{1/2}$

2. Specifications:

- i) **Potentiostat**
 - Zero resistance ammeter
 - 4-electrode configuration
 - Floating (isolated from earth) or earth ground
 - Maximum potential: ± 10 V
 - Maximum current: ± 250 mA continuous, ± 350 mA peak or better
 - Compliance Voltage: ± 13 V
 - Potentiostat rise time: $< 1 \mu\text{s}$ or better
 - Applied potential ranges (volts): ± 0.01 to ± 10
 - Applied potential resolution: 0.0015% of potential range or better
 - Applied potential accuracy: ± 1 mV, $\pm 0.01\%$ of scale or better
 - Applied potential noise: $< 10 \mu\text{V rms}$
 - Measured current range: ± 10 pA to ± 0.25 A in 12 ranges or better
 - Measured current resolution: 0.0015% of current range, minimum

		<p>0.3 fA</p> <ul style="list-style-type: none"> • Current measurement accuracy: 0.2% if current range $\geq 1 \times 10^{-6}$ A/V, 1% otherwise • Input bias current: < 20 pA <p>ii) Galvanostat</p> <ul style="list-style-type: none"> • Galvanostat applied current range: 3 nA - 250 mA • Applied current accuracy: 20 pA $\pm 0.2\%$ if $> 3 \times 10^{-7}$ A, $\pm 1\%$ otherwise • Applied current resolution: 0.03% of applied current range • Measured potential range (volts): ± 0.025 to ± 10 • Measured potential resolution: 0.0015% of measured range <p>iii) Electrometer</p> <ul style="list-style-type: none"> • Reference electrode input impedance: 1×10^{12} ohm • Reference electrode input bandwidth: 10 MHz • Reference electrode input bias current: ≤ 10 pA <p>iv) Waveform Generations and Data Acquisition</p> <ul style="list-style-type: none"> • Fast waveform update: 10 MHz @ 16-bit • Fast data acquisition: dual channel 16-bit ADC, 1,000,000 samples/sec simultaneously • External signal recording channel at maximum 1 MHz sampling rate <p>v) Experimental Parameters</p> <ul style="list-style-type: none"> • CV and LSV scan rate: 0.000001 to 10,000 V/s • Potential increment during scan: 0.1 mV @ 1,000 V/s • CA and CC pulse width: 0.0001 to 1000 sec • CA and CC minimum sample interval: 1 μs • True integrator for CC • DPV and NPV pulse width: 0.001 to 10 sec • SWV frequency: 1 to 100 kHz • i-t sample interval: minimum 1 μs • ACV frequency: 0.1 to 10 kHz • SHACV frequency: 0.1 to 5 kHz • FTACV frequency: 0.1 to 50 Hz, simultaneously acquire 1st, 2nd, 3rd, 4th, 5th, and 6th harmonics ACV data • IMP frequency: 0.00001 to 1 MHz • IMP amplitude: 0.00001 V to 0.7 V rms <p>vi) Other Features</p> <ul style="list-style-type: none"> • Current measurement bias: full range with 16-bit resolution, 0.003% accuracy • External potential input • Potential and current analog output • Digital input/output lines programmable through macro command • CV simulation and fitting program, user-defined mechanisms • Impedance simulation and fitting program 			
13.	Nano Spectrophotometer	<p>Description: Compact UV – VIS spectrometer to quantify undiluted nucleic acids at nanolitre volume (<2 μL), other biomolecule analysis using standard volumes and temperature controlled kinetic measurements</p> <p>Light Source: Xenon Flash Lamp</p> <p>Monochromator: Holographic aberration-corrected concave grating</p> <p>Detector: CMOS photodiode array</p> <p>Wavelength range: 200-830 nm</p> <p>Wavelength selection Method dependant, freely selectable (flexible)</p> <p>Spectral Bandwidth: ≤ 4 nm</p> <p>Wavelength increment: ± 1 nm</p> <p>Random wavelength error : ± 0.5 nm</p> <p>Photometric measuring range: 0.0-3.0 at Abs at 260 nm</p> <p>Photometric Accuracy: Δ Abs = 0.001</p> <p>Random photometric error: ≤ 0.002 at A = 0, ≤ 0.005 (0.5%) at A = 1</p> <p>Systematic photometric error: $\pm 1\%$ at Abs= 1</p> <p>Stray Light Component: <0.05 %</p>	1	6.5	15000/-

		<p>Diameter and Height of light beam in the cuvette: 1mm and 8.5 mm respectively Cuvette Type: Plastic/Glass cuvettes for standard methods and Quartz cuvettes for kinetic measurement Temperature Control: Built in Peltier controlled Cuvette shaft Cuvette incubation temperature Control: 20 to 42 degree C Temperature increment: 0.1 degree C Methods:</p> <ul style="list-style-type: none"> • Absorbance with one or more wavelengths, scans • Nucleic acids, Proteins, OD 600, dye labeling • Evaluation via factor, standard and calibration curve • Dual wavelength with subtraction and division evaluation • Kinetic method: end point, two point, linear regression <p>Methods Dependent Evaluation:</p> <ul style="list-style-type: none"> • Absorbance, concentration via factor and standard • Concentration via standard series using • Linear regression, Nonlinear regression with 2nd and 3rd degree polynoms • Spline evaluation • Linear interpolation (point to point evaluation) • Absorbance allocation via subtraction and division • Ratio 260/280, 260/230, molar concentration and total yield for nucleic acids • Frequency of incorporation of Cy3, Cy5 dyes and labeling density • Spectral zoom and peak evaluation for scans • Modification of time frame for regression evaluation <p>Selectable Cuvette Path Length: 10 mm, 5 mm, 2 mm, 1 mm, 0.5 mm, 0.2 mm and 0.1 mm Maximum Standards for Calibration curve: 12 Maximum Replicates: 3 Multi Wavelength Measurements: Upto 6 wavelength with Abs and scan data Display: 5.7" VGA TFT display Interfaces: USB, PC without need for dedicated software, thermal printer. Output data and graph as Microsoft Excel files Memory: > 100 method programs on the instrument > 1000 results with data, evaluation results and used parameters Connecting Port: USB for stick, USB for PC and RS-232 Power Supply: 100 to 240 V ± 10% / 50 to 60 Hz ± 5 % Power Consumption: Approx. 15 W in the operating step Approx. 5 W with dimmed display Note: UPS for running the instrument and accessories for 2 hours should also be quoted with instrument. Disposable cuvettes for 200 samples with Cuvette stand should be quoted with the instrument. Quartz cuvettes pair is also required.</p>			
14.	Deep Freezer	<ul style="list-style-type: none"> • Should have Temperature range of -50°C to -86°C (1°C increment) • Capacity: Atleast 500 Liters and above • Should have Platinum (Pt100) temperature sensor • Insulation: Vacuum Insulation Panel (VIP) with wall thickness ≤ 7 cm • Should be CFC & HCFC Free • Should have Cascade cooling system • Should have self-diagnostic function • Should monitor ambient & system conditions continuously & notify of abnormalities before problem happens • Control panel should be at eye level with digital display • Should have Microcomputer temperature controller with 	1	7.5	16000/-

		<p>digital design</p> <ul style="list-style-type: none"> • Should have protection from accidental setting of control panel • Should have Audible & visual alarms for: Hi/Lo Temperature, door open, microprocessor controlled filter clog check, power failure, remote alarm, sensor abnormality & part replacement notification • Should have 3 stainless steel shelves or more • Should have two independent, insulated & removable inner doors (HCFC Free) to prevent cold air leakage. • Should have the option of adding inner doors for each of the 4 shelves • Should have an outer door latch & an outer door lock • Should have 3 access ports • Exterior dimension : Approx. 770 x 875 x 1990 mm • Interior dimension: Approx. 630 x 600 x 1380 mm • Should be FDA certified, ISO 9001 compliant 			
15.	Fume Hood with Exhaust System	<p>Overall Fume Hood Dimension: 1800 mm L X 850 mm D X 1500 mm H [minimum].</p> <p>Working Dimension: 1600 mm L X 700 mm D X 800 mm H [minimum].</p> <p>Base Storage Cabinet: Provision required.</p> <p>Airflow Type: For Air Condition laboratories.</p> <p>Construction and Material: Made of good quality mild steel covered with a sheet, that is chemical, heat, fire resistant and easily cleanable.</p> <p>Ducting: Required [approximately 15-18 feet length], the fume extraction system should comprise a blower with dynamically balanced impeller fitted at the top of the fume chamber, PVC make ducting.</p> <p>Baffle Arrangement: Airflow uniformity throughout the chamber with smooth and immediate exhaust of fumes.</p> <p>Centrifugal Blower: Silent high efficiency remote blower is required. Blower capacity should be 1 H.P. 1 number or ½ H.P. 2 numbers. It should confirm international face velocity norms. The construction should be chemical and heat resistant.</p> <p>Sash: Glass with opening for unobstructed usage in the fume hood.</p> <p>Worktop: Table top with mild steel covered with marble, which should be chemical and heat resistant.</p> <p>Sink, Tap Water, Drainage: At least one sink made of porcelain required inside the hood with inlet and outlet arrangement.</p> <p>Gas Lines (Nitrogen, Argon etc): Provision required.</p> <p>Lighting: Lighting system with explosion proof fluorescent lamp [40 W, 2 numbers].</p> <p>Air Flow Monitor: Required and/or with provision from company for routine inspection.</p> <p>Scrubber: Required.</p> <p>Electrical Connections: Minimum two 15 A combined with 5 A electrical plug points, should be installed in the left and right side walls of the cabinet.</p> <p>Base Storage Cabinet Type: Should be compatible for chemical storage. Proper ventilation is required. The construction should be compatible to chemicals.</p>	1	3.5	70000/-
16.	Gel Documentation System	<ul style="list-style-type: none"> • 12-bit Scientific Grade, Zero Defect CCD Camera with Anti-reflective coating & MicroLens • Should have atleast 1.4 Megapixel Resolution • Should have Flat Field Calibration for uniformity of light acquisition cross the sensor. • Should have dark current noise corrections for increased image acquisition speed & reduced background noise • Manual zoom lens: 8-48 mm • Should have Auto Image Capture for single button click to automatically control & adjust camera zoom, focus and iris as well as exposure time simultaneously • Should have Metallic Dark room which should be chemiluminescence imaging ready & fully controlled through computer as well as through touchpad on darkroom 	1	7.5	16000/-

		<ul style="list-style-type: none"> • Should have atleast 5-Position Motorized Filter Wheel for Multiplex Imaging with controls through touch panel on darkroom as well as through software • Light source should automatically switched off after image acquisition • UV Transilluminator mounted on slide out tray: Dual wavelength without changing tubes (302 and 365nm), Dual Intensity (Hi/Lo) & EvenScan. Imaging area of atleast 21 x 26 cm • Independent Source for Transilluminated White Light; imaging area of atleast 21 x 31 cm • Dual Epi-White Lights • Epi UV-Light • Software for acquisition, enhancement, editing, annotation, archiving & analysis including features like 1-D multilane densitometry, 2-D spot densitometry, MW, Rf analysis, Microtiter plate, Eli-spot, Array & Dot Blot Analysis, Colony, Cell & GFP Yeast Counting, Q-PCR, Zymogram gel analysis, Gel Scoring, Band matching, RFLP, RAPD, Fingerprinting, Dendrogram creation, options for Dice, Jacard, Pearson, Frequency, Similarity Coefficients, & Cluster analysis with multiple methods including Neighbor joining, UPGMA, WPGMA, Simple linkage, complete linkage, ward, median, centroid etc., Multi-color fluorescence microscopy imaging & Movie Mode facility. Two additional licenses of standalone software 			
17.	Thermomixer	<ol style="list-style-type: none"> 1. A compact thermomixer with wide temperature control and application range (from 15 °C below RT to 99 °C) 2. Temperature setting 1° C to 100° C 3. Peltier element controlled heating and counter-cooling 4. Excellent mixing and incubating performance 5. Mixing frequency 300 rpm to 3,000 rpm, with stroke of 3 mm 6. Max. heating rate: 6 °C/min 7. Max. cooling rate: 2.5°C/min between RT and 100 °C 8. Temperature accuracy of ± 0.5°C at 20-45°C 9. Timer: 15sec to 99:30 h, continuous 10. Selectable “time” and “temp” controls: timer function starts with program activation or when set temperature is reached 11. Short-mix function, Interval mixing, USB interface, Pause function 12. Thermomixer Should be provided with a heated thermo Top/Lid for prevention of formation of condensation in the vessel top, thus to provide optimum reaction conditions, Top/lid should be simple and wireless with automatic recognition 13. It should have anti spill technology/2D Mix control 14. Digital display with simple and intuitive operation, save upto 20 user defined programs 15. RS-232 interface for remote control 16. Eleven different exchangeable thermo blocks for various formats (24x0.5ml, 24x1.5ml, 24x2.0ml, 8xependrof tube 5.0ml, 24x1.5-2.0ml cryo tubes, 8x15ml falcon tubes, 4x50ml falcon tubes, for MTP’s & deep well plates, for 96 x 0.2ml PCR tubes, and for 384 PCR plate) offer a high degree of flexibility 17. Quick release exchange and automatic thermo block identification and display of the maximum revolutions 18. Block for 1.5ml should be included with thermomixer. It should be CE certified in accordance to European standards. 	1	3	6000/-
18.	Fermenter	<ol style="list-style-type: none"> 1. The system should be compact, autoclavable, benchtop 7.5L total volume fermentor (working volume approx. 2-5.6 litres) designed for growth of bacteria, yeast, mammalian cells, fungi and plant cells. 2. Controller should be capable of Batch, fed-batch and continuous modes of operation. 3. It should be possible to use the same controller for vessels having total volumes of 1.3L, 3.0L and 14L. 4. The vessels should be interchangeable and made of borosilicate glass, autoclavable with dished-bottom. 	1	30	60000/-

		<ol style="list-style-type: none"> 5. Controllers should be capable of running either fermentation or cell culture. 6. System should be supplied with TMFC and capable of accommodating 1 – 4 rotameters. 7. The Master Control Station should be capable of controlling up to 3 vessels simultaneously. 8. The system should be suitable for both research and production purposes. 9. The system should be equipped with a bright color touch-screen interface of minimum 8.4”. 10. The system should be supplied with at least 3 fixed speed peristaltic pumps (for acid, Base, antifoam etc. addition) 11. The system should use Platinum RTD probe for temperature sensing. 12. The system should use PID Control for heating and cooling. 13. The system agitation should be through direct-drive mechanism. 14. The agitation range and control should be from 50 - 1,200 RPM for fermentation and 25 – 400 RPM for cell culture. The control should be PID with manual, automatic or cascade settings. 15. The system should be supplied with 2 six bladed Rushton Impellers along with 316L removable stainless steel baffles. Option for using other Impellers should also be available. 16. The system should be supplied with Ring sparger for aeration. Microsparger should be offered as an option. Inlet filter should be of 0.2μ. 17. The system should be supplied with one pH probe. The pH control range should be from 2 - 14, via PID links to pumps or gases and adjustable dead band. 18. The system should be provided with one DO probe. The DO probe range and control should be from 0 - 200%, via PID. The system should have a built-in cascade feature to automatically maintain DO set point. 19. The system should be supplied with one Foam / Level sensor. 20. The system should be provided with a bench mounted exit gas analyzer system for online monitoring and analysis of exit gas (O₂/CO₂) with data acquisition. It should have Oxygen/Carbon dioxide Monitor, 100-240 V, 50/60 Hz. Specification for gas: CO₂ range (0-5%), O₂ range (0-25%) with CO₂ accuracy ± 5% of the reading at 760 mm Hg and 25^oC. Non-dispersive Infra-Red Sensor to determine Carbon Dioxide Concentration, and Zirconium Oxide Sensor Monitors for Oxygen Concentration. Sensors should be Maintenance free, and provide high accuracy and excellent long term stability. It should have built in sample pumps with suitable flow meters for regulated delivery and enabling precise control of sample gas. It should comprise of automated process control and data logging with suitable software. It should be provided with all the suitable fittings for the standard analysis for calibration and the sample analysis. 21. The system should be ISO/CE certified and same will be mentioned in the original technical literature. 			
19. Centrifuge		<ol style="list-style-type: none"> 1. Table top cooling centrifuge with minimum capacity of 3 litres 2. Maximum speed (RPM): 14000 or more with accuracy of 10 rpm 3. Maximum (RCF): 20,000 X g or more 4. Temperature ranges from at least -9^oC to 40 ^oC. Fast and standby cooling facility. Sample temperature should be at 4 ^oC or less at maximum speed with 1.5/2 ml eppendorf tube and samples at swing out rotor 5. System should have a facility to run the 105 number of tubes (12mmX75mm) in a single run 6. Facility to run the Minimum- 16 – Micro Titer Plate (MTP) / 96 Well PCR Plate 7. Time pre-selection: Short run 0-99 minute, and continuous run 8. Microprocessor controlled alphanumeric LCD Screen for display of set & run parameters i.e. Speed, RCF, Temperature, Run Time, etc 	1	7	15000/-

		<p>9. Maintenance-free, noise level should be less than 68 d B</p> <p>10. Different curves for acceleration and deceleration</p> <p>11. Automatic rotor identification system.</p> <p>12. Motorized lid lock</p> <p>13. User defined 35 or more Programmable storage memory for routine experiments</p> <p>14. Provision for changes in parameters during centrifugation</p> <p>15. System Should have “At set RPM Function”</p> <p>16. System should have the inbuilt condensation drain in the rotor chamber bowl</p> <p>17. Power supply: 220-240V AC, 50/60 Hz</p> <p>18. Minimum Electricity consumption system will be preferred</p> <p>19. System must have International certification like CE/IVD conformity.</p> <p>20. System should be quoted with suitable voltage stabilizer.</p> <p>21. Rotors with Accessories: Two rotors should be included.</p> <p>(A) Autoclavable swing out rotor min. 4 x 750 ml capacity or more.</p> <p>(i) Swing Out Rotor should be quoted along with 15/50 ml. adaptor and plate adaptor.</p> <p>(ii) Other accessories of Swing out Rotor: Aerosol tight lid.</p> <p>(III) System should have the facility of various adapters at least 1 .5mL (up to 200 tubes or more), 5 ml of micro centrifuge tube & 15mL falcon (up to 55 tubes or more), 50 ml. Falcon min. 20-25 (Self Standing tube)in number, 750 ml of min. 4 bottles, and min. 16 or more in numbers of 96 – well PCR Plate.</p> <p>(iv) Max speed (RPM): 4,000 or more, Max RCF: 2800- 3,000 x g or more</p> <p>(B) A suitable autoclavable fixed angle rotor with 6 x 80 ml or more with rotor lid and 15/50 ml. falcon adaptors with 11000 rpm.</p> <p>(i)) Max speed (RPM): 4,000 or more, Max RCF: 2800- 3,000 x g or more</p>			
20.	Low Temperature Circulatory Water Bath	<ul style="list-style-type: none"> ➤ Temperature range: -20⁰C to 90⁰C ➤ Uniformity and stability using water: ±0.1 °C or less ➤ Temperature controller: PID ➤ Display: Digital ➤ Water bath: All wetted part should be leak proof and made up of stainless steel (SS316); capacity ≥ 20 L, Water tank/ container should be provided with closing lid. ➤ Powder coated exterior for corrosion resistant and proper thermal insulation ➤ The integral pump circulates the bath liquid within the tank, but also provides outlets to circulate the liquid through external equipment in both open and closed loop applications. <p>Provision for having corrosion free removable trays (SS316) and holders for keeping test tubes, Flasks, and eppendorff tubes inside the water bath.</p>	1	4	10000/-

SECTION IVFINANCIAL BIDSUPPLY AND INSTALLATION OF LAB EQUIPMENTS/INSTRUMENTS FOR USCT

S. No.	Description	Qty.	Unit Cost	Total Amount in figure	Total Amount in word
1.	Dynamic Light Scattering Instrument for Measurement of Size and Zeta Potential of Nanoparticle	01			
2.	High Performance Liquid Chromatography (HPLC)	01			
3.	Fourier Transform Infrared Spectroscopy (FTIR)	01			
4.	Thermogravimetric Analyzer (TGA)	01			
5.	Computer Controlled Liquid Mass transfer Coefficient and Diffusion Coefficient	01			
6.	High Temperature and High Pressure Reactor	01			
7.	Vertical & Horizontal condenser	01			
8.	Shell and Tube Heat Exchanger	01			
9.	Double Effect Evaporator	01			
10.	Finned Tube Heat Exchanger	01			
11.	Tray Drier	01			
12.	Electrochemical Workstation	01			
13.	Nano Spectrophotometer	01			
14.	Deep Freezer	01			
15.	Fume Hood with Exhaust System	01			
16.	Gel Documentation System	01			
17.	Thermomixer	01			
18.	Fermenter	01			
19.	Centrifuge	01			
20.	Low Temperature Circulatory Water Bath	01			
All Taxes (including insurance, freight and packing) if any					
Total Amount in Rs. (inclusive all taxes) & CIP New Delhi					

Note:-The bidder shall provide comprehensive on-site warranty for a period of 36 months or as provided by the bidder, which ever is more for all items from the last date of completion / installation as certified by the University

(SEAL, SIGNATURE & NAME OF THE BIDDER)