Guru Gobind Singh Indraprastha University

Sector 16C, Dwarka, New Delhi -110078
Website: http://www.ipu.ac.in

Phone No. 011-25302149
011-25302150

Dated: 05.10.2021

TENDER No. 03/PUR/GGSIPU/2021-22

E-TENDER (NIT)

Registrar, Guru Gobind Singh Indraprastha University invites e-tender from reputed and eligible contractors/firms in two bid systems (Technical & Financial) for the **Supply and Installation of Lab Equipments i.e. (**Advance Spectrometry Kit With Mercury Light Source, Michelson Interferometer With He Ne Laser, Advanced Polarimeter, Newton's Rings Apparatus, Diode Laser Diffraction Experiment (Single Slit, Double Slit, Grating, Circular Aperture Etc.), Two Beam Interference He Ne Laser kit, Optical Fiber Kit, Babinet Compensator-To Analyse Elliptically Polarised Light, Fresnels Biprism Assembly With Optical Bench, Bar Pendulum, Katers Pendulum, Flyweel, Sextant, E/M Experiment using Helmoltz coil, E/M Bar magnet set up using CRT, Magnetic Field in Helmoltz coil, Dielectric constants of solids and liquids, Specific heat of solids, Weighing Machine (Digital Weighing Balance Lab standard), Vernier caliper, Stop Watch, Mercury Light Source Spectrum Tube Power Supply (Should be consistent with spectrometer purchased), Sodium Light Source Spectrum Tube Power Supply (should be consistent with other optics experiment), Spherometer, Spirit Level, Meter scale, Miscellaneous (Prism-10, Grating -10, Screw Gauge -10**) for Physics Lab,** at East Delhi Campus, Surajmal Vihar, Delhi-110092. Tender document can also be downloaded from Delhi Govt. e-procurement website i.e. www.govtprocurement.delhi.gov.in. The details of Tender document can also be viewed from University Website http://www.ipu.ac.in.

1.	Name of work	**Supply and Installation of Lab Equipments (**Advance Spectrometry Kit With Mercury Light Source, Michelson Interferometer With He Ne Laser, Advanced Polarimeter, Newton's Rings Apparatus, Diode Laser Diffraction Experiment (Single Slit, Double Slit, Grating, Circular Aperture Etc.), Two Beam Interference He Ne Laser kit, Optical Fiber Kit, Babinet Compensator-To Analyse Elliptically Polarised Light, Fresnels Biprism Assembly With Optical Bench, Bar Pendulum, Katers Pendulum, Flyweel, Sextant, E/M Experiment using Helmolt coil, E/M Bar magnet set up using CRT, Magnetic Field in Helmoltz coil, Dielectric constants of solids and liquids Specific heat of solids, Weighing Machine (Digital Weighing Balance Lab standard),Vernier caliper, Stop Watch, Mercury Light Source Spectrum Tube Power Supply(Should be consistent with spectrometer purchased), Sodium Light Source Spectrum Tube Power Supply(should be consistent with other optics experiment), Spherometer, Spirit Level, Meter scale, Miscellaneous (Prism-10, Grating -10, Screw Gauge -10**) for Physics Lab at Guru Gobind Singh Indraprastha University, East Delhi campus. Surajmal Vihar, Delhi 110092.**
2.	The last date and time of uploading technical and financial bid on e-procurement website.	**15.10.2021 Upto 01.00 p.m.** As per order No. F.9/4/2020-PPD, issued by Procurement Policy Division, Deptt. of Expenditure, Ministry of Finance, Govt. of India dated 12th November, 2020, no EMD is required to be submitted, however, a self declaration undertaking must be submitted by the prospective bidders as per **Annexure-I.**
3.	Date and time for opening of Technical bid	**15.10.2021** at 02.30 p.m.

4.	Cost of Material	Rs. 41.55 Lakh (approximate)
5.	The bids shall be submitted in two stages viz.(i) *Technical bid* (ii) *Financial bid.* Detailed specification of the item(s) to be supplied is placed at **Section-III Annexure-G. The Technical & Financial bid should be uploaded on e-procurement website i.e.** www.govtprocurement.delhi.gov.in **(No documents need to be submitted in hard copy).**	
6.	Financial bid shall be opened after evaluation of technical bid and the date & time will be notified, thereafter on e-tender website www.govtprocurement.delhi.gov.in	

(REGISTRAR)

GURU GOBIND SINGH
INDRAPRASTHA
UNIVERSITY

TENDER DOCUMENT

FOR

Supply and Installation of Lab Equipments (Advance Spectrometry Kit with Mercury Light Source, Michelson Interferometer with He Ne Laser, Advanced Polarimeter, Diode Laser Diffraction Experiment (Single Slit, Double Slit, Grating, Circular Aperture Etc.) Two Beam Interference GE Ne Laser Kit, Optical fiber Kit, Babinet Compensator-To Analyse Elliptically Polarised Light, Fresnels Biprism Assembly with Optical Bench, Bar Pendulum, Katers Pendulum, Flywheel, Sextant, E/M Experiment using Helmoltz coil, E/M Bar magnet set up using CRT, Magnetic Field in Helmoltz coil, Dielectric Constants of solids and liquids, Specific heat of solids, Weighing Machine (Digital weighing Balance Labs standard) Vernier caliper, Stop Watch, Mercury Light Source Spectrum Tube Power Supply (should be consistent with spectrometer purchased), sodium Light source Spectrum Tube Power Supply (should be consistent with other optics experiment), Spherometer, Sprit Level, Meter Scale, Miscellaneous (Prism-10, Grating-10, Screw Gauge-10) for Physics Lab

AT

Guru Gobind Singh Indraprastha University
[*A state University under Govt. of NCT of Delhi]*
East Delhi Campus, Surajmal Vihar, Delhi-110092.

Dy. Registrar (Purchase)
Room No. L 010, Ground Floor, Library Block,
GGSIPU, Sector 16C, Dwarka, New Delhi 110078
Contact Nos.011 25302149-150
Email: purchasebranch@ipu.ac.in

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NOTICE INVITING TENDER

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

1. **Particulars of Items:** Details of the items with specification is mentioned at **Annexure-G**

2. **Completion period:** Supply and installation within 30 days from the date of issue of award of the tender/issue of Purchase Order, whichever is later.

3. **Availability of Tender Document:** Tender Documents with detail terms & conditions can be downloaded from Delhi govt. e-procurement website.

4. **Qualification of the Tenderer:** The bidder must upload the documents on e-procurement website as per the **tender clause 13**.

5. **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.

6. **Receipt and opening of Tenders:** The Technical Bid will be opened on the same day at 02.30 pm.

7. GGSIPU reserve the right to accept or reject any or all the tenders wholly or partially without assigning any reason thereof.

SECTION-I

INSTRUCTIONS TO BIDDERS

8.0 Scope & Work
The work consists of:

8.1 **Supply and Installation of Lab Equipments (**Advance Spectrometry Kit With Mercury Light Source, Michelson Interferometer With He Ne Laser, Advanced Polarimeter, Newton's Rings Apparatus, Diode Laser Diffraction Experiment (Single Slit, Double Slit, Grating, Circular Aperture Etc.), Two Beam Interference He Ne Laser kit, Optical Fiber Kit, Babinet Compensator-To Analyse Elliptically Polarised Light, Fresnels Biprism Assembly With Optical Bench, Bar Pendulum, Katers Pendulum, Flyweel, Sextant, E/M Experiment using Helmolt coil, E/M Bar magnet set up using CRT, Magnetic Field in Helmoltz coil, Dielectric constants of solids and liquids Specific heat of solids, Weighing Machine (Digital Weighing Balance Lab standard),,Vernier caliper, Stop Watch, Mercury Light Source Spectrum Tube PowerSupply (Should be consistent with spectrometer purchased), Sodium Light Source Spectrum Tube Power Supply (should be consistent with other optics experiment), Spherometer, Spirit Level, Meter scale, Miscellaneous (Prism-10, Grating -10, Screw Gauge -10)**) for Physics Lab** at East Delhi University Campus at East Delhi Campus, Surjamal Vihar, Delhi-110092 as per specification in **Section-III (Annexure-G).**

8.2 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.

9.0 Definitions:

9.1 **GGSIPU** means Guru Gobind Singh Indraprastha University, Delhi

9.2 **University** means Guru Gobind Singh Indraprastha University, Delhi

9.3 **Employer** means the Registrar, GGSIPU and his successor

9.4 **Bidder** means the Manufacturer/Vendor/Firm

9.5 **"Year"** means "Financial year" unless stated otherwise.

10.0 Who can apply:

10.1 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.

10.2 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.

10.3 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.

10.4 **Joint Venture/ Consortiums are not accepted.**

11.0 Sealing and Marking of Bids

11.1 Technical bid must be submitted on e-procurement website of each item and the respective Bid-Securing Declaration form for EMD as per **Annexure-I.**

12.0 **Bid Submission:**

12.1 The document comprise of the technical bids alongwith Bid-Securing Declaration Form should be uploaded on e-procurement website i.e. www.govtprocurement.delhi.gov.in **only** (**Not to be submitted in hard copy**)

12.2 The **"Financial Bid"** shall comprise of the price bids uploaded on e-tender website i.e. www.govtprocurement.delhi.gov.in

12.3 Each page of the Technical Bid, Tender Document must be signed by the authorized signatory of the bidder.

12.4 Conditions other than those laid down in the Tender document will not be entertained.

13.0 Eligibility Criteria for Technical Bid

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

13.1	Letter of Transmittal	**Annexure – A**
	Declaration by Bidder	**Annexure – A1**
	Compliance to Bid Requirement	**Annexure – A2**
	A declaration by the manufacturer/firm/vendor as to the probable date of manufacture of the item for which financial bid has been made.	**Annexure – A 3**
	Organizational Structure: - Legal status of the company/ organization with legal proof along with certified copies.	**Annexure - B**
13.2	Income Tax Registration (PAN No.),	**Attach certified copies**
	GST Registration Number	
13.3	Average financial turnover of **Rs. 41.55 Lacs for all the equipments** during the immediate last three consecutive financial years, duly audited, signed & stamped by a Chartered Accountant. The bidder should not have incurred losses in more than two years in the last 3 consecutive financial years along with copies of audited profit and loss account of last three years.	**Annexure C**
13.4	Firm should have executed atleast one single order of same and similar nature of **Lab Equipment** in the last three financial years. Explanation: Same and Similar nature of 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.	**Annexure D**
13.5	That the bidder/ organization has not been debarred or blacklisted by any of the Central/State Government/Departments /Organizations/Central or State PSU in last 3 years. In case the debarrement or blacklisted has been revoked by the department or court then it shall not be considered as blacklisting or debarrement. A declaration of fair business practice by the Bidder.	**Annexure – E**
13.6	The intending bidder must submit compliance report of each item of the bid.	Attach compliance report
13.7	The Manufacturer/firm/vendor should have a authorized service centre in India only	Attach copy of proof
13.8	Printed and proper circulated catalog for the quoted similar items be submitted along with the tender document	Attach copy of proof
13.9	Authorization letter of the OEM	Attach copy of proof
13.10	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.	Certificate to be given
13.11	The proprietor/partners of the agency do not have any relative employee in the University.	Certificate to be given
13.12	The intending bidder must attach Income Tax return for the last three years with the bid document or Gross Annual Income Certificate for the last three years duly certified by the Charted Accountant	Attach copy of proof
13.13	The quality of the equipments will be evaluated by the Technical Committee based on the physical demonstration by the bidder during the technical bid evaluation.	Attach copy of Acceptance of clause 13.13

Supplier needs to demonstrate the quoted instrument at the Institute/NCR and show each point mentioned in the technical specification.

All the documents should by self attested by the bidder. University reserves the right to independently verify the documents submitted by the bidder form issuing authority.

14.0 Opening of Technical Bids & Evaluation:-

14.1 The details submitted by the bidders will be evaluated in the following manner:

14.2 The "initial eligibility criteria" prescribed in para 13.1 to 13.11 above in respect of experience in similar class of works completed, financial turnover, profitability and valid registrations will first be scrutinized.

14.3 Examination of the specification of all the items will be done by specialized specification evaluation committee.

14.4 Even though any bidder may satisfy the above requirements, he/she would be liable to disqualification if he/she has:-

14.5 Made misleading or false representation or deliberately suppressed the information in the forms, statements and enclosures required in the eligibility criteria document.

14.6 Record of poor performance such as abandoning work, not properly completing the contract, or financial failures/weaknesses etc.

15.0 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 Eligibility Criteria as per Clause 13, at notified time, date and place, if any. **The lowest financial bidder item-wise shall only be considered for award of work**.

16.0 Earnest Money Deposit:

As per order No. F.9/4/2020-PPD, issued by Procurement Policy Division, Deptt. of Expenditure, Ministry of Finance, Govt. of India dated 12th November, 2020, no EMD is required to be submitted, however, **a self declaration undertaking must be submitted by the prospective bidders as per Annexure-I.**

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17.0 Performance Security: The successful bidder will be required to submit 3% Performance Security after award of work within 15 days in the form of FDR/BG (FDR/BG should be valid for 60 days beyond warranty period i.e. 36 months) from the date of supply.

18.0 Financial Bid:

The bidder shall quote unit item rates in INR 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. 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.

19.0 General:

19.1 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.

19.2 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.

19.3 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.

19.4 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.

19.5 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 performance security.**

19.6 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 binding.

19.7 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.

19.8 GST or any other tax on material applicable on the date of submission of bid in respect of this contract shall be payable by the bidder and University will not entertain any claim whatsoever in respect of the same.

19.9 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.

19.10 On acceptance of the tender, the name of the accredited representative(s) of the bidder who would be responsible for taking instructions from the University shall be communicated in writing to the Registrar.

19.11 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 bidder, which may also result to forfeiture of performance security.

19.12 Without prejudice to any of the rights or remedies under this contract if the bidder dies, the University shall have the option of terminating the contract without compensation to the legal heir of the bidder.

19.13 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.

20.0 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 as per specification given under Section III. Demonstration and training to the concerned Lab staff/faculty.

20.1 **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.

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

20.3 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.

20.4 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.

20.5 The necessary training and technical support will be provided for the period of maximum 1 week by the company.

20.6 All the necessary manuals, documentations (2 Sets) will be provided in hard and soft form by the supplier only.

20.7 The commissioning and complete installation of all the equipment/machinery, including civil work, electrical work, pneumatic power supply etc. as per the setup finalized by the committee will be done by the supplier only.

20.8 The whole system shall be secured by wired fencing.

20.9 **Default in After Sales Services:** In the event of any default and/or unsatisfactory after sales service by the supplier/tenderer/vendor/firm, the competent authority of the institute will be at liberty to repair during warranty/get the item repaired/serviced from other source/party at the cost of vendor. All the cost has to be paid by the vendor / supplier of instrument.

20.10 In case of software items, the suppliers should ensure that:

a) Legal software is supplied in original sealed pouches/P.K.T.
b) A license agreement is enclosed with it
c) A registration card is available in software.

20.11 The bidder who will qualify the technical evaluation shall give demonstration of the equipments to the technical members of the committee. Price bids of only those bidders will be considered whose demonstration will be found satisfactory by the technical members of the committee.

21.0 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).

22.0 Summary Rejection of tender:

22.1 The tenders not submitted the form for Bid-Securing Declaration for EMD (Annexure-I) 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.

23.0 Particular provisions

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

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

24.0 Amendment of tender document:

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

24.2 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.

25.0 Validity of Tender:

One Eighty days from the date of opening of **Technical Bid** of the tender. During this period no bidder shall be allowed to modify/ withdraw his tender.

26.0 Performance Guarantee:

26.1 The successful bidder shall be required to furnish a Performance Guarantee of 3% after successfully installation of the product at site. The Performance Guarantee should be valid up to **60 days beyond warranty period i.e. 38 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 (62 months validity)
ii. Bank Guarantee (As per Annexure-H) (62 months validity)

26.2 Performance Guarantee will be refunded after completion of the warrantee **period as per clause 27.**

26.3 In case of non submission of Performance Guarantee within specified time the University may consider to black list/de-bar the bidder.

26.4 In case a fixed deposit receipt/ Bank Guarantee of any bank is furnished by the bidder 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.

27.0 Warranty

The bidder shall provide comprehensive on-site **warranty** for a period of **36 months** for all items from the last date of completion/ installation as certificate issued 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.

28.0 Duration

The items covered under this tender are required to be delivered and installed at University East Campus at Surajmal Vihar, Delhi-92 **within 30 days.**

29.0 Payment Terms

29.1 The payment will be released after satisfactory complete installation, demonstration, training and receipt of performance guarantee of the product.

29.2 Each invoice should be submitted in duplicate clearly specifying contact no, goods description, quantity, unit price, total amount, bank details along with warranty certificate, etc.

29.3 No advance payment will be made under any circumstances.

30.0 Delay and Non Conformance

30.1 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.

30.2 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.

31.0 Services during warranty period

31.1 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 is made or letter is written) shall not exceed 05 working days.

31.2 The period for correction of defects during warranty period is 3 weeks.

31.3 In case an item is not useable beyond the stipulated maximum downtime the bidder will be required to arrange for an immediate replacement.

31.4 In case the rectification of defects is not carried out within 3 week and replacement of defective items are not provided, a penalty of sum equivalent to 1% per week of the delivered price of that defective item(s) shall be levied. This penalty is applicable up to a maximum of 3weeks (maximum 3%)

32.0 Packing and Marking

32.1 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.

33.0 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 bidder at bidder's cost and risk.

34.0 Insurance, Freight and Deliveries

34.1 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.

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

35.0 Arbitration and Settlement of Disputes:

35.1 University and the bidder 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.

35.2 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:

35.2.1 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 made in pursuance thereof shall be binding on the parties. The sole arbitrator shall be appointed by the Vice Chancellor, GGS Indraprastha University.

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

35.2.3 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

35.2.4 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.

36.0 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 to I)

Annexure – A

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 Equipments (**Advance Spectrometry Kit With Mercury Light Source, Michelson Interferometer With He Ne Laser, Advanced Polarimeter, Newton's Rings Apparatus, Diode Laser Diffraction Experiment (Single Slit, Double Slit, Grating, Circular Aperture Etc.), Two Beam Interference He Ne Laser kit, Optical Fiber Kit, Babinet Compensator-To Analyse Elliptically Polarised Light, Fresnels Biprism Assembly With Optical Bench, Bar Pendulum, Katers Pendulum, Flyweel, Sextant, E/M Experiment using Helmolt coil, E/M Bar magnet set up using CRT, Magnetic Field in Helmoltz coil, Dielectric constants of solids and liquids Specific heat of solids, Weighing Machine (Digital Weighing Balance Lab standard),,Vernier caliper, Stop Watch, Mercury Light Source Spectrum Tube Power Supply (Should be consistent with spectrometer purchased), Sodium Light Source Spectrum Tube Power Supply (should be consistent with other optics experiment), Spherometer, Spirit Level, Meter scale, Miscellaneous (Prism-10, Grating -10, Screw Gauge -10**) for Physics Lab at GGSIPU East Delhi Campus, Surajmal Vihar, Delhi -110092".**

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.

3. I/we submit the requisite certified solvency certificate and authorize the Registrar, GGSIPU to approach Bank issuing the solvency certificate to confirm the correctness thereof. I/we also authorize the GGSIPU to approach individuals, employers, firms and corporation to verify our competence and general reputation.

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

Annexure – A1

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.

Annexure – A2

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 : _____

Annexure – A3

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.

Annexure - B

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. GST 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)

Annexure – C

DETAILS OF ANNUAL TURNOVER

A. FINANCIAL DETAILS

Financial Years	Gross Annual Turnover (In Lakhs)	Profit/Loss (In Lakhs)
2018-2019		
2019-2020		
2020-2021		

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)

Annexure – D

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)

Annexure -E

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 fortified 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

Annexure – F

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 bidder(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 bidder (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 bidder (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 bidder(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 bidder(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 bidder(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 bidder(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 bidder(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 bidder(s) or for any forbearance, act of omission on the part of the University or any indulgence by the University to the said bidder(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 bidder(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

Supply and Installation of Lab Equipments (Advance Spectrometry Kit With Mercury Light Source, Michelson Interferometer With He Ne Laser, Advanced Polarimeter, Newton's Rings Apparatus, Diode Laser Diffraction Experiment (Single Slit, Double Slit, Grating, Circular Aperture Etc.), Two Beam Interference He Ne Laser kit, Optical Fiber Kit, Babinet Compensator-To Analyse Elliptically Polarised Light, Fresnels Biprism Assembly With Optical Bench, Bar Pendulum, Katers Pendulum, Flyweel, Sextant, E/M Experiment using Helmolt coil, E/M Bar magnet set up using CRT, Magnetic Field in Helmoltz coil, Dielectric constants of solids and liquids Specific heat of solids, Weighing Machine (Digital Weighing Balance Lab standard),,Vernier caliper, Stop Watch, Mercury Light Source Spectrum Tube Power Supply (Should be consistent with spectrometer purchased), Sodium Light Source Spectrum Tube Power Supply (should be consistent with other optics experiment), Spherometer, Spirit Level, Meter scale, Miscellaneous (Prism-10, Grating -10, Screw Gauge -10) **for Physics Lab at Surajmal Vihar, East Campus, Delhi 110092.**

1. **Advance Spectrometry Kit With Mercury Light Source – Quantity -10**

The setup should be able to perform the following

- Determine the Refractive index of the material of Prism
- Determine dispersion power of a prism.
- Determine the resolving power of the prism.
- Verify the Cauchy formula.
- Determine the wavelength of Light using a plane diffraction Grating.
- Determine the Resolving Power of a plane diffraction grating.

The Set up should have the following components:

Advance Spectrometer

Scale : Brass, Dia. 175mm.
Objective : Achromatic, focal length 178 mm, aperture 32mm
Slit : German silver.
Reticle : 90^{O} cross etched on glass.
Least count : 20 seconds
Base : Aluminium Casting
Vernier:4 verniers (Telescope & Prism table)
Supplied in wooden box

Prism (EDF) Quantity 2- Each Set Up

SIZE : 38 X 38 X 38 MM.
Height : 38mm
Material : EDF

Diffraction Grating

Size : 38 x 50 mm.
Lines/inch : 15000, 2500,750-Each Set up

Micrometer Slit

Pitch : 0.5 mm.
Least Count : 0.005 mm.
Range : 0 - 6.5 mm.
Diameter : 38 mm approx.

Mercury Light Source

Starting Voltage : 470 Volts
Operating Voltage : 220 Volts, 50 Hz.
Lamp House : 250 x 100 mm (L x dia.) (cylindrical)
Aperture diameter : 25mm
Mercury Lamp : 125W

Hand Lens for Viewing

2. Michelson Interferometer With He Ne Laser Quantity -6

The setup should be able to perform the following

- Determine the wave length of monochromatic light. (He- Ne laser).

The Set up should have the following components:

Michelson Interferometer

Base dimension	:	290 x 212 x 168mm (L x W x H)
Distance of mirror M2 from Beam Splitter	:	100mm.
Dimensions of beam splitter	:	50 x 38 x 7 mm (L x W x T)
Dimensions of compensating plate	:	50 x 38 x 7 mm (L x W x T)
Dimensions of mirrors M1 and M2	:	30 mm dia, Thickness 10 mm.
Reflectivity :Transmitivity	:	50 : 50
Flatness of beam splitter	:	λ/8
Least count	:	0.01 mm (coarse adjustment knob)
Least count	:	0.0001 mm (fine adjustment knob)
He -Ne Laser		
Wavelength	:	632.8 nm
Working current	:	4mA ~ 6mA
Output power	:	> 2mW
Continuous working time	:	> 8 hrs.
Working Voltage	:	220 V AC 50 Hz
Input Power	:	<2 W
Dimension (L x B x H)	:	300 x 62 x 82 mm
Weight	:	1.5 kg (approx.)
Laboratory Jack:		
Plate Material	:	Aluminium
Top Plate Size	:	32 x 32cm
Static Loading	:	20Kg
Vertical Elevation	:	70 to 270mm
Microscope Objective In Holder:		
Objective	:	10X
Rod diameter	:	10mm
Holder diameter	:	25mm
Object Screen:		
Material	:	Translucent, acrylic
Size	:	300 x 300mm
Rod	:	10 mm diameter
Cylindrical Base:		
Material	:	Ferrous
Mount	:	Rod 10-14mm dia

3. **Advance Polarimeter- Quantity 8**

The setup should be able to perform the following

- Measure the rotation of the polarisation plane through optically active liquids and determine the concentration of sugar solution.

The set up should have the polarimeter tube and light source **All in one Assembly** so that the alignment issues are taken care of. The requirement is a compact version of Polarimeter.

The set up should have the following features

- Circular measuring range : +/- 180^o (0-360^o)
- View : Triple Shade view
- Division Value : 1^o
- Least count : 0.05^o
- Magnifying factor of the magnifying glass : 4 times
- Magnifying Glass : 2 nos. at 180 Degree
- Monochromatic light source : $5893A^o$ (sodium)
- Power line voltage : 220V, 50 Hz
- Working current : 1.3A
- Discharging power : 20W
- Adjustment will be done with Course and fine Knob
- Stabilization time(approx.) : 5 minutes

Glass Tube : Borosilicate Material, Length : 200mm and 100mm, With central bulb, metallic caps & cover glasses packed in a velvet case.

Sodium Light Source :

- Supplied with One Extra Sodium Bulb
- Sodium Bulb: Pin type (3 pins)
- Bulb Holder : Plug in pin type
- Aperture : Rectangular and Vertical (50 X 20 mm)
- Ground Glass at the aperture
- 4 hole on top for hot air ventilation.
- Bulb Cover can be fixed and removed easily.

4.Newton's Rings ApparatusAssembly Quantity -8

The set up should be able to perform the following

- Determine the wavelength of sodium light.
- Determine the refractive index of a liquid by using newton's rings apparatus.
- Determine the radius of curvature of planoconvex lens using newton's rings experiment, given $\lambda=5893A^0$.
- Determine the thickness of a thin sheet of paper (air wedge experiment).

The setup should contain the following specifications

Newton's Rings Main Unit

Dimension : 390 x 480 x 170mm approx.
Micrometer : 0.01 mm least count
Eyepiece : Ramsden 10X
Objective : 3X
Weight : 12.6 kg approx.

Spherometer (Disc Brass)

Types : 3 legs
Vertical scale : 6mmx6mm (WxT)
Micrometer : Dia. 40mm, Brass
Lower disc : Dia. 60mm
Range : 10-0-10mm
Least count : 0.01mm

Plano Convex Lens

Dia. : 61.5mm, Glass
Focal length : 200mm

Sodium Lamp

5. Diode Laser Diffraction Experiment Quantity- 6

The set up should be able to perform the following:

- Diffraction of light by single slit.
- Diffraction of light by double slit.
- Diffraction of light by multiple slit.
- Diffraction of light by fine wire.
- Diffraction of light by cross wire.
- Diffraction of light by wire mesh.
- Diffraction of light by transmission grating.
- Diffraction of light by coarse grating.
- Diffraction of light by circular aperture (Pinhole).
- Diffraction of light by grid.
- Diffraction of light by grey filter.
- Diffraction of light by tapered single slit.
- Diffraction of light by circular opaque spots.

The Setup should consist of the following:

Diode Laser :

Peak wavelength : 635nm
Operating voltage : 5V DC
Operating current : 250mA
Optical power : 0.4-0.8mW
Laser product : Class II
Operating temp. : 0 - 40°C
Storage temp. : -10 to 50°C

Optical Bench Triangular

Material : Aluminum extrusion
Type : Triangular shape
Scale : 0-100cm
Least count : 1mm
Optical bench should be rigid, heavy, stable, long lasting with four levelling screws and flexible feets.

Diffraction Grating Set with Frame Size : 50mm x 50mm, Following attachments required

- Slits : Width=0.06mm & Separation=0.20mm (Single, Double, Three, Four, Five, & Six)
- Coarse Grating : 4 lines/mm and 8 lines/mm, line/space ratio 3:1
- Coarse Grating : 4 lines/mm, line/space ratio 6:1
- Diffraction grating : 80 lines / mm, 300 lines / mm
- Single and Double slit : Tapered
- Metal gauze : 300 mesh
- Circular apertures : 1.0, 0.60, 1.40, 0.30 mm nominal dia.
- Hologram : 50x50mm Transmission type
- Polaroids : 50x50mm linearly polarized

Pin Hole Photo Detector

Detector : Silicon photocell
Terminals : 4mm safety socket
Aperture : 1 mm
Rod : 10 mm diameter

Slit Holder

Clear Aperture : 45x45mm
Object holder : Clip type

Mounting Rod : 10mm diameter

6.Two Beam Interference He Ne Laser Kit Quantity-4

The setup should be able to perform the following

- Determine the wavelength of monochromatic light source using Fresnel's biprism.
- Determine the wavelength of monochromatic light source using Fresnel's mirror.

The setup should contain the following

Optical Bench

Material : Aluminum extrusion
Type : Triangular shape
Scale : 0-100cm
Least count : 1mm
This optical bench should be rigid, heavy, stable and long lasting with four levelling screw and flexible feets.

Fresnel Biprism :

Material : Glass
Size : 40x50mm (LxW)
Prism angle : 178° approx.

Fresnel's Mirror:

Size : 100x50mm
Mirror : 50x45mm (LxW)
Flatsness : λ/6
Coating : Front coated
Mirror angle : 3° approx.
Mounting rod :10mm

He -Ne LASER

Wavelength : 632.8 nm
Working current : 4mA ~ 6mA
Output power : > 2mW
Continuous working time : > 8 hrs.
Working Voltage : 220 V AC 50 Hz
Input Power : <2 W
Dimension (L x B x H) :300 x 62 x 82 mm
Weight : 1.5 kg (approx.)

Universal Lens Holder :

Object :upto 60mm
Jaws : 3 no. at 90°
Frame : 100 mm dia.
Rod : 10mm dia.
Rotation : By knurled screw

Micrometer Eyepiece

Eyepiece : 10X, Ramsden
Pitch : 0.5mm
Least count : 0.01mm
Displacement : 20mm

Object Screen

Material : MS sheet
Size : 300x300mm
Rod : 10 mm diameter

---

7. OPTICAL FIBER KIT Quantity-8

The set up should be able to perform the following

- Study external circuitry to transmit an audio signal through an optical FIBER using the analogue transmitter and receiver
- Calculate the numerical aperture of the PMMA Fiber cable.
- Study various types of losses that occurs in optical fibers and measures the loss in dB coupling two optical Fibre patch cords.
- Compute the coefficient attenuation per meter.
- Find the relationship between the forward current of fibre optic LED and optical power output and determine the linearity of the device.
- Determine the relationship between the optical input power Pin and the resultant photo current IP in an optical to electrical converter.
- Evaluation of an AC intensity modulation system.
- Study Transmission/Reception of digital signal using this trainer and plot the graph of transmitter frequency versus VO.

It should contain the following items with these specifications:

Specifications Of Simplex Cable

- Core Material : PMMA (Polymethyl methacrylate)
- Cladding Material : Fluorinated Polymer
- FiberStructure : Step index type
- Core/Cladding Diameters : 960 micron/1000 microns
- Core Refractive index : 1.492
- Cladding Refractive index : 1.405 to 1.417
- Numerical Aperture : 0.5 (typical)
- Acceptance Angle : 55-60
- Attenuation at 660nm : Typically 0.3 dB per meter
- Jacket Material : Polythene (black, 2.2 mm OD)

Specifications Of Fiber-Optic Led

- Material : Ga Al As
- Wavelength : 660nm
- Spectral Line Width : 45nm
- Forward Voltage Vf : 1.7V to 10V
- Reverse Voltage (Vr) : 5 Volts
- Capacitance : 100 pf (approx.)
- Forward Current (9max) : 30 mA (avg.)
- Optical Power : 30-40mw-10mA
- Turn-on-turn-off time :<800 ns
- Termination : SMA (905)
- Should be able to couple 40 to 50 mw of power into a 1000 micron PMMA fiber.

Specifications Of Fiber Optic Phototransistor

- Peak Responsively : 850 nm
- Spectral Range : 400 to 1100 nm
- Dark Current : 100 mA (max)
- Spectral Response : 50mA/mw-660 nm
- CE Breakdown Voltage : 30V (min)
- EC Breakdown Voltage : 5V (min)
- Vce (sat) : 0.2 V (typical)
- Rise/Fall Time : 5 ms (typical)
- Connector : SMA (905)
- Electrical Leads : Black sleeve is Emitter, No sleeve is collector.

Features Of The Trainer:

- • Function Generator: Sine / Square output
- FIBER optic analogue Transmitter/Receiver section.
- FIBER optic loss & numerical aperture (NA) section.
- The microphone Input and audio amplifier output section
- DIMENSION : 41.5cm x 31.5cm x 13.5cm
- WEIGHT : (Approx.) 2-3 KG
- POWER : 230VAC - Mains Operated

The setup should consist of the following:

Receiver :

Wavelength : 635nm
Connector : SMA
Optical power : 0.4mw (peak)
Bandwidth : dc to 200KHz(min)
Vin &Vout : Analog 1mV to 300 mV p-p
Storage temperature : -10 to 50°C
Cable length : 1 - 5 m

Transmitter :

Wavelength of laser transmission : 650nm +/- 5nm
Laser threshold current &power : 20-25mA; 3mw(max)
Optical power coupled into a : -3.0dBm (0.5mw) max PMMA fibre.
Monitor photodiode : Built-in (test photocurrent on Vm)
Analog modulation bandwidth : dc to 100Khz

---

8. Babinet CompensatorQunatity 4

The set up should be able to perform the following
Analyse elliptically polarised light by means of Babinet`s compensator.
The set up should contain the following

- Babinetcompensator : With heavy stand, 360 degree scale screen, micrometer Least count = 0.01mm, with stand rod
- White light source (Lamp) : Table lamp with 100W bulb, attached main lead, on/off switch
- Quarter wave plate : circular scale, Lest count of scale of quarter wave-plate = 1 degree, with stand rod, pointer for scale
- Polariser : with stand rod
- Analyser. circular scale, with stand rod and pointer for scale
- Eye piece : focus adjustable, with hair line **(attached with analyser)**
- Sodium lamp

---

9. Fresnel's Biprism with optical Bench Quantity -4

The set up should be able to perform the following:

- Determine the wavelength of light using Fresnel's Biprirsm

The set up should contain the following

Fresnel Biprism :

- Material : Glass
- Size : 40x50mm (LxW)
- Prism angle : 178° approx.

Micrometer Eyepiece:

- Eyepiece : 10X, Ramsden
- Pitch : 0.5mm

- Least count : 0.01mm
- Displacement : 20mm

Universal Lens Holder :

- Object :upto 60mm
- Jaws : 3 no. at 90°
- Frame : 100 mm dia.
- Rod : 10mm dia.
- Rotation : By knurled screw

Optical Bench :

- Material : Aluminum extrusion
- Type : Triangular shape
- Scale : 0-100cm
- Least count : 1mm
  This optical bench should be rigid, heavy, stable and long lasting. It should have four leveling screw and flexible feet.

Mercury or Sodium Light source:

- Starting Voltage : 470 Volts
- Operating Voltage: 220 Volts, 50 Hz.
  Aperture dia. : 25mm

---

10. Bar Pendulum Quantity -10

The set up should be able to determine the acceleration due to gravity using bar Pendulum

The setup should have a Simple & Compound pendulum. Digital Time measurement unit with Microcontroller based LCD display (Mains operated) with automatic & Manual mode.

Specifications

Bar Rod :Length : 1 m ; Breadth : 4.3 cm ; Width : 0.7 cm
Number of holes : 19 ; Distance between holes : 5 cm
Diameter of holes : 1 cm ; Diameter of bob : 2.47 cm
Height of Hook : 1.1 cm
Measurement unit :Microcontroller based LCD display (Mains operated) with automatic & Manual mode.
Adaptor input : 100 - 240 V, 0.2 A, 50 Hz

---

11. Katers Pendulum -Quantity -10

The set up should be able to determine the acceleration due to gravity using Kater's Pendulum

Salient Features:

- Sharp knife edges.
- Unyielding wall bracket.
- Heavy & light weight for course & fine adjustment
- Stainless steel rod with pointed ends.Steel rod 120 cm in length, 1.2 cm diameter
  - SS adjustable masses of 600g & 300g (each) 1
  - Meter scale of length 1m 1
  - Stopwatch 1
  - Removable sharp knife edges 2
  - Adjustable wooden light masses 2
  - Wall bracket 1

---

12. **Flywheel Quantity 6**

The set up should be able to determine the moment of inertia of a fly wheel about its axis of rotation

Salient Features:

- Flywheel : Axel supported on bearings, heavy base

- Thin cord : Extra strong, make escort, colourbrowen
- Weight : Material Iron, + 9 X100g slotted weight
- Hanger : Material Iron, Hanger 100g
- Meter scale : material -Wooden, scale, 0 to 100 cm printing, length 1 meter.
- Rod : Rod with clamp knob
- Ball bearing for small friction.

---

13. **Sextant Quantity -6**

The set up should be able to

- Determine height of building, pole etc.
- Measure the area of window etc.

The set up should have following specifications

- Tripod Base (C.I.) of cast iron with levelling screws
- Adjustable Height stand (MS) Height 6 feet.
- Measuring Tape 5 meter.
- Sextant Material german silver, embedded in brass frame, three shades for each horizon & index mirror,
- Astronomical telescope
- **Terrestrial Telescope**

---

14. **E/M Experiment using Helmoltz coil, Quantity-4**

- The set up should be able to Measure electron Charge to Mass Ratio (based on Thomson's method)

The set up should consist of bulb-like, helium filled e/m-tube containing a filament, a cathode, a grid, a pair of deflection, plates and an anode. The tube is placed between a pair of fixed Helmholtz coils which produce a uniform and known magnetic field. The socket of the tube can be rotated so that the electron beam is at right angles to the magnetic field.
The equipment consist of:
Helmholtz coils of radii 14 cm
Number of turns 160 on each coil
Accelerating Voltage 0 – 250V
Deflection plates voltage 50V – 250V
Operating Voltage 220V AC/ 50Hz

15.E/M Bar magnetset up using CRT Quantity-6

- The set up should be able to Measure electron Charge to Mass Ratio (based on Thomson's method)

Setup should have the following specifications:

Microcontroller based power supply instrument for CRT , LCD to measure deflection voltage, Focusing adjustment provided, Intensity adjustment provided, Cathode Ray Tube mounting on acrylic stand , Deflection magnetometer provided , Octal socket provided on the front panel of power supply for connecting CRT , Provided with Pair of bar magnet and Compass Box
Cathode Ray Tube: Distance between Plates :d=1.4cm Length of Plates :l=3.23cm Distance between Screen :L=14.5cm and Plates (edge)
Focusing Voltage :Variable 0 - 300V DC
Intensity Adjustment Voltage :Variable 0 - 60V DC
Deflection Voltage :Variable 0 - 50V
Scale :0 - 30cm each side

CRT connection :Octal socket
LCD :16 x 2 Characters
Deflection magnetometer :0 to 90°
Mains :230V AC ±10%, 50Hz

16.**Magnetic Field in Helmoltz coil Quantity-6**

The setup should be able to perform the following:

- Measure the spatial distribution of the magnetic field between a pair of identical coils in helmholtz arrangement.
- Investigate the spacing between coils at which magnetic field is uniform and to measure its spatial distribution.
- Demonstrate the superposition of the magnetic fields of the two individual coils.

The set up should consist of the following:

Power Supply :

- Voltage : 0-20 V DC continuously variable & stabilized
- Voltage display : 3½ digit LED
- Ripple : Less than 25mV
- Overload : Current limiting protection
- Current : 5 A continuously variable, 10% to full rating
- Current display : 3½ digit LED
- Working voltage : 230V AC, 50 Hz single phase

Digital Gauss Meter:

- Range : 200 Gauss & 2 k Gauss
- Resolution : 0.1Gauss at 0 - 200 Gauss
- Offset : By Potentiometer to set ZERO
- Display : 3½ Digit LED
- Input Voltage : 220 V, ± 5 %, 50 Hz AC
- Axial Hall Probe :InAs

Helmholtz Coils:

- COIL SETS SV628
- Coil :Dia=150mm, N=390,
- Current : 1Amp (max.)
- Connection : 4mm safety socket
- Material : Copper

Base For Helmholtz Coil

- U channel dimension : 350x210x25mm (LxWxH)
- Scale : 0-22cm, least count=1mm
- Material : Aluminium

U Channel with Rider:

- U rail dimension : 725x60x15mm (LxWxH)
- Scale : 0-50cm, least count=1mm
- Rider : 60x60mm (LxW)
- Material : Aluminium

Deflection Compass WithBase:

- Compass box : 100mm dia.
- Rider : 150x60mm (LxW)
- Material : Aluminium

Support Base & Support Rod

	Dimension	Material
Base	Star base	Mild steel
Rod	250x10mm (LxΦ)	Mild steel

17. Dielectric constants of solids and liquids Quantity 8

The set up should be able to calculate dielectric constants of solids and liquids

The set up should have the following specifications:
Complete unit for measurement of capacitance in different type of samples both solids and liquids. For solid samples two types of parallel plate setups 50mm plates for large sample and 10m plates for small samples. For liquid samples suitable arrangement for easy changing of liquid samples and 10cm graduated circular parallel arrangement to enable the user to take multiple readings in a particular sample
Range: 0pf-50mf
Resolution: 0.01pf
Accuracy: Better than 1%
Display: 16x2 LCD display with back light
Zero Setting: Push Button zero setting
Samples: (a) Solids: Glass Plate, Bakelite Sheet, Barium Titanate, Lead Zirconate Titanate and (b) Liquid: Carbon Tetrachloride (CCl4)

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18. Specific heat of solids Quantity-4

The set up should be able to calculate the specific heat of solids
The set up should contain the following with these specifications

Steam Chamber:

- Inner chamber : 100x30mm (LxΦ)
- Outer chamber : 80x75mm (LxΦ)
- Nozzle : 30x8mm (LxΦ)
- Handle : L=90mm, PVC
- **Supplied with rubber stopper & silicon tube.**

Dewar Flask:

- **Capacity : 350ml**
- Temperature : -200°C to 150°C
- Inner surface : Stainless steel
- Outer surface : Stainless steel

Digital Temperature Sensor :

- Sensor/ Input : Pt-100
- Range : -50 to +199.9 C
- Resolution : 0.1 C
- Accuracy : ± 0.2 C ± 1 digit
- Battery : 9V

Sample :

- Sample : Copper, Lead & Glass
- Weight : 100g each
- Supplied in plastic bottle.

Digital Weighting Scale:

- Body : Plastic
- Capacity : 700g.
- Least count : 0.1g.

19. **Weighing Machine – Quantity 2**

20. Vernier calliper Quantity 20

Vernier : vernier caliper 0-150mm
Least Count 0.02 mm,
material - Metal
Screw Gauge 20
Screw Gauge : material MS,

Range 0 - 25mm,
Least count - 0.01mm

21.Stop Watch: Quantity -20

- Display : 6 Digit
- Accuracy : 0.01sec
- Digit size : 5mm
- Mode : Start, Stop & Reset

22**. Mercury Lamp Source spectrum Tube Power supply Quantity-10**

Specifications

Spectrum tube :
Mercury Tube :
Tube Length: 270 mm
Tube Diameter outer : 15 mm
tube Diameter Center : 7 mm
Strong Spectrum composed of Violet, Green, Yellow and Red Lines.
Violet : 4500 A°
Green : 5000, 5600 A°
Yellow : 5900 A°
Red: 6250 A°

23. **Sodium Lamp Source spectrum Tube Power supply Specifications Quantity-10**

Sodium Tube
Tube Length: 270 mm
Tube Diameter outer : 15 mm
tube Diameter Center : 7 mmTube Length:
Strong Spectrum composed of double yellow lines.
Yellow : 5890 and 5896 A°

24. Spherometer 10

- Types : 3 legs
- Vertical scale : 6mmx6mm (WxT)
- Micrometer : Dia. 40mm, Brass
- Lower disc : Dia. 60mm
- Range : 10-0-10mm
- Least count : 0.01mm

25. Spirit level 10

- Magnetic Base
- Hanging Arrange
- Vertical , Horizontal and 45 degree leveling arrangement.
- Clear view of bubble, Right and left marking

26.Meter Scale 20

27. Miscellaneous (Prism-10, Grating-10, Screw gauge-10)

Prism (EDF)

SIZE : 38 X 38 X 38 MM.
Height : 38mm
Material : EDF

Diffraction Grating

Size : 38 x 50 mm.
Lines/inch : 15000, 2500,7500
Screw Gauge :Least Count-0.01 mm

SECTION IV

FINANCIAL BID

Supply and Installation of Lab Equipments (Advance Spectrometry Kit With Mercury Light Source, Michelson Interferometer With He Ne Laser, Advanced Polarimeter, Newton's Rings Apparatus, Diode Laser Diffraction Experiment (Single Slit, Double Slit, Grating, Circular Aperture Etc.), Two Beam Interference He Ne Laser kit, Optical Fiber Kit, Babinet Compensator-To Analyse Elliptically Polarised Light, Fresnels Biprism Assembly With Optical Bench, Bar Pendulum, Katers Pendulum, Flyweel, Sextant, E/M Experiment using Helmolt coil, E/M Bar magnet set up using CRT, Magnetic Field in Helmoltz coil, Dielectric constants of solids and liquids Specific heat of solids, Weighing Machine (Digital Weighing Balance Lab standard),,Vernier caliper, Stop Watch, Mercury Light Source Spectrum Tube PowerSupply (Should be consistent with spectrometer purchased), Sodium Light Source Spectrum Tube PowerSupply (should be consistent with other optics experiment), Spherometer, Spirit Level, Meter scale, Miscellaneous (Prism-10, Grating -10, Screw Gauge -10**) for Physics Lab at Surajmal Vihar, East Campus, Delhi 110092.**

S. No.	Description	Qty.	Unit Cost (Estimated Amount in Rs.)	Taxes as Applicable	Total Amount (Estimated Amount in Rs.)
1.	**Advance Spectrometry Kit With Mercury Light Source** As per the specification mentioned in the tender document at Annexure-G	10	51000		**510000**
2.	**Michelson Interferometer With He Ne Laser** As per the specification mentioned in the tender document at Annexure-G	6	54000		**324000**
3.	**Advanced Polarimeter** As per the specification mentioned in the tender document at Annexure-G	8	45000		**360000**
4.	**Newton's Rings Apparatus** As per the specification mentioned in the tender document at Annexure-G	8	21000		**168000**
5.	**Diode Laser Diffraction Experiment (Single Slit, Double Slit, Grating, Circular Aperture Etc.)** As per the specification mentioned in the tender document at Annexure-G	6	50000		**300000**
6.	**Two Beam Interference He Ne Laser kit** As per the specification mentioned in the tender document at Annexure-G	4	55000		**220000**
7.	**Optical Fiber Kit** As per the specification mentioned in the tender document at Annexure-G	8	55000		**440000**
8.	**Babinet Compensator-to Analyse Elliptically Polarised Light** As per the specification mentioned in the tender document at Annexure-G	4	21000		**84000**
9.	**Fresnels Biprism Assembly with Optical Bench** As per the specification mentioned in the tender document at Annexure-G	4	50000		**200000**
10.	**Bar Pendulum** As per the specification mentioned in the tender document at Annexure-G	10	1500		**15000**
11.	**Katers Pendulum** As per the specification mentioned in the tender document at Annexure-G	10	2500		**25000**
12.	**Flywheel** As per the specification mentioned in the tender document at Annexure-G	6	5500		**33000**

13.	**Sextant** As per the specification mentioned in the tender document at Annexure-G	6	13000		**78000**
14.	**E/M Experiment using Helmoltz coil** As per the specification mentioned in the tender document at Annexure-G	4	25000		**100000**
15.	**E/M Bar magnet set up using CRT** As per the specification mentioned in the tender document at Annexure-G	6	55000		**330000**
16.	**Magnetic Field in Helmoltz coil** As per the specification mentioned in the tender document at Annexure-G	6	56000		**336000**
17.	**Dielectric Constants of solids and liquids** As per the specification mentioned in the tender document at Annexure-G	8	25000		**200000**
18.	**Specific heat of solids** As per the specification mentioned in the tender document at Annexure-G	4	40000		**160000**
19.	**Weighing Machine (Digital Weighing Balance Lab standard)** As per the specification mentioned in the tender document at Annexure-G	2	15000		**30000**
20.	**Vernier Calliper** As per the specification mentioned in the tender document at Annexure-G	20	500		**10000**
21.	**Stop Watch** As per the specification mentioned in the tender document at Annexure-G	20	2000		**40000**
22.	**Mercury Light Source Spectrum Tube Power Supply (Should be consistent with spectrometer purchased)** As per the specification mentioned in the tender document at Annexure-G	10	7500		**75000**
23.	**Sodium Light Source Spectrum Tube Power Supply (Should be consistent with other optics experiment)** As per the specification mentioned in the tender document at Annexure-G	10	7500		**75000**
24.	**Spherometer** As per the specification mentioned in the tender document at Annexure-G	10	500		**5000**
25.	**Spirit Level** As per the specification mentioned in the tender document at Annexure-G	10	300		**3000**
26.	**Meter Scale** As per the specification mentioned in the tender document at Annexure-G	20	200		**4000**
27.	**Miscellaneous (Prims-10, Grating-10, Scres Gauge-10)** As per the specification mentioned in the tender document at Annexure-G	30	1000		**30000**
	All Taxes (if any) including GST*				**-**
	Total Amount in Rs.(excluding all taxes, GST) & CIP New Delhi				**41,55,000/-**

*The taxes will be paid as applicable from time to time

Note:-

1. The item wise lowest financial bidder separately shall only be considered for award of work.

2. The bidder shall provide 60 months warranty on all items from the last date of installation and shall be responsible for any defects that develop in the Lab item. They shall also replace any defective part of the product supplied and other accessories, without any exception and recourse, free of cost. The period

of warrantee will automatically treated as extended beyond 60 months if the instrument remain non functional more than 15 days after reporting non-functional.

3. The rates of the items supplied by the bidder through local market/India must be quoted in INR only.

(SEAL, SIGNATURE & NAME OF THE BIDDER)

Annexure-I

BID SECURING DECLARATION

I…….(Name of the Bidder)…….. Designation, of …… (Name of the Company) do hereby submit this Bid Securing Undertaking that, if I withdraw or modify my Bid during the validity or, if I am awarded the contract and failed to sign the contract or to submit the Performance security before the deadline defined in the tender document, I shall be **suspended** for the period specified in the tender document from being eligible to submit Bids for contract with the entity that invited the Bids.

Name of the Bidder
Name of the Company
Dated