

**OFFICE OF THE PRINCIPAL
L.T.K. COLLEGE, P.O. AZAD
DIST. LAKHIMPUR, ASSAM, INDIA
Ph. 9954189103, website : www.ltkcollege.ac.in
Email ID : ltkcollege@yahoo.in**

Tender No-

TENDER DOCUMENT

(Includes both Technical & Financial bid documents)

Name of Works:

NIQ No A: Supply of Departmental Laboratory Equipments

NIQ No B: Supply of Computers for Computer Centre

NIQ No C: Supply of Sports Equipments

Issued To :

M/s.....

.....

.....

.....

Ph/Mb No.....

Signature of the issuing authority with seal

Table of Contents:

1. Tender Notification
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PART-A (Technical Bid)

PART-B (Financial Bid)

TENDER NOTICE

Sealed quotations are invited affixing court fees stamp of Rs. 8.25 (Rupees Eight and twenty five paisa only) are invited from reputed firms/suppliers under RUSA 2.0 for supplying (a) Laboratory Equipments (b) Computers (c) Sports Equipments. Visit college website www.ltkcollege.ac.in for details.

Sd/- Dr. B.K. Saikia
Principal
L.T.K. College, Azad
North Lakhimpur
e-mail : ltkcollege@yahoo.in

Tender Notification

L.T.K. College
Azad, North Lakhimpur
Pin-7870031
Rashtriya Uchcharat Siksha Abhiyan
Mobile No : 9954189103, website : ltkcollege.ac.in
Email ID : ltkcollege@yahoo.in

NOTICE INVITING QUOTATIONS (NIQ)

Particulars	Details
Nature of work	<p>NIQ No A Departmental Laboratory Equipments (List Enclosed in Annexure II)</p> <p>NIQ No B: Supply of Computers for Computer Centre (List enclosed in Annexure-III)</p> <p>NIQ No C: Supply of Sports Equipments (List Enclosed in Annexure-IV)</p>
Details of Contact Persons for Clarification/quarries	<p>Mr. Manash Protim Borah Coordinator RUSA, L.T.K. College, Azad, North Lakhimpur, Assam Mobile No-9864178042 Email :mpborah36@gmail.com</p> <p style="text-align: center;">OR</p> <p>Dr. Bubul Kr. Saikia Principal L.T.K. College, Azad, North Lakhimpur, Assam Mobile No-9954189103 Email :bksaikia12@rediffmail.com</p>
Mode of Tendering	<ol style="list-style-type: none"> 1. Details Terms and Conditions can be obtained /downloaded from the college website www.ltkcollege.ac.in. Hard copy can be obtained from College Office during the office hours. 2. Tenders have to be submitted in the College during the office hours 3. The bidders have to submit the sealed tenders by affixing non refundable Court fee stamps of Rs. 8.25 (Eight rupees and twenty five paisa only) 4. The bidders must have to submit their tenders separately in every group of NIQ. Both The bids, Technical and Financial should be submitted in separately
Cost of Tender documents	Rs.1000/- for each NIQ
No. of Covers	<ol style="list-style-type: none"> 1. Technical Bid 2. Financial Bid
Estimated Tender (Approx)	

<ol style="list-style-type: none"> 1. Items included in Price Schedule Package B (Annexure-V) 2. Items included in Price Schedule Package C (Annexure-VI) 3. Items included in Price Schedule Package D (Annexure-VII) 	<ol style="list-style-type: none"> 1. For 4 departments of Science Stream 2. For 25 no's of Desktop Computers 3. Sports Equipments
<p>Token Earnest Money Deposited (EMD) (Refundable)</p> <ol style="list-style-type: none"> 1. Items included in Price Schedule Package B (Annexure-V) 2. Items included in Price Schedule Package C (Annexure-VI) 3. Items included in Price Schedule Package D (Annexure-VII) 	<p>Token Earnest Money Deposited (EMD) (Refundable) 2% for each NIQ</p>
Date of Publishing Tender	30 th September, 2019
Website for obtaining / Downloading Tender Documents Etc	www.ltkcollege.ac.in .
Last date of Pre Bid queries	11 th October, 2019
Starting date and time of Bid submission	30 th September, 2019
Closing date and time of Bid submission	16 th October, 2019 before 4:00 pm
Opening date and time of Technical Bid and Financial Bid	It will be informed in due time
Address where Tenders are to be opened	Principal L.T.K. College, Azad, North Lakhimpur, Assam
Venue for opening Technical and Financial Bid	Office of the Principal, L.T.K. College, Azad, North Lakhimpur, Assam

Notice Inviting Quotations

Sealed Quotations are hereby invited from Govt. Registered Company/ Firm/authorized dealer/ Suppliers for supplying and installation of the following items.

Sl. No	Name of the work	Details	Tentative Amount (In Lakh) (Including GST)	Token Earnest Money (Refundable)	Cost of Tender Paper (Non Refundable)	Date of Completion
1	Departmental Laboratory Equipments	List enclosed in Annexure II (Max.amount of Rs2.5 lakh for each Dept.)	12.00	2 %	Rs.1000.00	15 days
2	Supply of Computers for Computer Centre	List Enclosed in Annexure III	8.00	2 %	Rs.1000.00	15 days
3	Supply of Sports Equipments	List Enclosed in Annexure-IV	4.00	2%	Rs.1000.00	15 days

1. ELIGIBILITY:

1. The Vendors should have the experience of supply of laboratory equipments/Computers/ Sports Equipments to colleges/universities, and should have the experience of supply of any one of the above item to any institutions at least last three years.
2. Application for tender must include attested certificate copies of valid GST, Income Tax, Professional Tax, Trade License, Pan Card and credential for works done.
3. No quoted price above the cost of work mentioned will be accepted.
4. No extra cost will be borne by the college.
5. The rate should be quoted both in figures as well as in words.
6. No extension of time will be allowed.
7. Payment will be made in favour of the selected bidder as per RUSA guidelines on successful completion of the works and observation of necessary formalities as the authority deems fit from time to time as per RUSA norms.
8. Since the entire work will be financed from RUSA Project Grant, payment will be made as per RUSA guideline
9. The successful bidder has to start of work within five days from the date of issue of work order.
10. Acceptance of the lowest tender is not obligatory and the undersigned reserves the right to accept or reject any or all the tenders without assigning any reason.
11. The eligible Bidders have to face the project monitoring committee of RUSA in order to negotiate and know the details of the proposed supply work.

12. Tender papers have to be collected from office of the undersigned within stipulated dates as mentioned below on showing necessary documents as mentioned and payment of non-refundable tender paper fees in the form of DD in favour of The Principal, L.T.K. College payable at North Lakhimpur.
13. Token earnest money at the rate of 2% percent of total amount has to be deposited in the form of DD in favour of Principal, L.T.K. College payable at North Lakhimpur.
14. Eligible bidders may be present at the time of opening of financial bid.
15. The firms/suppliers are requested to submit copies of the following documents along with the Technical Bid, failing which their Bids shall be rejected and shall not be further considered:-
 - a) Copy of Earnest Money Deposit (EMD)
 - b) Copy of PAN/GIR card, GST registration certificate
 - c) Copy of work experience of similar work during last three years
 - d) Original Tender document duly signed with seal of the firm on each page in token of acceptance of the terms and conditions of the tender.

16. Schedule

- (a) Date of issuing tender :30th September 2019
- (b) Last date of submission of sealed tender : 16th October 2019
- (c) Tentative Date & time of opening tender : It will be informed in due time
 - (i) Technical bid : It will be informed in due time
 - (ii) Financial bid : It will be informed in due time.

Note : In case the said date/s, happen to be a holiday for any reason, the activity will be held on the immediate next working day at the same time & place & as a consequence any change/s in the date/s of the subsequent activities will be informed through suitable media to all concerned. Selection of the agency will be at the sole discretion of the competent authority of the L.T.K. College who reserves its right to accept or reject any or all the proposals without assigning any reasons. The tender documents for the above work can be obtained from the office of the principal, L.T.K. College, Azad, North Lakhimpur, or can also be downloaded from www.ltkcollege.ac.in

Sd/-
Principal
L.T.K. College, Azad
North Lakhimpur, Assam

2. TERMS AND CONDITIONS:

1. The list of equipments are to be submitted in hard and soft copies (in excel format) mentioning Sl.No, Name, Prices and offered discounts against each items. Bidders must submit on prescribed Annexures only.
2. The contract is to commence from the date of award of contract to the firm and shall continue for the period of six months, unless it is curtailed or terminated by L.T.K. College owing to deficiency of service or supply of substandard quality of materials.
3. **Submission of OEM authorization is must for every product of Laboratory equipment, Computers and Sports equipment.**
4. The contract shall automatically expire after six months from commencements of the contract unless extended further by the mutual consent of contracting firm and L.T.K. College.
5. The contract may be extended on the same terms and conditions or with some additions/deletions/ modifications and on satisfactory performance, for a further period of three months with mutual consent.
6. The contracting firm shall not be allowed to transfer, assign, pledge or sub-contracts rights and liabilities under this contract to any other company/ firm/ agency etc.
7. The contracting firm will be bound by the details furnished by the firm to L.T.K. College, while submitting the tender or at subsequent stage. In case, any of such documents furnished by the firm is found to be false at any stage, it would be deemed to be a breach of terms of contract making the firm liable for legal action besides termination of contract.
8. Financial bids of only those firms that are technically qualified shall be evaluated.
9. L.T.K. College reserves the right to terminate the contract during initial period after giving a week's notice to the firm.
10. All expenses for sending the items supplied to L.T.K. College, Azad, North Lakhimpur, pin 787031, Assam should be borne by the firm.
11. The rates quoted shall remain same during the rate contract period and no request for any increase in the rates shall be entertained during the period of the contract
12. The owner / supplier/ firm should be available on his/ her own direct telephone (office as well as residence) and also on mobile phone so that he/ she may be contacted immediately in emergency cases.
13. Before award of contract, all original documents will be checked by the authority of L.T.K. College and at that time attested photo copies are required to be furnished.
14. L.T.K. College shall not be responsible for any financial loss or other injuries to any person deployed by the contracting firm in the course of their performing the duties to L.T.K. College in connection with the supply of items.
15. In case of breach of contract by the vendor, L.T.K. College shall have the authority to cancel/ terminate the contract, besides forfeiting the Security Deposits.
16. It may specifically be mentioned whether quotation is strictly as per tender specifications/ conditions. Deviation in any form will not be accepted.
17. L.T.K. College reserves the right to accept or reject any bid or cancel the tender proceeding without assigning any reason whatsoever. Further L.T.K. College reserve the right to purchase or to purchase any item listed in the price schedules.
18. The contract shall be subject to Lakhimpur Jurisdiction. This document and the contract or job award letter issued as a result of the tender process shall be interpreted in terms of Indian law.
19. All disputes arising out of this contract shall be settled amicably by L.T.K. College and the contractor. In the event of failure to reach amicable settlement, the change shall be settled by an Arbitrator appointed by L.T.K. College as per the provisions contained in Arbitration and Conciliations Act 1956.
20. The terms and conditions of Rastriya Uchchar Siksha Abhijan (RUSA) will be followed and implemented strictly.

21. The terms and conditions of Public Financial Management System (PFMS) will be followed in case of all financial transaction issues.
22. The successful Bidder (s) must sign an agreement with the Authority of the L.T.K. College regarding the contract and supply of materials as well.
23. The Contractor will be responsible for supply/installation/refilling/maintenance of all such /chemicals/items/equipments/machineries, etc., used in various facilities of the college

3. INSTRUCTIONS FOR SUBMISSION OF TENDERS:

1. The Contractors are required to submit two separate Bids i.e. Technical and Financial as per prescribed proforma. The two bids should be submitted in two separately sealed envelopes superscribed 'TECHNICAL BID FOR SUPPLYING LABORATORY EQUIPMENTS/COMPUTERS/SPORTS EQUIPMENTS IN L.T.K. COLLEGE and "FINANCIAL BID FOR LABORATORY EQUIPMENTS/COMPUTERS/SPORTS EQUIPMENTS IN L.T.K. COLLEGE. Both sealed envelopes should be put in a third sealed envelope superscribed 'TENDER FOR SUPPLYING LABORATORY EQUIPMENTS/COMPUTERS/SPORTS EQUIPMENTS IN L.T.K. COLLEGE, AZAD, NORTH LAKHIMPUR'.
2. The financial bid of only those Contractors who qualify in technical bid evaluation by the concerned committee shall be opened. The financial bids of all those Contractors who have failed to qualify in the technical bid will not be opened under any circumstances.
3. The declaration in the prescribed proforma should be enclosed with the Technical Bid.
4. The Technical Bid should be accompanied by an Earnest Money Deposit (EMD) as notified elsewhere in the document in the form of DD/Bankers' Cheque for Earnest Money Deposit drawn on issued by any nationalized Bank drawn in favour of 'Principal, L.T.K. College' payable at North Lakhimpur, Lakhimpur.
5. The Bidders can submit the tender either by post or by submitting in the box provided in the college in the following address-

To

The Principal
L.T.K. COLLEGE
Azad, North Lakhimpur
Pin-787031, Assam

1. The earnest money shall be refunded to all the unsuccessful Contractors, Without any interest after finalization of the contract. EMD shall be refunded to the successful Contractor on receipt of performance security deposit. No interest is payable on the EMD to either the successful Contractor or the unsuccessful Contractor. Exemption from payment of EMD is applicable as per the existing law if accompanied by the relevant orders/instructions issued by the appropriate authorities.
2. All entries in the tender form should be legible and filled clearly. Any overwriting or cutting which is unavoidable shall be signed by the authorized signatory. Any alterations without authentication will be treated as a 'NIL' entry.
3. The Contractor may quote for all or any facilities. However, tender in respect of each facility should be complete in all respects failing which the bid shall be considered non-responsive.
4. Tender incomplete in any form will be rejected outright. Conditional tenders will also be rejected outright.

5. The closing date and time for receipt of tenders will be as detailed elsewhere in this tender document.
6. The technical bid shall be opened at a date & time as specified elsewhere in this tender document in presence of the authorized representatives of the Contractor, who wish to be present at that time. All the technical bids will be scrutinized, relevant documents checked for their authenticity and the Contractor whose technical tenders are accepted will participate in the financial bids on date & time as stipulated elsewhere in this tender document.
7. In case the successful bidder declines the offer of contract, for whatsoever reasons(s), his EMD will be forfeited.
8. The Contractor shall enter into a formal contract with the College within three days from the date of receipt of intimation of their selection. They shall further get prior approval of the draft copy of the agreement from the college.
9. Each page of the tender document should be signed and stamped by authorized representative of the contractor as a token of acceptance of the terms and conditions laid down by the college.
10. The competent authority of college reserves the right to withdraw/relax any of the terms and conditions mentioned above, under such circumstances the Contractor will be given adequate time to take the changes into account.
11. The competent authority of the college reserves it's right to reject all or any tender in whole, or in part or cancel the entire tender process, without assigning any reason thereof.

4.EARNEST MONEY DEPOSITED:

Technical Bid must be accompanied by DD/Bankers' Cheque for Earnest Money Deposit drawn on any Nationalized Bank in favour of The Principal, L.T.K.College. EMD shall be valid for a maximum period of 90 days from the closing date (original) of the tender. Quotation submitted without EMD shall be summarily rejected.

The DD/Bankers' Cheque in physical form duly sealed in envelop superscribed with "DD towards EMD and Tender Document cost for the tender No.....for SUPPLYING LABORATORY EQUIPMENTS/COMPUTERS/SPORTS EQUIPMENTS" shall be be dispatched/ submitted at the office of the Principal, L.T.K. College at the address mentioned below.

To

The Principal
L.T.K. COLLEGE
Azad, North Lakhimpur
Pin-787031,Assam

5.BID EVALUATION CRITERIA:

1. In the first instance the Technical Bids shall be opened by the Authority of L.T.K. College in the presence of representative of Bidders, if available.
2. The date and time of the Technical Bids and Financial Bids is given for all.
3. The Bidders may depute their representatives for the opening of the Bids.
4. The Technical Bids will then be evaluated by the L.T.K. College internally.
5. Once the Technical Bids are accepted, the Financial Bids of the vendors (whose Technical Bids have been accepted) shall be opened.
6. If any vendors so desires, it may depute its representative for Financial Bid opening event also.
7. The decision of the Principal, L.T.K. College shall be final and binding.
8. The terms and conditions of Rastriya Ucchatar Shiksha Abhijan (RUSA) will be followed and implemented.
9. The terms and conditions of Public Financial Management System (PFMS) will be followed in case of all financial transaction issues.

ANNEXURE-I

TENDER DOCUMENT
Name of Work
PART-A : TECHNICAL BID

Issued to :

M/S.....
.....
.....
Ph/Mb No.....

Signature of the issuing authority with seal

Brief description of the firm

- 1. Sl. No. :
- 2. Name of the Firms :
- 3. Name of owner/Partner/Directors :
- 4. Full particulars of office :
 - (a) Address :
 - (b) Telephone No. :
 - (c) Fax No. :
 - (d) E-mail ID :
- 5. Full particulars of the bankers of the farm :
 - (a) Name of the Bank and Branch :
 - (b) Account type :
 - (c) Account No. :
 - (d) IFSC :
- 6. Registration details : (Self attested copies of all Certificates/Licenses/Permits/Registrations etc. should be enclosed failing which the application is liable to be rejected outright)
 - a. PAN/GIR No. :
 - b. GST Registration No. :
 - c. Service tax registration No. :
 - d. EPF registration No. :
 - e. ESI registration No. :
 - f. Labour License issued under the Contract Labour Act., 1970 :
- 7. Details of Earnest Money Deposited :
 - a. Amount :
 - b. DD No. and Date :
 - c. Drawn on bank :
 - d. Valid up :

The above format may be used to provide requisite details.

Additional information, if any.

Date :
Place :

Signature of authorized person
Full Name :
(Company's Seal)

DECLARATION

I.....son/daughter
of Shri.....Proprietor/Partner/Director/Authorized
Signatory of.....I am Competent to sign this declaration and execute this tender
document.

I have carefully read and understood all the terms and conditions of the tender and hereby convey my
acceptance of the same.

The information/documents furnished along with the above application are true and authentic to the
best of my knowledge and belief. I/We/am/are well aware of the fact that furnishing of any false
information/fabricated document would lead to rejection of my tender at any stage. Besides liabilities towards
prosecution under appropriate law.

Date :

Signature of authorized person

Place :

Full Name :

(Company's Seal)

N.B. The above declaration, duly signed and sealed by the authorized signatory of the company should
be enclosed with Technical tender.

Annexure V

*FINANCIAL BIDS**Price Schedule: A (Supply of Laboratory Equipments)*

Sl. No	Items Name/Description	Brand with Model	Quantity	Unit Rate	Total Cost	Discount	Others (if any)	Actual Cost
1	List of Materials (Annexure-II)							

Signature of the authorised signatory with seal of the tendering firm/company/agency

Date:

Signature

Place:

Full name

Designation & Seal

Address:

Annexure VI

*FINANCIAL BIDS**Price Schedule: B (Supply of Computers)*

Sl. No	Items Name/Description	Brand with Model/Specifications	Quantity	Unit Rate	Total Cost	Discount	Others (if any)	Actual Cost
1	Supply of Computers for Computer Centre (List enclosed in Annexure III)							

Signature of the authorised signatory with seal of the tendering firm/company/agency

Date:

Signature

Place:

Full name

Designation & Seal

Address:

Annexure VII

*FINANCIAL BIDS**Price Schedule: C (Supply of Sports Equipments)*

Sl. No	Items Name/ Description	Brand with Model/ Specifications	Quantity	Unit Rate	Total Cost	Discount	Others (if any)	Actual Cost
1	Supply of Sports Equipments (List enclosed in Annexure VIII)							

Signature of the authorized signatory with seal of the tendering firm/company/agency

Date:

Signature

Place:

Full name

Designation & Seal

Address:

Annexure-III
NIQ.No. B. Supply of Computers

Sl.no	Configurations/ Specifications	Qty
1	HPE midend server /16 GB RAM/2 TB HDD /18.5 LED / keyboard mouse /3 Year Warranty	1
2	Microsoft server 2019	1
3	Configuration with active server	1
4	Configuration with Mail server	1
5	Increased Awareness of Network Security Threats Advanced Persistent Threats (APT) and polymorphic attacks affect your system using multiple technologies and code changes that can be difficult to detect under single component technologies that do not operate in unison. stop the unauthorized access to the servers	1
6	INTEL/AMD 2400G/3.6 Ghz or latest, Turbo 3.9 Ghz or higher, 4 Core, 8 Threads, 6 MB Cache,11 GPU Core / 4GB RAM / 1 TB HDD/ 18.5 Led / key board mouse/ Win 10 / 3 Year warranty	5
7	INTEL/AMD A69500 / 4GB RAM / 1 TB HDD/ 18.5 Led / key board mouse/ Win 10 / 3 Year warranty	21
8	UPS 600 va	26
9	HPLaptop i3 (7th/8th Gen.) / 8GB RAM/ 1 TB HDD/ Window / 1 year /15.6" LED	1
10	Epson/Canon/HP Laserjet Single Function Monochrome Laser Printer	1
11	Configuration Single location for assigning access to shared network resources	1
12	RACK ,1fan, , 6socket PDU, rack hardware	1
13	24 Port Switch 10/100/1000	1
14	Cable Molex Cat 6	2
15	I/O Box Molex	25
16	RJ connector,	1
17	Networking charge	1
18	Support One year	1

Submission of OEM of each equipment is must

Annexure-IV
List of Sports Equipments

Sl. NO	Items	Descriptions/Specifications	Quantity
1	Treadmill	Aquafit Aq-270 DC Turdan Motor 3.25 Speed 1-16 Km, Belt size 44 x 252 cm (Auto Incline) 5 window	1
2	Weight Plate	(Rubber) Baspo Imported rubber Coated Iron with Handle	6 pcs (90 KgS)
3	Twister	Standing Baspo	1
4	Push up Bar	Baspo (Spiral) Imported Plastic Folding	5
5	Elliptical	Aquafit AQ- 125E Ellptical Magnetic	1
6	Weight Plate Stand	Baspo	1
7	Weight Lifting Set	Baspo	1
8	Flat Bench	Baspo (Body Fuel)	2
9	Pec Deck Machine	Baspo (2x4) Single Station	1
10	Badminton Net & Pole	KTR	1
11	Table Tennis Ball Board	KTR Tournament Top Size 25 mm	1
12	Bench Press	Baspo 2 x 4 Single Station	1
13	Dumble Hex	Hexagonal Rubber Head CP handle	5 pcs (100 Kgs)
14	Volley Ball	Wilson Quicksand Spike/Nivia rotator moulded rubber	2
15	Foot ball	Nivia shining star/ Cosco Milano	2
16	Cricket bat	Spartan MSD Run English Willow Cricket Bat/GM Kaha 707 English	2
17	Badminton Racket	Li-Ning G Force Lite series unstrung	4 Nos
18	Athletic starting block and pedals	Aluminium	2 Nos.
19	Weight Lifting Rod	25 mm CP (90 cm= 2.95 feet)	5 pcs (100 Kgs)
20	Abdominal Board	With Ladder (Bodyfuel) Baspo	1

Annexure_II

LIST OF LABORATORY EQUIPMENTS**Department of Physics**

Sl. No	<u>Name of the Materials and equipments</u>	Details	Qty.
1	To determine the height of a building using sextant	A sextant to determine the height of a building	1
2	Moment of inertia of a flywheel		1
3	Elastic constant of a wire by searls method	by searls method apparatus	1
4	Modulus of rigidity of a wire by Maxwell's needle	Maxwells needle apparatus	1
5	Co efficient of viscosity by Poiseulles method	Viscosity apparatus – poiseulles method	1
6	Characteristics of a series RC ckt.	RC Circuit bridge	1
7	To determine an unknown low resistance using Carey Fosters bridge	Carey fosters bridge.	1
8	To compare capacitances using De'Sauty's bridge	De sauty's bridge	1
9	To verify Thevenins theorum and Norton Theorum	Thevenins theorem and Norton Theorem bridge	1
10	To determine the self inductance by Andersons bridge.	Andersons bridge	1
11	To study response curve of series LCR circuit and determine its Resonant frequency, Impedence, Quality factor and Band width.	LCR circuit apparatus	1
12	Melde's experiment	Melde's experiment apparatus.	1
13	To determine refractive index of a material of a prism using sodium source.	Apparatus for determine refractive index of a material of a prism using sodium source.	1
14	To study the motion of a spring and calculate spring constant and modulus of rigidity.	Apparatus to calculate spring constant	1
15	Velocity of a freely falling body using digital timing technique.	Apparatus for determining velocity of a freely falling body using digital timing technique.	1
16	Young's modulus of a wire by optical lever method	Young's modulus by optical lever	1

17	Self inductance of a coil by Rayleigh's method	Self inductance of a coil by Rayleigh's method apparatus	1
18	Mutual inductance of two coils by Absolute method	Mutual inductance of two coils by Absolute method	1
19	Study of Lissajous Figures	Apparatus for studying Lissajous Figures	1
20	Dispersive power and Cauchy's constant of the of a prism using mercury source.		1
21	Michelson interferometer	Michelson interferometer	1
22	Dispersive power and resolving power of a plane diffraction grating.	Plane diffraction grating.	1
23	To determine mechanical equivalent of heat by callender and barne's consatnt flow method.	callender and barne's consatnt flow method.	1
24	Thermal conductivity of copper by Angstorm method.	Apparatus for thermal conductivity of copper by Angstorm method	1
25	Temperature coefficient of platinum Resistance Thermometer.	platinum Resistance Thermometer.	1
26	Variation of thermo- EMF of a thermocouple with difference of temperature of its two junction	Apparatus for Variation of thermo-EMF of a thermocouple	1
27	To design a switch (NOT Gate) using a transistor.	Apparatus for designing a switch (using Transistor)	1
28	To design Half adder, full adder and 4 bit binary adder.	Half adder, full adder and 4 bit binary adder.	1
29	To minimize a given logic circuit	Logic circuits	1
30	Half subtractor, full subtractor, adder subtractor using Full adder IC	Full adder IC	1
31	To test a diode and transistor using Multimeter	Digital Multimeter	1
32	Convert a Boolean expression into logic circuit and design it using logic gate ICs.	Logic gate and ICs	1
33	To build Flip Flop (RS,ClockedRS, D type and JK) circuits using NAND gate	Apparatus for building Flip Flop using NAND gate.	1
34	To build JK master slave flip flop using flip flop ICs.	Flip Flop ICs	1
35	To design a combinational logic systems for a specified truth table	Apparatus for logic systems	1

36	Measurement of Plank's constant using black body radiation and photo detector	Apparatus for measuring Plank's constant using black body radiation and photo detector	1
37	To determine the photo current versus intensity and wavelength of light , maximum energy of photo electron	Apparatus for photo electric effect.	1
38	To determine work function of material of filament of directly heated vacuum diode .	Directly heated vacuum diode apparatus.	1
39	Planck's constant using LED of 4 different colours.	LED of 4 different colours.	1
40	Ionization potential of mercury .	Ionization potential of mercury.	1
41	To determine e/m by magnetic focusing or bar magnet.	Apparatus for measuring e/m by magnetic focusing or bar magnet.	1
42	To determine the charge of an electron.	Millikan oil drop apparatus .	1
43	Tunneling effect using I-V characteristics.	Tunnel diode.	1
44	Moment of susceptibility of paramagnetic solution.	Quick's tube method.	1
45	To determine the coupling coefficient of a piezoelectric crystal.	Apparatus to determine Coupling coefficient of piezoelectric crystal.	1
46	To measure the dielectric constant of a material with frequency.	Apparatus for measuring the dielectric constant of a material with frequency.	1
47	To determine complex dielectric constant and plasma frequency of metal using surface plasma resonance (SPR)	Apparatus for measurement of complex dielectric constant and plasma frequency of metal using surface plasma resonance (SPR)	1
48	To determine the refractive index of a dielectric layer using SPR	Apparatus to find the refractive index of a dielectric layer using SPR	1
49	To study the PE hysteresis loop of a Ferroelectric crystal.	To study the PE hysteresis loop of a Ferroelectric crystal.	1

50	To draw BH curve of Fe using solenoid & determine energy loss from hysteresis.	Apparatus to draw BH curve of Fe using solenoid & determine energy loss from hysteresis.	1
51	To determine resistivity of a semiconductor (Ge) with temperature by four probe method (room temp. to 150) and to determine its band gap.	Apparatus to determine temperature by four probe method (room temp. to 150) and to determine its band gap.	1

Department of Chemistry

Sl. No	<u>Name of the Materials and equipments</u>	Details	Qty.
1	Muffle Furnace		1
2	Digital melting Point Apparatus, Digital Model		1
3	Digital pH Meter with Electrode		1
4	Analytical Balance		1
5	Water Bath		1
6	Desktop Computer with UPS and Printer		1
7	Double Beam UV-Vis Spectrophotometer		1
8	Magnetic Stirrer with Hot Plate		1
9	Microwave Oven		1
10	Digital melting Point Apparatus, Digital Model		1
11	Digital Polari Meter with Na lamp		1

Department of Botany

Sl. No.	<u>Name of the Materials and equipments</u>		Qty.
1	TLC Chamber		1
2	Hot air oven		1
3	Pen Blance		1
4	Camera Lucida		4
5	Digital Colony Counter		1
6	OTG		1
7	Haemocyiometer		2
8	Compound Microscope		5
9	Soil Thermometer		2
10	Maximum and Minimum Thermometer		2
11	Arenometer		1
12	Hygrometer		1
13	Rain Gauge		1
14	Luxmeter		1
15	Petridishes		20 pair

<u>DEPARTMENT OF ZOOLOGY</u>			
Sl. No.	<u>Name of the Materials and equipments</u>		Qty
1	Permanent slides of L.S. and T.S. of <u>Sycon</u> , <u>Hyalonema</u> , <u>Euplectella</u> ,		
	<u>Spongilla</u> .		2
2	T.S. through <u>pharynx</u> , <u>gizzard</u> , <u>Typhlosalar</u> <u>intestine of earthworm</u>		2
3	For preparation of proteins by - i) <u>Mercurobromophenol blue</u> or by <u>FastGreen</u> (Chemicals)		
	ii) DNA and RNA preparation by MGP (Chemicals)		
4	Whole mount of binary fission and conjugation of <u>paramecium</u> ,		
-	<u>Euglena</u> , <u>Amoeba</u>		2
5	Slides or Micro – Photographs of Adult <u>Ascaris</u> <u>Lumbricoides</u> and		
	<u>Life – Cycles (stages)</u>		2
6	Kits for water analysis (Turbidity, FCO ₂ , DO ₂)		
7	Museum Specimen ;		
a	<u>Corallium</u> , <u>Meandrina</u> , <u>Madrepora</u> , <u>Alcyonium</u> , <u>Obelia</u> , <u>Tubipora</u> ,		1 each
b	one <u>slide</u> or specimen of <u>Ctenophore</u> , <u>Aurelia</u> (specimen bottle)		
c	<u>Aphrodite</u> (museum specimen), <u>Nereis</u> (specimen), (One each)		
d	<u>Daphnia</u> , <u>Balanus</u> , <u>Sacculina</u> , <u>Eupagurus</u> , <u>Chiton</u> , <u>Nautilus</u> , <u>Doris</u>		
e	<u>Helix</u> , <u>ostrea</u> , <u>Dentalium</u> , <u>cucumaria</u> , <u>ophiura</u> , <u>echinus</u> , <u>clypeaster</u> ,		
f	<u>Pinctada</u> , <u>unio</u> .		
8	Slide or micro-photographs of adult – <u>Fasciola</u> <u>hepatica</u> ,		2
	<u>Taenia Solium</u> and their life cycle.		
9	A chart of keys of identification of <u>poisonous</u> and <u>non-poisonous Snakes</u>		2
10	Ranbaxy wax for microtomy.		3
11	Chemicals for the tests of functional groups of <u>carbohydrate</u> ,		
	<u>proteins</u> and <u>lipids</u>		3
12	Permanent slide or photographs of placoid, cycloid and ctenoid scales		2

13	Skeleton (Disarticulated) of Frog, Varanus, Fowl and Rabbit		2
14	Binocular, Microscope		2
15	Mammalian skull		1
16	A chart of structure of <u>heart</u> , <u>lung</u> , <u>kidney</u> , <u>eye</u> and <u>ear</u>		1
17	A Refrigerator		1
18	Micro oven (with good quality)		1
19	For preparation of <u>haemin crystal</u> and <u>haemochromogen crystals (chemical)</u>		
20	Estimation of haemoglobin		
	<u>Sahil's haemoglobinometer</u> (with chemicals)		1
21	Demonstration of ABO Blood group and Rh factor (<u>Chemicals</u>)		1
22	A sphagnomanometer		1
23	Cover slip		13 dozones
24	Formaldehyde		5 bottles
25	Absolute alcohol		5 bottles
26	Spirit		5 bottles

Department of Mathematics

Sl. No.	<u>Name of the Materials and equipments</u>		Qty
1	Mathematica software	Version 12.0 wolfram India	1