OFFICEOF THE PRINCIPAL
R.I.H.S, BHOGRAI,
Balasore, Odisha

TENDER FORM

Tender No& Date	No. 483 dt.: 28.07.2023
Name of The Tenderer	Principal R.I.H.S., Bhograi, Balasore.
List of Items	See in **Annexure-II**
Date of publication of tender notification on official website and newspapers	Date: 29.07.2023
Sale of Tender Form commence from	Date:28.07.2023
Last date & Time for sale of tender form	Date: 01.08.2023 Time:11:00AM
Last date & Time for submission of duly filled in Tender form	Date: 03.08.2023Time:02:00 PM
Date & Time for opening of Tender	Date: 03.08.2023 Time:02:30PM
Date and Time of the opening of Technical Bids	Date: 03.08.2023 Time:03:00PM
Place of opening of Tender	Office of the Principal R.I.H.S., Bhograi, Balasore.

CHECKLIST

The tenderers are hereby instructed to arrange and submit the following required documents as per the checklist

Sl. No	Name of Document	Yes/No	Page No
1	CHECK-LIST		
2	Bidder Details**(Annexure-I)**		
3	Technical specification with **Compliance Statement(Annexure-II)**		
4	Copy of Valid GSTIN Registration Certificate		
5	Copy of PAN		
6	The authorization certificate of OEM/ authorized Manufacturer/ Distributor/ Dealership Certificate		
7	Copy of Income Tax Return for last 03 years (20-21, 21-22 & 22-23)		
8	Price schedule in prescribed format**(Annexure-III)**		
9	Self-declaration for not having been black listed**(Annexure-IV)**		
10	Guarantee/Warranty**(Annexure-V)**		
11	Letter of Willingness**(Annexure-VI)**		
12	The tenderer should have minimum 2/3 nos. of similar work orders during last five years in any of the Government organization Work Experience**(Annexure-VII)**		
13	Photo copies of the work order or Installation report of similar items(Only)		
14	Original Product catalogue		
15	Original Tenderer form Duly Signed & Stamp on each Page		

Signature and with seal of tenderer

Date

Note – If tender is not submitted in above manner by the tenderer, may be treated as non-responsive & liable to be rejected

NOTICEINVITING TENDER

The Principal, **R.I.H.S., Bhograi** invites sealed tenders under **"TWOBID SYSTEM"** from reputed suppliers of good standards for selection of a supplier for the purpose of supplying different items to **Principal R.I.H.S., Bhograi, Balasore.**

"TWO BIDS SYSTEM"

Tenderer should take due care to submit the tender in accordance with requirement in sealed covers. Bids received shall be evaluated as per the Criteria pre scribed in the tender document.

The College will not entertain any modifications subsequent to opening of bids and bids not conforming to tender conditions shall be liable to be rejected. Therefore, bidders are advised to submit their bids complete in all respects as per requirement of tender document specifying their acceptance to all the clauses of Bid Evaluation Criteria, General terms and conditions and compliance to the Scope of Work requirement etc.

i) Technical Bid shall consist of all technical details along with commercial terms and conditions.

AND

ii) Financial Bid shall indicate item-wise price for the items mentioned in the technical bid.

The technical bid and the financial bid should be sealed by the bidder in separate covers duly super scribed as "**Technical Bid**" and "**Financial Bid**" respectively. **Both these sealed covers should then be kept in a bigger cover** which should also be sealed & duly super scribed as "Tender for Supplying (Name of the dept.) to **Principal R.I.H.S., Bhograi**. "The **Letter of Willingness & Check List.**

The tender document can also be available from the official website/Office. The tender document is not transferable to any other person.

ELIGIBILITYCRITERIA

The bidders who are desirous for above work require fulfilling the following conditions:

A. Must be registered under GST Act

B. Should not have been blacklisted by any State Govt. / Central Govt. / PSU India. A self-declaration is required as per **Annexure IV.**

C. The Tenderer must be a Reputed Original Equipment manufacturer (OEM) / or the authorized Dealer of an OEM should provide all documents relating to their manufacturing/ sales capabilities. Must have Odisha Office for after sales & Service (If OEM/ Dealer outside of the State). **Tenderer who has their own sales and service station in Odisha with GST Registration Number should only quote.**

D. Proof of Establishment of Firms / Manufacturing unit/ Dealership certificate from the OEM to be attached with **Technical Bid**.

E. The tenderer should have minimum 03 nos. of similar work orders during last three years inany of the Government organization. Photocopies of the work order and Installation report of similar items to be attached with Technical Bid.

F. The bidder should supply the items as per technical specification mentioned in **Annexure II**. The list of items available with the tenderer. Original Technical Catalog as Proof of Technical Specification should be enclosed by Bidder, merely Copy & Paste of Technical Specification will be out right Rejected.

G. The bidder should compile as per **Annexure II**, duly filled in, signed and complete in all respects. No alteration/modification in the formats hall be permitted.

H. A self-declaration that the tenderer has not been blacklisted by any State Government/ /Central Govt./PSU in India as per **Annexure IV.**

I. Performance Statement-**Annexure-V**

J. If any Technical conflict arises while evaluating the Technical Bid, **Principal of R.I.H.S., Bhograi** may ask for **Live Demonstration** of same product in front of the Purchase committee.

1. LIST OFITEMS:

Supply of Laboratory equipments to **R.I.H.S., Bhograi**. The items have been described in Annexure-I A bidder can submit financial bid for any number of items however care should be taken to submit for accounting units mentioned against each item.

2. BIDDER:

The term Bidder shall mean Company, Farm, Agency or the Individual to whom the Contract is awarded and shall include its/ his/ her/ its heirs and legal representative. Successful Bidder is referred to as "Party" in this tender document.

3. MODEOFPAYMENT

(i) Payment shall be made through NEFT/RTGS/Chq. transfer only after satisfactory supply of the said items.
(ii) The principal shall be at liberty to with hold any of the payments in full or in part.
(iii) No advance payment will be made in any case
(iv) The100%payment shall be given within 10-15daysaftersatisfactoryinstallationoftheequipment/ material supplied & necessary training of operating personnel.

5. MODEOFSUBMISSIONOFTENDER

A. Tender should be submitted by tenderer in prescribed form.
B. Tenderer should submit their offer in two parts as under:
   (a) Technical Bid, consisting of technical details, drawing/catalogues/ brochures, data sheets or models etc.**(Annexure-II)**
   (b) Financial Bid on prescribed format attached with the tender document **(Annexure-IV)**
C. Proposals complete in all respect should be submitted to the **R.I.H.S., Bhograi** through **Speed Post/ Registered Post/ Courier Service/By Hand** only. Delivery in person shall not be accepted.
D. All details asked for in the Annexure (s) should be properly filled in and each page of tender should be Stamped & Signed by the tenderer. Failure to attach Annexure required may in valid at the tender.
E. Any tender which is not found in the proper form or is received late due to postal delay or other wises hall in no case be accepted.
F. The bidder is expected to examine all instructions, forms, terms and specifications in the bid document. Failure to furnish all information required as per the tender document or submission of bids not substantially responsive to the bidding document in every respect will be at the bidder's risk and may result in rejection of the bid.
G. Offers should be typed and Price be quoted in words as well as in figures. In case of any discrepancy or variation in between figures and words is found, the offer in words shall be finally acceptable. Disagreement with this provision shall entail the bid as non-responsive and subsequently rejected.
H. Tender documents are not transferable.
I. Incomplete tenders or tender received after due date and not accompanied
J. In no case the bidding manufacturer or the bidder, otherwise can authorize any

other agency what so ever to supply the items to purchaser and receive payment in respect thereof.

K. No amendment or supplementary attachment in the bidding document shall be allowed or entertained after the bid having been submitted to the purchaser. No representation there to at any stage shall be entertained.
L. **Principal, R.I.H.S., Bhograi** reserves the right to reject any or all offers or increase/decrease in quantities, call for acceptance the offer in full or in part, without assigning any reasons thereof.
M. ISO certified Company should have established service team & net work across the state.
N. The principal is not bound to accept the tender quoting the least in the financial bid. The principal reserves the right to place order for a part of the quantity offered. The rates quoted by the bidder shall be valid for any such part.
O. They should be registered for GST/CST/ST & Income Tax and should enclose copies of relevant certificates.
P. Tenderer will have to produce all these original documents at any time as deemed by the Institute.

6. TERMS& CONDITIONS

The tenderer are requested to follow the below mentioned instructions

A. Failure to comply with the conditions will result in forfeiting of the tender. Please cross out any mistakes and rewrite the same and countersign.
B. Cost involved in submitting the bids, attending the tender opening meeting, arrangements for the demonstration/presentation etc. shall be borne by the bidder.
C. No tenderer shall be allowed to withdraw the tender rates after opening of the tender. If any tenderer withdraws the rates, Rates should be offered unconditionally and if rates are submitted with any condition the tender shall be rejected.
D. Tenderer shall have to quote item wise rates; consolidated rates shall not be considered and tender shall be liable to be rejected out rightly.
E. Tenderer/Manufacturer should have extensive **experience of at least 05 years** of designing, manufacturing, Supplying, installation and commissioning of the required item.
F. It is a compulsory requirement that the items offered make and model, as quoted by the bidder must be supplied, installed and must be in good working condition.
G. Tenderer should quote for the whole set of items required and should be willing to under take rsponsibility of commissioning, warranties and after sales service. Part offer/offers not as per given specification will not be considered.
H. Tenders should comply all the terms and conditions given in the tender document and be quoted for the specification given in thetender documents.
I. Not with standing anything stated herein above, the principal reserves the right to assess the tenderer capability and capacity to perform the contract, should the circumstances warrant such assessment.
J. In case any part of the equipment supplied being found to be non-functional the entire unit of equipment shall be taken as non-functional
K. The principal reserves the right to change the quantity/ upgrade the criteria/ drop any item or part thereof/extension of delivery date at any time before placing the purchase/ work/ supply order.

L. Right to Acceptance: The college authority is not bound it self to accept the lowest tender. It is the sole discretion of the principal to place order for better quality.

- Signing of Tender: The individual signing the tender (or the documents in connection with it)must specify whether he/she is sign in gas:

(i) A sole proprietor of the farm, or constituted attorney of such proprietor.

(ii) A partner of the farm, if it be a partnership, in which case he/she must have the authority to refer to arbitration, disputes if any, concerning the business of the partnership, either by virtue of the partnership agreement or power of attorney.

(iii) Authorized signatory of the farm, if it is a company, a letter of the authority in this respect must been closed along with the bid.

(iv) A person signing the tender form or any part thereof, on behalf of another, shall be deemed to warrant that he/she has the authority to bind the other and if on inquiry it appears that the person so signing has no authority do to so, Principal may without prejudice to other Civil and Criminal remedies, cancel the contract and hold the signatory liable for all costs and damages.

7. PRICES

Farm will submit the prices (all inclusive) for each item to be quoted on prescribed format attached with the tender document including charges for installation and commissioning with at least One year(12 months) Warranty from the date of satisfactory installation and commissioning of the equipment. The installation will include the mechanical, civil, electrical, furnishing work (if any) required at site.

The tenderer should take care that the rates and amounts are written in such a way its misinterpretations not possible.

The price ranking will be carried out as under:

1. The prices of optional items if not required as per technical specifications will be excluded for ranking purpose.
2. The ranking will be determined as under. Total Price (Cost) = Price quoted with all accessories as per technical specifications along with all the taxes and charges (if any). All these calculations must be clearly written by the bidder in price bid.
3. Offer with any price variation clause will not be accepted. The rates quoted in ambiguous terms such as “Freight on actual basis”, “taxes as applicable extra” or “packing & forwarding extra” will render the tender liable for rejection.
4. G.S.T. or Central sales tax (C.S.T.) or as applicable must be reflected in the financial bid and the tax amount is to be clearly indicated separately but included in the lump sum price.
5. Bids shall be accepted with price quoted in variably in Indian Currency.
6. No increase in price shall be allowed even if claimed on the grounds of any statutory increase or fresh in position of any other tax later.
7. Discount, if any, offered by the bidder shall not be considered unless specifically indicated in the price schedule and shall be taken into account for consideration only if it is quoted clearly with net price taking all such factors like discount, free supply etc. to arrive at net price.
8. Prices: The tenderer are required to quote as per “Annexure” (Financial Bid) in a Separate Envelope. The rates quoted shall include the cost of Material, labour, Transport & Packaging etc. , as required for the completion of work.

8. VALIDITYOFBID:

The bid will remain valid for 1months from the date of opening of financial bid.

9. TESTAND INSPECTIONS

Upon completion of the installation work, the tenderer /supplier shall facilitate inspection of the equipment by the principal or his authorized representative, to inspect & test the equipment and to confirm that they are installed in conformity to the required specifications and are serving the desired purpose. Any defect or failure to serve the desired purpose, discovered during the inspection will be promptly rectified and made good to the satisfaction of the principal or his authorized representatives.

10. GUARANTEE/ WARRANTY (Annexure-V)

The tenderer shall furnish along with their quotations the under noted Guarantee/Warranty:

A. The Guarantee/ Warranty shall be for a period of at least 12 months from the date of satisfactory installation and handing over the equipment and of works conducted there with covered under the contract in working order. During the guarantee period the replacement of any part(s) of the equipment or rectification of defect of works will be free of cost. If the downtime exceeds seven consecutive days at any one time, the guarantee period will be extended beyond aforesaid 12 months by duration equal to the total down time during the period of warranty.
B. The tenderer should produce written guarantee stating that the equipment being offered is latest model and that spares for the equipments will be available for a period of at least five years after its supply to the purchaser.
C. The tenderer whose tender is accepted shall furnish the warranty (Where Ever Applicable) in **Annexure-V** Along with Bill.
D. The manufacturer and the tenderer should guarantee the entire unit against defects of manufacture, work man ship and poor quality of components.
E. The tenderer shall be are all cost of such replacement, including freight, if any,of such replace or repaired equipment and/or other articles but with out being entailed to any extra payment on that or any other account. All documents required for replacement in part/parts will be made available by the indenter.

Annexure-I

BidderDetails

1. Name & Postal address of Bidder:
2. **E-mail:**
   Name & address of Owners/ Partners/Directors:
   Nature of Farm/Agency/Company (Sole/Partnership/otherwise)
3. Copy of GST Registration Certificate
4. Copy of PAN Card
5. Income Tax return of preceding 3financial years
6. Undertaking certifying that the Farm is not blacklisted in Annexure
7. Each page of tender form duly signed in
8. Dealership Certificate (Latest)
9. Whether agreed to abide by all the terms & conditions of this tender

Signature of the Proprietor/Authorized Signatory
(Name & Signature of the tenderer with seal)

Place:
Date:

Annexure-III

FINANCIALBID

SL No	Name of the Items	Make & Model	Qty	Taxable price Per unit	GST@%	Total Price Including GST
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Price: - Total price should be inclusive of all taxes. Items quoted must be as per the specifications given in enclosed Annexure-II

Signature& Seal of

the supplier Place:

Date:

Annexure-IV

SELFDECLARATIONCUMUNDERTAKING

It is certified that my Farm/ Agency/ Company has never been **black listed** by any of the Departments/ Autonomous Institutions/ Universities/ Public Sector Undertakings of the Government of India or Government of Odisha or any other State Government or reputed educational institutions and no criminal case is pending against the said Farm/Agency/Company as on date _____.

Signature of the Bidder:

Name of the Authorized

Signatory: Name of the:

Seal

Annexure-V

GUARANTEE/WARRANTY

I/We hereby declare that the equipments and other articles supplied to the purchaser under this contract shall be of the best quality and workmanship and are strictly in accordance with the specification and particulars contained/mentioned in the clause hereof and I/we hereby guarantee that the said equipment and other articles confirm to the description and quality a foresaid.

The purchaser will be entitled to reject the said equipment and other articles as maybe discovered not to confirm to the said description and quality. On such rejection the equipment and other articles will be returned in own risk and all the provision herein contained relating to rejection thereof shall apply. I/we shall, if called upon to do so, replace within a period of 14 days or such further period that be extended from time to time by the purchase at his discretion, and an application made thereof by us, the equipment and other articles as are rejected by the purchaser and in such an event the above mentioned Warranty shall apply to the equipment and/or other articles replaced from the date of replacement thereof, otherwise the tenderer shall pay to the purchaser such damages as may arise by reason of therein contained without prejudice to any other right of the purchaser in that behalf.

The equipment being offered is latest model and that spares for the equipments will be available for a period of at least five years after its supply to the purchaser. The Guarantee/ Warranty shall be for a period of at least 12 months from the date of satisfactory installation and handing over the equipment and of works conducted there with covered under the contract in working order. During the guarantee period the replacement of any part(s) of the equipment or rectification of defect due to manufacturing of works will be free of cost. If the downtime exceeds seven consecutive days at any one time, the guarantee period will be extended beyondafore said 12monthsbyduration equal to the total down time during the period of warranty.

Signature with seal of

the tenderer Date:

Place:

Annexure-VI

LETTEROFWILLINGNESS

To
The Principal,
R.I.H.S., Bhograi
Balasore, Odisha

Sub: Submission of willingness certificate to supply/ install (Science Lab. Equipments) at your college premise.

Sir,

I am to inform you that my farm (Party Name) is ready to **supply/install (**Science Lab. Equipments**)** within the specified period of receipt of work order from the college, if my farm is selected as eligible bidder during the selection of tender. I am willing to accept all the clauses of Bid evaluation criteria, general terms and compliance to the scope of work requirement as mentioned in the Tender form. If my farm fails to supply and install the required items in the quoted price.

Yours faithfully,

Authorized Signatory of the

farm with Seal Date:

Place:

Annexure-VII

PAST WORK EXPERIENCES

Work of Similar nature over the last 3years

Sl. No	**Name & Address of College**	PO No & Date	Total Value of items supplied	Date of Supply	Contact no for College

Authorized Signatory of the

farm with Seal Date:

Place:

Annexure-II

DEPARTMENTOFPHYSICS

R.I.H.S, Bhograi, Balasore

LIST OFAPPARATUSFOR

Brand : INDOSAW/3B-SCIENTIFIC/GINI USA/PHYWE/ SPANCOTEK

Sl No.	Experiment Name & Technical Specification	Qty
1	**Half adder Full adder and 4bit binary adder** ***Technical Specification*** ➢ DC Supply: +12V & -12V fixed, DC Supply: 0-1V Variable- 2nos, Voltmeter: 0-1V (Moving Coil)-2nos, Voltmeter: 0-10V (Moving Coil), Resistor: 1KΩ-2nos, 10KΩ-2nos, 500Ω, OpAmp-IC741, Interconnection: 2mm patch cord, Mains Power: 230V/50Hz	**01**
2	**To design an astablemultivibrator of given specification using 555 timer** ***Technical Specification*** ➢ DC Supply: 5V, IC: NE555, Led Indicator-02, Resistor: 100KΩ-2nos, 10KΩ-1nos, 10KΩ-1 nos, Capacitor: 1μF, 0.1μA-2nos, 0.01μA-2nos, 10μA, Variable Resistor: 5KΩ, CRO (Optional)	**01**
3	**To Obtain the static characteristics of a P-N-P/N-P-N transistor** ***Technical Specification*** ➢ On Board 4 Meter, DC supply: 0-1V/100mA (Variable) & 0-10V/100mA (Variable), DC Voltmeter Range: 0-1V & 0-10V, DC Ammeter Range: 0-250μA & 0-50Ma, Ammeter Display: Moving Coil, Voltmeter Display: Moving Coil, Transistor: NPN & PNP, Mains Power: 230V/50Hz	**01**
4	**To determine the Height of a Building using a Sextant with its Stand** ***Technical Specification*** ➢ Frame: Light alloy , Graduated: -5° to 125° into 1° on the arc , Lacqered: Gold, Micrometer: Divided to 1 minute on black drum, Index Mirror: Rectangular, 33x49mm aluminium spattered , Horizon Mirror: Circular, 50mm diameter, one half transparent, other half aluminium separated , Shade glasses: Three different densities for direct rays and four reflected rays , Star Telescope: Galilean monocle 4x40mm, prismatic monocle 7x35mm, prismatic monocle 7x50mm, Shade caps: One dark and polarized light , Illuminator: Equipped, Adjusting tools: 1-wrench for mirror, Spare parts: 2-ry cell, 2bulbs, Case: Hard wood , Weight of Sextant: 1.9kg/ Stand: (m.s) 6 feet stand (Tripod Stand) , Weight of case: 2kg , Telescope: Astronomical & Terrestrial, Sextant: German silver scale embedded in brass frame , Measuring Tape	**01**
5	**Determine the youngs modulus "y" of a wire by searles method** ***Technical Specification*** ➢ Young's Modulus and Weight	**01**
6	**To determine an unknown Low Resistance using Carey Fosters Bridge** ***Technical Specification*** ➢ Carey-Foster-bridge with jockey, Resistance module 10 ohm, Resistance modules 0.5,1,1.5 & 2.5Ω (each), Sensitive Galvanometer 20μA/ Div., Thick brass strip, Power Supply 2V/100mA, Connecting leads (red & black) 50cm (pair), Connecting leads black 25cm, Unknown low resistance (approx. 0.22 & 2Ω)	**01**
7	**To determine the Temperature Coefficient of Resistance by Platinum Resistance Thermometer (PRT)** ***Technical Specification*** ➢ Platinum Resistance Thermometer, Three in one (Callender & Griffth bridge, Carry Foster bridge and potentiometer), Galvanometer, Hypsometer Copper, Power supply 2V DC 100mA, Connecting leads red & black 50cm (pair), Hot plate, Banana lead socket with U clip, Thermometer -10º to 150º c x 1ºc, Connecting lead red & black 100cm(pair), Instruction manual	**01**
8	**To determine the specific heat of liquid by the method of cooling** ***Technical Specification*** ➢ Copper Calorimeter 4"x3" , Thermometer: Mercury type, Digital Stop Watch	**01**
9	**To design and study Op-Amp -IC 741/351 as inverting and non-inverting amplifier** ***Technical Specification*** ➢ DC Supply: +12V & -12V fixed, DC Supply: 0-1V Variable- 2nos, Voltmeter: 0-1V (Moving Coil)-	**01**

	2nos, Voltmeter: 0-10V (Moving Coil), Resistor: 1KΩ-2nos, 10KΩ-2nos, 500Ω, OpAmp-IC741, Mains Power: 230V/50Hz	
10	**To study the colpitt's Oscillator** ***Technical Specification*** ➢ DC Supply: +5V, BJT: CL100S, Resistor: 4.7KΩ, 100KΩ, 6.8KΩ, 3.3KΩ, 680Ω, 10KΩ, Capacitor: 0.01µF, 0.047µF, 0.2µF, Mains Power: 230V/50Hz, OPTIONAL: 50MHz DSO	**01**
12	**To determine the Planck's constant using LEDs of at least 4 differentColours** ***Technical Specification*** ➢ **PLANCK'S CONSTANT APPARATUS WITH OVEN:** Selector Switch: V-I and T-I experiment, Selector Switch at V-I position, Voltmeter Display: 3 ½ digit, 7 segment LED, auto polarity & decimal indication, Voltage Range: 0.000-2.000V, Current Display: 3 ½ digit, 7 segment LED, Current Range: 0-2000 Micro A, Selector Switch at T-I position:- Current Display: 3 ½ digit, segment LED, Current Range: 0-20mA, Temperature Display: 3 ½ digit, 7segment LED, Temperature Range: Room temperature to 60.0 °C, Oven: Heater pin 4 & 5. Temperature pin 1 & 2, Oven Connector: 5 Pin, DIN type, LED Connector: 3 Pin DIN type, Input Voltage: 220V, 50Hz AC, Fuse: 1A, 250V, **OVEN WITH TEMPERATURE SENSOR:**, Heating Element: 20 ohm, Oven Connector: 5 pin, DIN type,, Ambient Temperature: 60°C, Temperature Sensor: Pt100, Output Pin: Heater pin 4 & 5., Temperature pin 1 & 2, **LED SPECIFICATION :** Yellow LED Size: 5mm, Wave Length: 590nm, Connector: 9pin, Din, Yellow LED Size: 5mm, Wave Length: 590nm, Connector: 9pin, Din type, Red LED Size: 5mm, Wave Length: 590nm, Connector: 9pin, Din type, Orange LED Size: 5mm, Wave Length: 590nm, Connector: 9pin, Din type, Green LED Size: 5mm, Wave Length: 590nm, Connector: 9pin, Din type	**01**
13	**To determine the value of e/m by (a) Magnetic focusing** ***Technical Specification*** ➢ To study charge of an electron by using Magnetic Focusing method., Kit comprises of High voltage Power Supply with intensity, focus X, Y deflection & Solenoid current controls, Two meters provided for acceleration voltage & for solenoid current controls., One 3" CRT mounted on Teak Wood Stand & a Ring Type Solenoid slides over the CRT. Dimension 11"x7"x4	**01**
14	**To determine the wavelength of laser source using diffraction of double slits** ***Technical Specification*** ➢ **OPTICAL BENCH:** Material: Black Aluminum alloy, Type: Hexagonal section, Scale: 0-100cm, Least count: 1mm, **DIODE LASER:** Peak wavelength: 635nm, Operating voltage: 5V DC, Operating current: 250mA**,** Optical power: 0.40-0.8mW, Laser product: Class II, Operating temp. : 0-40°C**,** Storage temp. : -10 to 50 °C, **PIN HOLE PHOTO DETECTOR:** Detector: Silicon photocell, Terminals: 4mm safety socket, Aperture: 1mm, Rod: 10mm diameter, **SLIT HOLDER:** Clear Aperture: 45x45mm, Object holder: Clip type, Mounting Rod: 10mm diameter, **SADDLE WITH MICROMETER:** Material: Aluminium, Transverse Motion: 10-0-10mm, Least count: 0.02mm**,** Locking: Spring loaded, Motion: X-Y axis, Holder: 10mm dia, **SINGLE WIRE:** Frame Size: 50mm x 50mm, Clear aperture: 15mm dia. (approx.), Wire thickness: 0.5mm (approx.), **CROSS WIRE:** Frame Size: 50mm x 50mm, Clear aperture: 15mm dia. (approx.), Wire thickness: 0.5mm (approx.), **TRANSVERSE SADDLE:** Material: Aluminium, Locking: Spring loaded, Motion: X-Y axis, Holder: 10mm dia, **DIGITAL MULTIMETER:** Resistance: 200W, 2000W, 20k, 200k & 2000k W., D.C. Voltage: 200 & 2000, mV: 20, 200 & 600V**,** AC Voltage: 200 & 600V, D.C. Current: 200 & 2000mA, 10A**,** Testing: Diode & transistor, Battery: 9V, **DIFFRACTION SLIDE:** Frame Size: 50mm x 50mm**,** Slit: Width=0.06mm & Separation=0.20mm (Single, Double)**,** Diffraction grating: 80 lines /mm**,** Diffraction grating: 300 lines /mm**,** Single slit: Tapered**,** Double slit: Tapered**,** Metal gauze: 300 mesh**,** All individually mounted in slide frames and protected by two Glass plates	**01**
15	**Measurement of susceptibility of paramagnetic solution (Quinck's Tube-Method)** ***Technical Specification*** ➢ **POWER SUPPLY:** Voltage : 0-16V DC continuously variable & stabilized, Voltage display : 3**½** digit LED, Ripple : Less than 25Mv, Overload : Current limiting protection, Current : 5 A continuously variable, 10% to full rating, Current display : 3**½** digit LED, Working voltage : 230V AC, 50 Hz single phase**, DIGITAL GAUSS METER:** Range : 200 G & 2 kG, Resolution : 1G at 0 - 200G, Power : 220 V, 50 Hz AC, Hall probe : InAs**, TRAVELING MICROSCOPE,** Travel : Horizontal 170mm, Vertical 110mm, Least Count : 0.01mm, Working distance : 50mm, Eyepiece Ramsden : 8x, Reticle : 90° cross on glass, The vertical carriage slides on a brass pillar. In the vertical and horizontal at carriages a locking arrangement is provided to arrest coarse motion when slow motion screw is used. By successively locking and unlocking, motion in the total travers can be provided by the slow motion screw.**, DIGITAL WEIGHING SCALE:** Capacity : 700g., Display :Digital, Least count : 0.1g., Body : Plastic**, ELECTROMAGNET:** Coils: 400 Turns. Coil Current: 4.5Amp (Max.): Connection: 4mm safety socket, U Core: 150x130mm (LxH), 40x40mm cross section, I Core : Length=150mm, 40x40mm cross section, Core material: Ferromagnetic	**01**

16	**To determine the Hall coefficient of a semiconductor sample** ***Technical Specification*** ➢ Specifications:ELECTROMAGNET - Made of soft iron, specially design for Hall Effect experiments, mounted on a wooden base for stable performance, Pole pieces :- 50mm dia. tapered type Field :- 7.5kg at 10mm. air gap, Energizing Coils :- Two coils each with total resistance of 9 ohms (approx).DIGITAL POWER SUPPLY FOR ELECTROMAGNET - 0 - 6Amp, 60V digital display, It is a constant current power supply, with long time operation and continuously variable current.DIGITAL GAUSS METER: Range: 0-2 K Gauss & 0-20 K Gauss, Resolution: 1Gauss at 0-2 K Gauss Range, Accuracy: ± 0.5%, Display: 3 ½ Digit, 7 Segment LED, Power: 220V, 50Hz Special Feature: Indicates the direction of the Magnetic field. Gauss Probe CONSTANT CURRENT POWER SUPPLY:(i) Digital Mill voltmeter Range: 0-200mV/ 2000mV (100µV minimum) Accuracy : ±0.1% of reading ±1 digit (ii) Digital Mill Ammeter Range : 0-10mA/20mA Accuracy : ±0.1% of reading ±1 digit, (iii) Constant Current Power Supply Current : 0-20mA Resolution : 10µA Accuracy : ±0.2% of the reading ±1 digit, Load regulation : 0.03% for 0 to full load Line regulation : 0.05% for 10% variation	**01**
17	**To draw B-H Curve of "Fe" using solenoid and to determine the energy loss from Hysteresis** ***Technical Specification*** ➢ A step down transformer on board, One Solenoid coil, One Search Coil, Output Brought out through BNC connectors, Type differenttypes of controls through 10 Turn potentiometer, Length of sample 39mm, Diameter of sample 1mm (Approx.), Sample type: Soft Iron, 2. Nickle, 3. Hard steel, CRO (Optional)	**01**
18	**To analyze elliptically polarized Light by using a Babinets compensator** ***Technical Specification*** ➢ Babinet Compensator, White Light Source (Lamp), Quarter wave plate, Polariser, Analyser, Eyepiece, Sodium light (Optional)	**01**
19	**To determine the refractive Index of (1) glass and (2) a liquid by total internal reflection using a Gaussian eye piece** ***Technical Specification*** ➢ **SPECTROMETER:** Scale: Brass, dia. 150mm, Objective: Archromatic lens, f=178mm, Aperture: 32mm**,** Slit: Brass with micrometer, Reticle: 90 cross etched on glass, Least count: 1 minute**,** Eyepiece: 10x, **Gauss eyepiece**, Vernier: 2 verniers (0-30iv) **in-bulit magnifier,** Base: 190mm Triangular, Cast iron**,** Special Features: Manufactured on **CNC machine, Illumination device** for cross wire, adjusting screws for **lateral & height adjustment, SODIUM LIGHT SOURCE:** Starting Voltage: 470 Volts, Input Voltage: 220V, 50Hz, Lamp House: 300x85mm(LxW)**,** Aperture dia: 25mm, **PRISM:** Size: 38x38x38mm, Height: 38mm, Material: EDF, **MICROMETER SLIT:** Pitch: 0.5mm, Least Count: 0.005mm, Range: 0-6.5mm, Diameter: 38mm approx.	**01**
20	**To determine the Boltzmann constant using V-I characteristics of PN junction diode** ***Technical Specification*** ➢ Plug in Board, Diode Module 1N4007, Resistance Module 100Ω, 2W, Variable Resistance Module 1KΩ (0-3600°C), Connecting Lads Red & Black L=50cm, Digital Voltmeter: 19.99V DC, Digita, Ammeter: 19mV DC. Power Supply: 5V DC, Acrylic sheet with clip	**01**
21	**CRO** ***Technical Specification*** ➢ Bandwidth: DC -50MHz, Channels: 2 + External, Display: 5.7 inch LCD colour (320x240 resolution) , **ACQUISITION**: Mode: Sample, Peak detect, averaging, Sample Rate (Real Time): 500MS/s, **INPUT**: Input Coupling: DC,AC,GND, Input Impedance: 1MΩ ± 2% In parallel with 20pF ± 3pF, Probe Attenuation Factors: 1X,10X,100X,1000X, Max. Input Voltage: 400V (DC + AC Pak, 1M input impedance), **HORIZONTAL SYSTEM**: Record Length: Max. 512K points, Time Base Range: 20ns/div-50s/iv/5ns/iv-50s/div (step as 1-2-5), Time Base Accuracy: ± 100ppm, Dual channel, 28 Automatic Measurements, Saving 10 Waveforms and 10 setup parameters, Convenlent USB port Interface	**01**
22	**Magnetic stirrer** ***Technical Specification*** ➢ Magnetic Stirrer without Heating ,Capacity - 2Ltr	**01**
23	**To determine wavelength of sodium light using Newton's Rings** ***Technical Specification*** ➢ NEWTON'S RING MICROSCOPE: Eyepiece: Ramsden 10x, Objective: 3x, Scale length: 110mm, Least count: 0.01mm, NEWTON'S RINGS REFLECTOR: Housing: PVC, Finish: Matt black painted, Glass plate: Mounted at 45°, SPHEROMETER (DISC BRASS): Types: 3 legs, Vertical scale: 6mmx6mm (WxT), Micrometer: Dia. 40mm, Brass, Lower disc: Dia. 60mmRange: 10-0-10mm, Least count: 0.01mm, PLANO CONVEX LENS: Dia.: 61.5mm, Glass, Focal length: 200mm, SODIUM	**01**

	LIGHT SOURCE: Sodium light Lamp: 35 watt, Transformer with metal Box, Lamp house: 300x85mm(Lxdia), Aperture dia: 25mm	
24	**To determine the Moment of Inertia of a Flywheel** **Technical Specification** ➢ **Flywheel:** Flywheel consists of a Steel disc 250mm old x 30mm wide, Which is integral with a shaft running in ball bearings, A peg fixed in the shaft acts as an anchor for the end of a pulling cord which is wound round the shaft, The periphery f the disc is an engraved mark which passes a pointer as the flywheel revolves, The bracket carrying the flywheel should be bolted to vertical surface , At least 1 m above the ground, This will allow the pulling cord and its load hanger, Sufficient free fall to drive the flywheel for up to 10 revolutions, Weights: (9 x 100gm slotted weights), Meter Scale 1 meter (Wood), **Digital Stopwatch: Count**: 1/100 Second, **Time Display**: Hour, Minute, Seconds	**01**
25	**To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method** ***Technical Specification*** ➢ Hollow metal box, MS chrome plated rod, Thread reel, MS painted base, Chrome plated brass disc, Disc made of ebonite and glass, Steam generator, Stem Chamber, Thermometer alcohol -10 to 150°C x 1°C, Digital Stopwatch- Count: 1/100 second, Time display: Hour, Minute, Seconds, Rubber tube silicon L=50cm, Rubber tube L=50cm, Hot plate dia 6", Glass Beaker 250ml	**01**
26	**To study the variation of thermo emf across two junctions of a thermocouple with temperature** ***Technical Specification*** ➢ 10 wire potentiometer with jockey, Unit of electronic standard cell 1018V, Battery eliminator 2V/100mA, Rheostat 0-5 K ohm & thermometer, Hot plate, Sensitive galvanometer 30-0-30,22Ω, Resistance box, dial type (% dial), Flexible plug leads, 'A' Base, Rod 50cm, Engine oil 250ml, Beaker 250ml, Two way plug key, Thermocouple copper-iron	**01**

DEPARTMENT OF BOTANY

R.I.H.S, Bhograi, Balasore

LIST OF APPARATUS FOR

(Brand: Biolinkk/Br-Biochem/Novel/Contech/ Dbios/BH/BM/ Spancotek/Pallav/Molychem)

Sl No.	Experiment Name & Technical Specification	Qty
1	**Spectrophotometer (UV-Visible) -Single beam (with accessories)** Technical Specification - Optical System: Single beam, grating 1200 lines/mm, Wavelength Range: 190-1000nm, Bandwidth:2nm, Wavelength Accuracy: ±1nm , Wavelength Repeatability: 0.5nm, Wavelength Setting: Auto, Photometric Accuracy: ±0.5%T, Photometric Repeatability: 0.3%T, Photometric Range: -0.3-3A, 0-200%T, Stray Light: ≤0.3%T, Stability: +0.002A/h@500nm, Display: 128*64 Dots LCD, Detector: Silicon Photodiode, Standard cell holder: 4-position 10mm cell changer, Light Source: Tungsten & Deuterium Lamp, Output: USB port & Parallel Port (printer), Power: AC 85-250V, Dimension: 420x280x180mm, Weight: 12kg, USB Cable, 4 Glass Cell (1cm), 2 Quartz Cell (1cm), Operating Manual, Dust Cover, Software CD, Software Key, Software Manual, Power Cable with PC Attachment	01
2	**MICRO CENTRIFUGE HIGH SPEED 10000 R.P.M (Microprocessor based)** Technical Specification: Speed: 3000rpm - 10000rpm (step 1000rpm), Centrifugal Force: 1000g - 7500 g, Sample Capacity: 8 x 2.0ml /1.5ml / 0.5ml /0.2ml tube, (additional 0.5ml and 0.2ml tube carriers)2 x 8 x 0.2ml PCR tube, strip(tube strip only used when speed≤6000rpm), Time Range: 1s - 999min, Noise: ≤55 Db, Dimension: 176 x 156 x 121 (mm), Net Weight: ≤1.5kg, Power: 220V/110V 50-60HZ	01
3	**LCD Microscope** Technical Specification: Magnification: 40X-1600X, Viewing Head: Compensation Trinocular Tube, 30° Inclined ,360° Rotatable, Interpupillary Distance: 48-75mm, Eyepiece: Wide field, adjustable diopter, WF10X/22mm, Objective: Plain Achromatic Objective,4x 10x 40x(SL) 100x(OIL), Nosepiece: 4 holes,revoving nosepiece,inward, Stage: Double Layer Mechanical Sliding Stage, 140X140MM, Condenser: Abbe Condenser N.A=1.25, Iris Diaphragm Moving Up and Down, Lamp: LED 3W,s tepless adjustment light, no screen flashing, Power: Switch Power, Wide Voltage 90V-240V, Microscope Camera with Software, **Computer/Laptop (Optional)**	01
4	**MicroPipette (All Variable Volume range)** Technical Specification: Fully Autoclavable & Variable Volume range setting , Volume Range: 5range , Digital/Manual display , Ergonomic design provides excellent operating experience, Easy-to-read volume display, The pipettes cover the volume range from 0.1µl to 5ml, Easy calibration and maintenance, Manufactured from innovative materials, Each Micropette Plus supplied, Individual calibration certificate according to ISO8655, Increment: 0.5µl, Test Volume (µl): 2, 10,20, Accuracy error (%): 3.00%, 1.20%, 0.90%, Accuracy error (µl): 0.06, 0.12, 0.18, Precision error (%): 2.00%, 1.00%, 0.40%, Precision error (µl): 0.04, 0.1, 0.08	03
5	**Micro Tips 1000µl** Technical Specification : Autoclavable, Graduated, Dnase Rnase Free	01
6	**Digital pH Meter- Microprocessor based** Technical Specification - pH range: 0-14 Ph, pH resolution: 0.01pH, pH Accuracy: ± 0.02 pH, Temperature compensation: Automatic or Manual, Temp. Range: 0-100 deg C, mV range: ±1999mV, mV resolution: 1mV, mV Accuracy: ±1mV, Electrode: pH combination electrode with built in temperature sensor – Plastic-EpHP02, Temp. Electrode: Built in, pH, mV and temp. Measurement, 3 point ph calibration, automatic buffer recognition, Buffers selectable from 1.68pH, 4.00pH, 4.01pH, 6.86pH, 7.00pH, 9.18pH, 9.20pH, 10.01pH and 12.45pH, Bi directional RS 232 interface. Baud rate selectable from 1200, 2400, 4800 and 9600, Real time clock, Memory storage of 100pH measurements	01
7	**BOD Incubator** Technical Specification: Capacity: 112 ltr., Chamber Size (WxDxH): 455x410x610, Size: 4.1 cu. Ft, Digital Temp. indicator cum Controller, Microprocessor based, Double wall construction, Inner chamber anodized highly polished stainless steel sheet, Supplied with two/three removable perforated shelves, Exterior made out of thick mild steel sheet duly finished write staving enamel/ powder coated paint with mat finished colour combination, Outer wall door is provided with magnetic gaske and lock & key arrangement, Inner door unbreakable acrylic transparent sheet for inspection of material in the chamber without disturbing the chamber temperature	01
8	**Vortex Mixer** Technical Specification: Type of Movement: Orbital, Orbital diameter: 6mm, Speed range: 0-3000rpm,	01

	Speed range: Scale, Permissible ambient temp.: 5-40 deg C, Permissible relative humidity: 80%, Protection class according to DIN EN 60529: IP 21, Voltage: 200-240/115/100 V compatible, Frequency: 50/60 Hz, Power: 36W, Motor rating input: 30W, Motor rating output: 15W, Dimensions: 107x146x166mm, Weight: 3kg	
9	**Digital Hot Plate with Magnetic Stirrer (Ceramic Plate)** Technical Specification: Stirring Positions: 1, Set-Up plate dimensions: 135mm, Set-up plate material: Stainless steel with **Ceramic plate**, Motor type: DC motor, Max. Stirring quantity (H2O) (L): 5, Motor rating input (W): 3, Motor rating output (W): 2.5, Speed range (rpm): 100-1500, Safety temperature: 50-320 deg. C, External temperature sensor: PT1000, Control accuracy with external temperature sensor PT 1000 deg.C: ±1, Hot surface warning: 50 deg.C, Protection class according to DIN EN 60529: IP 42, Voltage (VAC): 200-240/100-12, Frequency (Hz): 50/60, Load: 10Kg, Power (W): 650, Display: LED Digital Display	**01**
10	**Sample Cold Storage System** Technical Specification: Temperature: 4 deg. C, Total Volume: 184/190 liters (Above), Type: Direct Cool, Ice magic Power cool, Insulated Capillary Technology, Home Inverter, 10 year warranty on compressor, Door Type: Single Door	**01**
11	**Printer cum Scanner**	**01**
12	**Projector**	**01**
13	**All Permanent Slide (As per Syllabus)**	**01**
14	**All Chart (As per Syllabus)**	**01**
15	**All Chemicals (As per Syllabus) (Pallav/Molychem)**	**01**
16	**All Specimen (As per Syllabus)**	**01**
17	**All Class Work Material (As per Syllabus)**	**01**

DEPARTMENT OF CHEMISTRY

RIHS, Bhograi, Balasore

LIST OF APPARATUS FOR

Brand : Contech/Denvar/Spancotek/Spectronics/ Biolinkk/Pragati/Prime/ Labsun/Br-Biochem

Sl No.	Experiment Name & Technical Specification	Qty
1	Calorimeter (Ostwald)4x3	10
2	**Digital Potentiometer (with 2 Electrodes)** Technical Specification: Range: 0 to + 199.9mV, 0 to + 1999 mV, Resolution: 0.1mV, Repeatability: +1mV, Accuracy: +1mV +1 digit, Input impedance: > 1012 ohms, Operating temperature: 10o C to 45oC, Display: 3 1/2 Digit seven segment LED display with auto polarity indication, Power: 230V + 10% AC, 50 Hz, Dimensions: 275 X 175 X 76mm, Weight: 2.5 Kg (Approx.), Accessories: Platinum Electrode, Reference Electrode, Glass Electrode and Silver Electrode-1No each, Buffer Tablets 4 pH & 7 pH, Operation Manual, Electrode Stand, and Dust Cover	01
3	**Digital Conductivity Meter - Microprocessor Based** Technical Specification - Measurement Range: conductivity: 0-200mS/m spread into 5 ranges 0.00-20.00micro S/cm, 20.0-200.0 micro S/cm, 200-200 micro S/cm, 2.00-20.00 MS/cm, 20.0-200.0MS/cm., Resistivity: 0-100 M ohm cm, TDS: 0-100ppt (g/L), Salinity: 0-100ppt, Temp.: 10-110 deg C, Precision: Conductivity: ± 1%FS, Temp.: ± 0.4 deg C, ATC: 0-50 deg C, Display: Back Lite LCD, Power: 9V/500 Ma External adaptor or Battery backup unit (Option), Operating Temperature: 15-45 deg. C, Meter Dimensions (mm): 165 (I) x 19 (D) x 60 (H), Weight: 700gm, Electrode: Conductivity Electrode ECN G01, Temp Sensor Electrode ETS01	01
4	Stalagnometer	10
5	Viscometer	10
6	Chromatography Jar with Lid	10
7	Chromatography paper (57 x 46 cm)	12
8	**Spectrophotometer** Technical Specification: Wavelength Range: 320-1020nm, Optical System: C-T Single Beam, Grating 1200lines/mm, Spectral Bandwidth: 2nm, Wavelength Interval: 1nm, Wavelength Accuracy: ±2nm, Wavelength Repeatability: ≤1nm, Photometric Accuracy: ±1%T, Photometric Repeatability: 0.5%T, Photometric Range: 0 -1.999A, 0-199.9%T, Stray Light: ≤0.3%T@340nm, Stability: ±0.004A/h @500nm, Display: 4 LCD, Photometric Mode: T,A,C, Detector: Si Photodiode, Light Source: Tungsten lamp, Power Requirement: AC（220V/50Hz), Dimensions: (W x D x H) 450 x 520 x 320mm, Weight: 10kg, Output: RS-232C Port, Operational Manual : 1 No, Power cable : 1 No, Glass Cell 10m m : 4 no, Software CD : 1 no, RS 232 Cable : 1 no	01
9	**Digital Photo Colorimeter with in 8 Digital Filters** Technical Specification: Wavelength Range: 405-700 nm, Filters: Built in 8 Digital Filters Filters Wavelength: 405nm, 450nm, 480nm, 520nm, 540nm, 578nm, 620nm, 700nm, Display Parameters: O.D. % T, Wavelength Detector: Silicon Photo Diode, Accuracy: +0.01 O.D Stability: +0.02 O.D./ Hour	01
10	**Thermometer 0-360^{0}C-01**	01
11	**Hard glass test tube (25 x 150 mm)**	20
12	**Barometer (Digital)**	01
13	**Vacuum decicator**	01
14	**Digital Balance** Technical Specification: Max Capacity: 220gm, Readability: 0.001g, Tare Range: Full, Repeatability: ± 0.001g, Linearity: ± 0.002g, Pan Size: 85mm, Stabilization Time: 2-3 sec, Communication: RS-232, Calibration: Automatic External Calibration, Weighting Units: Multi weighing units, Power: DC9V/500mA with 6V/1.3Ah rechargeable Battery Backup, Display: Large LCD Display with back light, Working temperature: 10-40 degree C, Automatic External calibration, 2,00,000 internal resolutions, Easy to read LCD display with back light, Multifunction weighing units as like g, ct, etc., Full tare range up to max capacity of the balance, Counting weighing functions, Standard RS 232 C interface, S.S. weighing pan, Level indicator, Adjustable fit, In built rechargeable battery for continuous use, Zero tracking function with battery back-up	01

15	**Separating funnel**	**10**
16	**Activated charcoal**	**24**
17	**Burette 50ml**	**24**
18	**Pipette (10ml)**	**36**
19	**Bottle for partition co-efficient- (250ml)**	**20**
20	**Conical flask (250ml)**	**24**
21	**Beaker 250ml**	**24**
22	**Test Tube 10ml (Eack/Pkt)**	**06**
23	**Test Tube Holder**	**36**
24	**Tong**	**36**
25	**Bunsen Burner Brass Heavy**	**24**
26	**Blow Pipe**	**24**
27	**Blue Glass**	**20**
28	**Funnel**	**24**
29	**Wire Gauge**	**24**
30	**Reagent Bottle 125ml**	**20**
31	**Reagent Bottle 250ml**	**20**
32	**Reagent Bottle 500ml**	**20**
33	**Glass Rod & Glass Tube (KG)**	**6**
34	**Weighing Bottle**	**20**
35	**Cork**	**20**
36	**Crucible with Lid**	**10**
37	**Magnetic Stirrer**	**5**
38	**Microprocessor Melting Point Apparatus** Technical Specification: Cylindrical silicon oil bath, Built-in Magnetic stirrer with electronic speed controller, Electronic controller for adjusting the heating rate, Digital display of temperature with PT-100 sensor, Glare-free back ground light with adjustable light intensity, Provision for holding the melting point display, Temp. Range: 2deg above RT-275deg C (Make: SPECTRONICS, PRAGATI, SPANCO TEK)	**01**
39	**Digital Hot Plate with Magnetic Stirrer (Ceramic Plate)** Technical Specification: Stirring Positions: 1, Set-Up plate dimensions: 135mm, Set-up plate material: Stainless steel with **Ceramic plate**, Motor type: DC motor, Max. Stirring quantity (H2O) (L): 5, Motor rating input (W): 3, Motor rating output (W): 2.5, Speed range (rpm): 100-1500, Safety temperature: 50-320 deg. C, External temperature sensor: PT1000, Control accuracy with external temperature sensor PT 1000 deg.C: ±1, Hot surface warning: 50 deg.C, Protection class according to DIN EN 60529: IP 42, Voltage (VAC): 200-240/100-12, Frequency (Hz): 50/60, Load: 10Kg, Power (W): 650, Display: LED Digital Display	**01**

DEPARTMENT OF ZOOLOGY

RIHS, Bhograi, Balasore

LIST OF APPARATUS FOR

Brand : Contech/Denvar/Spancotek/Spectronics/ Biolinkk/Pragati/Prime/ Labsun/Pallav/Molychem

Sl No.	Experiment Name & Technical Specification	Qty
1	**Digital pH Meter- Microprocessor based** Technical Specification - pH range: 0-14 Ph, pH resolution: 0.01pH, pH Accuracy: ± 0.02 pH, Temperature compensation: Automatic or Manual, Temp. Range: 0-100 deg C, mV range: ±1999mV, mV resolution: 1mV, mV Accuracy: ±1mV, Electrode: pH combination electrode with built in temperature sensor – Plastic-EpHP02, Temp. Electrode: Built in, pH, mV and temp. Measurement, 3 point ph calibration, automatic buffer recognition, Buffers selectable from 1.68pH, 4.00pH, 4.01pH, 6.86pH, 7.00pH, 9.18pH, 9.20pH, 10.01pH and 12.45pH, Bi directional RS 232 interface. Baud rate selectable from 1200, 2400, 4800 and 9600, Real time clock, Memory storage of 100pH measurements	**01**
2	**Sphygmomanometer**	**01**
3	**Stethoscope**	**01**
4	**Monocular Microscope** Technical Specification - Head: Monocular, 30° inclined, 360° rotating, Eyepieces: WF 10x/18, secured by screw, Nosepiece: Quadruple ball bearings revolving nosepiece, reversed, Objectives: Achromatic 4x, 10x, 40x (with anti-fungus treatment), Stage: Eraseable Fixed stage, 120x110 mm, with sample clips, Focusing: Coaxial coarse and fine mechanism with limit stop to prevent the contact between objective and specimen, Condenser: N.A. 0.65 with iris diaphragm, Illuminator: 1 W LED built-in in the condenser, with brightness control. Color temperature: 6,300 K. Multi-Plug 100-240Vac/5Vdc external power supply, manual brightness control, Battery: Rechargeable batteries	**01**
5	**Test Tube Stand**	**01**
6	**Stanning Rack 6 Hole**	**01**
7	**Binocular Microscope** Technical Specification - Head: Binocular, 360°rotating, 30° inclined, Eyepieces: Wide Field 10x/18mm, Objectives: Achromatic 4x,10x,40x,100x, Stage: Mechanical stage, 125x116mm with specimen holder Focusing: Coaxial coarse and fine focusing mechanism with limit stop, Condenser: N.A. 1.2 with diaphragm adjustable height, Illuminator: 1W LED with external power supply	**01**
8	**Reagent Bottle 500ml with screw cap (Plastic)**	**01**
9	**Gas Jar different Size**	**01**
10	**Haemocytometer**	**01**
11	**Haemoglobinometer**	**01**
12	**Spectrophotometer (UV-Visible) -Single beam (with accessories)** Technical Specification - Optical System: Single beam, grating 1200 lines/mm, Wavelength Range: 190-1000nm, Bandwidth:2nm, Wavelength Accuracy: ±1nm , Wavelength Repeatability: 0.5nm, Wavelength Setting: Auto, Photometric Accuracy: ±0.5%T, Photometric Repeatability: 0.3%T, Photometric Range: -0.3-3A, 0-200%T, Stray Light: ≤0.3%T, Stability: +0.002A/h@500nm, Display: 128*64 Dots LCD, Detector: Silicon Photodiode, Standard cell holder: 4-position 10mm cell changer, Light Source: Tungsten & Deuterium Lamp, Output: USB port & Parallel Port (printer), Power: AC 85-250V, Dimension: 420x280x180mm, Weight: 12kg, USB Cable, 4 Glass Cell (1cm), 2 Quartz Cell (1cm), Operating Manual, Dust Cover, Software CD, Software Key, Software ManuaL, Power Cable with Computer (Make: BIOLINKK, SPANCO TEK, SPECTRONICS)	**01**
13	**Micropipette** Technical Specification: Variable, Fully Autoclavable, Calibrated in accordance with ISO 8655 and each pipette supplied with individual test certificate (Make: BR BIOCHEM, BIOLINKK, SPANCO TEK)	**01**
14	**ABO Kit**	**01**
15	**All Permanent Slide (As per Syllabus)**	**01**
16	**All Chart (As per Syllabus)**	**01**
17	**All Specimen & Model (As per Syllabus)**	**01**
18	**All Chemicals (As per Syllabus)**	**01**