OFFICE OF THE PRINCIPAL
KENDRAPARA AUTONOMOUS COLLEGE, KENDRAPARA-754211

Letter No 980 / Date 18.7.19 /

To,

The Advertisement Manager,
The Sambad, Bhubaneswar

Subject: **Publication of Quotation Call notice**

Sir,

Please find the attached quotation call notice to be published in your daily newspaper, The Samaj, in an economical price with low font size.

Principal 18.7.19
Kendrapara Autonomous College
Kendrapara

OFFICE OF THE PRINCIPAL
KENDRAPARA AUTONOMOUS COLLEGE, KENDRAPARA

No. 981 /Date 18.7.19 /

QUOTATION CALL NOTICE

Sealed quotations are invited from registered firms/ suppliers having GSTIN, PAN, Authorisation certificate from the manufacturer, Audited financial statement of preceding three financial years and Income Tax return of preceding three financial years for procurement of furniture, electronic items, sports equipments, Laboratory equipments water cooler cum purifier with storage facility etc. under **OHEPEE** and **RUSA**. The quotations must reach the undersigned by speed post/ registered post within 21 days of the publication of the notice. The quoted price should include GST, delivery and installation charges. The undersigned reserves the right to cancel/reject all or any one of the quotations without assigning any reasons thereof. For detailed specifications please visit our website www.kac.edu.in Right top coroner of the quotation must specify the item(s).

18.7.19
(Dr. R. P. Tripathy)
Principal
Kendrapara Autonomous College
Kendrapara

LIST OF EQUIPMENTS FOR IDP

Sl.No	Service/Goods to be procured	Specification	Quantity
1	Rack for books	Height-6”, Breadth-4”,width1.5”, 5 Racks	10 nos
2	Power point projector(LCD)	EPSON full HD Projector, Wall mount, Screen installation electric supply	04 nos
3	Amplifier with sound boxes	(AHUJA)Amplifier with sound boxes, cordless mice set for >200 seated rooms	02 nos
4	Laptop for power point projectors	Intel core-i5, I TB HDD, 4 GB RAM, 15.6” Window 10	04 nos
5	Podium	Ahuja 5 core Podium-01 Portable Lectorn microphone stand with three inbuilt speakers, USB, 2 wireless microphone	02nos
6	Electronics display of Notice	Scrolling Board	02
7	Computer Desk top	Intel core-i5, 1TB HDD, 4GB RAM, Window 10 Professional, ODD/18.5”	4nos
8	Notice Board	Fibre Coat	02nos
9	Chair for conference room	Steel Chair	100 nos
10	Wheel chair for different able person	KosmoCare Dura Rexine Mag Wheels with Safety Belt	02nos
11	Stretcher	Folding Stretcher, Brand- SISS, Size- 24”x90”, Max load carry-100kg	02nos
12	Braille	dot base diameter = 1.5 mm – 1.6 mm, dot height = 0.6 mm – 0.9 mm, spherical radius = 0.76 mm – 0.81 mm	02 nos
13	Document Visualiser		02 nos
14	Multi purpose printer (for IDP cell)	HP Multifunction Printer	02 nos
15	Stainless steel water cooler cum purifier-120L capacity	Normal and cold installation steel body, water supply electrify supply and water filter(RO/UV type)	10 nos
16	Laboratory equipment and chemical	As per C BCS Syllabus	

SPORTS ITEM

Sl No	Particulars	Quantity
1	Heavy duty Semi Commercial Treadmill	1
2	Heavy duty Commercial 4-Station multi gym	1
3	Heavy duty Commercial Cable Cross over	1
4	Heavy duty Commercial Chest machine	1
5	Heavy duty Commercial Cycle	1
6	Heavy duty Commercial twister	1
7	Heavy duty Commercial Vibrator	1
8	Heavy duty Commercial Multi Bench	1
9	Heavy duty Commercial Dump bell bar	1
10	Heavy duty Commercial Plain bar	1
11	Heavy duty Commercial Rubber dump bell	1
12	Heavy duty Commercial Rubber Plate	1
13	Heavy duty Commercial Plane Bench	1
14	Baseball mobile post with solid rubber wheels with adjustable height of fibre glass board	1 pair
15	Flexible multipurpose floor exercise mat (1m x 1mx 40 mm) or (1m x 1m x 20 mm)	1

LIST OF EQUIPMENTS & INSTRUMENTS UNDER IDP

DEPARTMENT OF GEOGRAPHY

Sl.No:	Name of Equipment & Instrument	Quantity (Nos)	Approximate Cost
1	Computer (High Configuration)	18	720000.00
2	Printer (Laser)	2	30000.00
3	Scanner	1	15000.00
4	Aerial Photograph	16	16000.00
5	Pocket Stereoscope	16	16000.00
6	Mirror Stereoscope	16	30000.00
7	Parallax Bar	16	48000.00
8	Eidograph	1	15000.00
9	Mercury Barometer	16	16000.00
10	Aneroid Barometer	16	16000.00
11	Wind Vane	16	16000.00
12	Manual Theodolite (Set)	1	15000.00
13	Digital Theodolite (Set)	1	30000.00
14	Clinometer	2	10000.00
15	Hypsometer	2	10000.00
16	Sextant	2	20000.00
17	Digital Image (Hard Copy And Soft Copy)	16	80000.00
18	Toposheet	200(L/S)	15000.00
19	Tracing Table (4'x4')	2	20000.00
20	Globe (Illuminating)	2	3000.00
21	Steel Almirah With Glass Door (6')	4	40000.00
22	Steel Table (Official)	4	32000.00
23	Office Chair	4	24000.00
24	Honours Laboratory Room (30'x 20')	1	950000.00
25	Honours Class Room (30' X20')	1	950000.00
26	Class Room And Office Tile Flooring	L/S	150000.00
27	Map Stand	1	5000.00
28	Ply Room Separator (10'x 6')	4	20000.00
29	Projector (With All Accessories)	2	70000.00
30	Invertor	1	25000.00
31	Stabiliser	1	10000.00
32	Sanitary Fitting	L/S	40000.00
33	Digital Global Position System	1	300000.00
34	Electrification Of Class Room And Laboratory	L/S	50000.00
35	G.I.S Software (ArcGIS & ERDAS IMAGINE)	L/S (1)	300000.00
36	Folding Chair (Steel)	48	192000.00
37	White Board	2	10000.00
38	Map & Charts	L/S	30000.00
39	Office Stationary	L/S	10000.00

Total Cost = 43,49,000.00

13/11/17

(HOD. Geography)

Dept. of Psychology.

Sl No	Name of the apparatus	Quantity
1.	Memory Apparatus	120
2.	Metronome	05
3.	Mirror drawing Apparatus	12
4.	Tachistoscope	12
5.	Muller. Lyer Illusion apparatus	12
6.	Aesthesiometer	- 05
7.	Weight lifting Box	- 08
8.	Stopwatch	- 08

LIST OF TESTS

1. Raven's Standard Progressive Matrices Test —
2. Glazer's test of Personality Type —
3. Donelson's Revised Position Questionnaire (EPQ)
4. Spence, Helmreich & Stapp's Attitude towards Women Scale
5. Bob Simpson's Environment literacy and awareness survey questionnaire
6. Hamilton's Anxiety Rating Scale
7. Beck's Depression Inventory
8. Sea's Academic Behaviour Scale
9. Rao's Academic Stress Scale

Sl No LIST OF TESTS

10. Spreng's Empathy Questionnaire
11. Mc Ghee's Scale of Sense of Humour
12. Greenberg's Basic Leadership Style Scale
13. Rahim's Scale of Conflict handling style.
14. Pittsburgh's Sleep Quality Index (PSQI)
15. Tobin's Coping Strategy Inventory (TCSI)
16. Rorschach's Ink Blot Test
17. Raven's Progressive Matrices. — (4 sets)
18. Wechsler's Adult Intelligence Scale
19. Thematic Appereception test
20. Draw a man test
21. Sentence Completion Test
22. Academic Anxiety Scale
23. Aptitude test
24. Wechsler's Intelligence Scale for Children
25. J.P. Das's PASS Model
J.P. Das's Intelligence Test
26. ~~Bora~~

3/11/18
HOD, Psychology

DEPARTMENT OF ZOOLOGY

Laboratory Equipment List

Sl no	Equipment	Specification	Approx price
1	Laminar air flow	Laminar Flow Cabinets complete with HEPS filter having efficiency of 99.97% down on O.3%microns.pre filter 90 % down to 5 micron, suitable motor blowing assemblies, working table SS top, side Acrylic panel, fluorescent tube Lights & Pressure differential manometer & castor wheels. U. V. Light & Gas cork 7 Plexi doors.	Rs 50,000/piece
2	Smart Class Projector & Smart Board	Effective Touch Area (Inches) 65" x 46", Operating System Windows, Included Accessories : USB Connector, LED Interactive PEN, Software CD, Mounting	Rs 1,00,000/-
3	Egg Incubator	Fully automatic , 200 cap	Rs 25,000/Piece
4	Cold Centrifuge	Maximum speed: 20000 rpm, Speed holding accuracy: 100 rpm, Digital timer: 0 - 99 minutes, Maxinal centifugal force RCF: 2300, Temperature: -20 degree C to + 40 degree C	Rs 1, 20,000/piece
5	Thermostatic Water bath	Material: Inside Body Fully Stainless Steel, Coating: Outside MS Powder Coated, Standard Model: 6 Holes & 12 Holes for 500ml Beaker, Power: 300W	Rs 12,500/piece
6	Green silent generator	Mahindra powerol 30KVA Diseal	Rs 3,50,000/
7	Gel Electrophoresis		**Rs 1.50,000/-**

15/11/18

HOD, Zoology

EQUIPEMENT LISTOF PHYSICS DEPARTMENT

1st SEMESTER

SL NO	Name of the Experiment	Make
1	**To determine the Moment of Inertia of a Flywheel** ***Technical Specification*** Flywheel consists of a steel disc 250 mm old x 30 mm 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 a 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*100gm slotted weights),Meter Scale 1meter, Digital Stop watch	**INDOSAW LEYBOLD PHYWE**
2	**To determine the Modulus of Rigidity of a Wire by Maxwell's needle.** ***Technical Specification*** Hollow cylindrical brass tube of length 40cm, Maxwell's needle Wall Bracket, Wire, Screw gauge **:**Material -Stainless Steel,Range:0-25 mm**,** Finish: Metallic, Meter scale-1meter, Digital Weighing balance Stopwatch: Count :1/100 Second, Time display :Hour, Minute ,Seconds	**INDOSAW LEYBOLD PHYWE**
3	**To determine Coefficient of Viscosity of water by Capillary Flow Method** ***Technical Specification*** Constant water level reservoir can be adjusted on MS chrome plated rod on tripod stand, Rubber tube of length 1mtr., Stopwatch, Thermometer Pinch cock, Graduated cylinder 100ml, Manometer on wooden stand Glass capillary tube of length 38cm on stand	**INDOSAW LEYBOLD PHYWE**
4	**To determine g and velocity for a freely falling body using Digital Timing Technique. & Measurement of 'g'** ***Technical Specification*** g by free fall apparatus, Digital Timer, Photo gate sensors Lead black and red each 100cm, 2L-picket, Steel Balls, Solenoid Driver Electromagnet, USB lead, Adaptor 5V/1A & 9V/1A,Alen Key Photo gate rod, R J cables, Instruction Manual	**INDOSAW LEYBOLD PHYWE**

2nd SEMESTER

Sl No	Name of the Experiment	Make
1	**To Verify the Thevenin and Norton Theorems** ***Technical Specification*** Power Supply Unit :9V DC & 5VDC, Plug in Board, Digital Voltmeter Digital Ammeter, Connecting Leads red & black (each), Variable resistance module , Resistance modules 10,22,50,75,100,150,220,560Ω	**INDOSAW LEYBOLD PHYWE**
2	**To Verify the Superposition Theorems** ***Technical Specification*** Power Supply Unit :9V DC & 5VDC, Plug in Board, Digital Voltmeter Digital Ammeter, Connecting Leads red & black (each), Variable resistance module , Resistance modules 10,22,50,75,100,150,220,560Ω	**INDOSAW LEYBOLD PHYWE**

3	**To Verify the Maximum Power Transfer Theorems** ***Technical Specification*** Power Supply Unit :9V DC & 5VDC, Plug in Board, Digital Voltmeter Digital Ammeter, Connecting Leads red & black (each), Variable resistance module , Resistance modules 10,22,50,75,100,150,220,560Ω	**INDOSAW LEYBOLD PHYWE**
4	**To determine the Refractive Index of the Material of a Prism using Sodium Light** ***Technical Specification*** **Spectrometer:** Scale: Brass**,** Dia:150mm L.C-30 Second Objective: Achromatic lens, f = 178mm,Aperature 32mm, Slit : Brass with micrometer, Reticle : 90 cross etched on glass, Eyepiece : 10X, Gauss eyepiece, inbuilt magnifier, Base: 190mm Triangular, Cast Iron **Prism:** Size : 38 x 38 mm, Height :38mm, Material :EDF Sodium Light Lamp 35W, Transformer with metal Box Lamp house : 300x85mm(LxΦ), Aperture dia : 25mm	**INDOSAW LEYBOLD PHYWE**
5	**Determination of angle of prism** ***Technical Specification*** **Spectrometer:** Scale: Brass**,** Dia:150mm L.C-30 Second Objective: Achromatic lens, f = 178mm,Aperature 32mm, Slit : Brass with micrometer, Reticle : 90 cross etched on glass, Eyepiece : 10X, Gauss eyepiece, inbuilt magnifier, Base: 190mm Triangular, Cast Iron **Prism:** Size : 38 x 38 mm, Height :38mm, Material :EDF Mercury light source, Mercury Vapour Lamp :125W, Transformer with metal Box, Lamp house : 250x100mm(Lxdia), Aperture dia : 25mm	**INDOSAW LEYBOLD PHYWE**
6	**To determine Dispersive Power of the Material of a prism** ***Technical Specification*** **Spectrometer:** Scale: Brass**,** Dia:150mm L.C-30 Second Objective: Achromatic lens, f = 178mm,Aperature 32mm, Slit : Brass with micrometer, Reticle : 90 cross etched on glass, Eyepiece : 10X, Gauss eyepiece, inbuilt magnifier, Base: 190mm Triangular, Cast Iron **Prism:** Size : 38 x 38 mm, Height :38mm, Material :EDF Mercury light source, Mercury Vapour Lamp :125W, Transformer with metal Box, Lamp house : 250x100mm(Lxdia), Aperture dia : 25mm	**INDOSAW LEYBOLD PHYWE**
7	**To determine Cauchy Constant** ***Technical Specification*** **Spectrometer:** Scale: Brass**,** Dia:150mm L.C-30 Second Objective: Achromatic lens, f = 178mm,Aperature 32mm, Slit : Brass with micrometer, Reticle : 90 cross etched on glass, Eyepiece : 10X, Gauss eyepiece, inbuilt magnifier, Base: 190mm Triangular, Cast Iron **Prism:** Size : 38 x 38 mm, Height :38mm, Material :EDF Mercury light source, Mercury Vapour Lamp :125W, Transformer with metal Box, Lamp house : 250x100mm(Lxdia), Aperture dia : 25mm	**INDOSAW LEYBOLD PHYWE**
8	**To determine the Resolving Power of a Prism** ***Technical Specification*** **Spectrometer:** Scale: Brass**,** Dia:150mm L.C-30 Second Objective: Achromatic lens, f = 178mm,Aperature 32mm, Slit : Brass with micrometer, Reticle : 90 cross etched on glass, Eyepiece : 10X, Gauss eyepiece, inbuilt magnifier, Base: 190mm Triangular, Cast Iron **Prism:** Size : 38 x 38 mm, Height :38mm, Material :EDF Mercury light source, Mercury Vapour Lamp :125W, Transformer with metal Box, Lamp house : 250x100mm(Lxdia), Aperture dia : 25mm	**INDOSAW LEYBOLD PHYWE**

9	**To determine wavelength of He-Ne laser using plane diffraction grating** ***Technical Specification*** **OPTICAL BENCH:** Material : Aluminium alloy, Type : Hexagonal section, Scale : 0-100cm , Least count : 1mm **He-Ne LASER:** Wavelength : 632.8 nm, Working current : 4mA ~ 6mA, Output power : > 2mW, Working time : > 8 hrs., Working voltage : AC 220 V ± 22 V, Input Power : <2 W Dimension : 300x62x82 mm, Weight : 1.5 kg (approx.) **SET OF OBJECTS:** It consists of Objects: Single slit, double slit, multiple slit 3, multiple slit 4, multiple slit 5, single tapered slit, fine, grating, 4 holes, circular opaque spot, gray filter, mesh, coarse grating & grid pattern. Frame Size : 50mm x 50mm **PRISM TABLE:** Disc: 75mm Diameter. Rod: 10 mm diameter. **OBJECT SCREEN:** Material : Translucent, Acrylic., Size : 300 x 300 mm, Rod : 10 mm diameter **CYLINDRICAL BASE:** Material : Ferrous, Mount : Rod 10-14mm dia: Flat object up to 10mm,Groove : Slide object,30x10mm (LxW) **GLASS SCALE:** Length : 15cm, Least Count : 1mm **SLIT HOLDER:** Clear Aperture : 45x45mm, Object holder : Clip type, Mounting Rod : 10mm diameter	**INDOSAW** **LEYBOLD** **PHYWE**
10	**To study Lissajous Figures** ***Technical Specification*** Function Generator-2nos, Function: Sine ,Square, Triangle, Frequency range :0.1Hz to 100KHz, Amplitude :20Vpp, Frequency Multiplier :.1 to 10K in decade step, Op amp-IC 741	**INDOSAW** **LEYBOLD** **PHYWE**
	Analog Oscilloscope 30MHz	**INDOSAW** **SCIENTIFIC** **METRAVI**
11	**To determine the Resolving Power of a Plane Diffraction Grating** ***Technical Specification*** **Spectrometer:** Scale: Brass**,** Dia:150mm L.C-30 Second Objective: Achromatic lens, f = 178mm,Aperature 32mm, Slit : Brass with micrometer, Reticle : 90 cross etched on glass, Eyepiece : 10X, Gauss eyepiece, inbuilt magnifier, Base: 190mm Triangular, Cast Iron **Prism:** Size : 38 x 38 mm, Height :38mm, Material :EDF Sodium Light Lamp 35W, Transformer with metal Box Lamp house : 300x85mm(LxΦ), Aperture dia : 25mm	**INDOSAW** **LEYBOLD** **PHYWE**
12	**To determine the Frequency of an Electrically Maintained Tuning Fork by Melde's. Experiment and to verify λ2 – T Law** ***Technical Specification*** Heavy steel fork ,Heavy cast iron base , Electromagnet , Weight box 1 Voltage source 1.5V – 12V / 3A , Pulley with clamp , Reel of thread Meter scale of length 1m , Scale pan	**INDOSAW** **LEYBOLD** **PHYWE**

3rd SEMESTER

Sl No	Name of the Experiment	Make
1	**To determine mechanical equivalent of heat J by callender and barne's constant flow method.** ***Technical Specification*** Calendar and Barn's continuous flow calorimeter, AC Ammeter : 0- 3A (Moving Coil), AC Voltmeter : 0-10V (Moving Coil), Thermometers : 10°C to 100°C -2nos Measuring cylinder : 0 to 100mg, DC Supply : 2V to 12V/3A Three Flow Water containg Beaker -1 no, Rubber tubing : 8mm - 2Meter	**INDOSAW** **LEYBOLD** **PHYWE**

2	**To determine the temperature co-efficient of resistance by Platinum resistance thermometer** ***Technical Specification*** Callender and Griffith bridge with jockey, Platinum Resistance Thermometer Galvanometer 30-0-30, 22 ohm, Hypsometer Copper, Power supply 2V DC 100mA, Connecting leads red & black 50cm (pair) Hot plate, Banana lead socket with U clip, Thermometer -10° to 150° c x 1°c Connecting lead red & black 100cm(pair), Instruction manual	**INDOSAW LEYBOLD PHYWE**
3	**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 Flexible plug leads, 'A' Base, Rod 50cm, Engine oil 250ml, Beaker 250ml Two way plug key, Thermocouple copper-iron, Instruction manual	**INDOSAW LEYBOLD PHYWE**
4	**To calibrate Resistance Temperature Device (RTD) using Null Method** ***Technical Specification*** Meter Bridge, Galvanometer, Resistance Box : 1Ω to 10000Ω Resistance Coil-2nos , Battery Eliminator:2V, RTD: PT 100 Constant Temperature Arrangement	**INDOSAW LEYBOLD PHYWE**

4th SEMESTER

Sl No	Name of the Experiment	Make
1	**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".	**INDOSAW LEYBOLD PHYWE**
2	**Measurement of Planck's constant using LEDS & (black body) radiation** ***Technical Specification*** Selector Switch : V-I and T-I experiment **Selector Switch at V-I position :-**Voltmeter & current Display: 3½ digit, 7segment, Voltage Range : 0.000-2.000V, Current Range : 0-2000mA **Selector Switch at T-I position :-** Current Display : 3½ digit, 7segment LED, Current Range : 0-20mA Temperature Display : 3½ digit, 7segment LED, Temperature Range : Room temperature to 60.0°C, Oven , Oven Connector : 5 Pin, DIN type, LED Connector : 3 Pin, DIN type **Oven with Temperature Sensor** Heating Element : 20 ohm, Oven Connector : 5 Pin, DIN , Ambient Temp. : 60° C, Temp. Sensor : Pt100, Output Pin : Heater pin 4 & 5.,Temperature pin 1 & 2	**INDOSAW LEYBOLD PHYWE**
3	**To determine work function of material of filament of directly heated vacuum diode.** ***Technical Specification*** DC Supply :0-250V,Vacuum diode, DC Voltmeter : 0-6 & 0-150V (Moving Coil)	**INDOSAW LEYBOLD PHYWE**

	DC Ammeter: 0-600mA & 0-30mA (Moving coil), Vacuum Diode : EZ80, Variable Pot:2nos	
4	**Measurement of Planck's constant using LEDS 4 different colour** ***Technical Specification*** Selector Switch : V-I and T-I experiment **Selector Switch at V-I position :-**Voltmeter & current Display: 3½ digit, 7segment, Voltage Range : 0.000-2.000V, Current Range : 0-2000mA **Selector Switch at T-I position :-** Current Display : 3½ digit, 7segment LED**,** Current Range : 0-20mA Temperature Display : 3½ digit, 7segment LED**,** Temperature Range : Room temperature to 60.0°C**,** Oven , Oven Connector : 5 Pin, DIN type**,** LED Connector : 3 Pin, DIN type **Oven with Temperature Sensor** Heating Element : 20 ohm, Oven Connector : 5 Pin, DIN , Ambient Temp. : 60° C, Temp. Sensor : Pt100, Output Pin : Heater pin 4 & 5.,Temperature pin 1 & 2	**INDOSAW LEYBOLD PHYWE**
5	**To determine the wavelength of H-alpha emission line of Hydrogen atom** ***Technical Specification*** **Advanced Spectrometer:** Scale : Brass, Dia. 175mm.Objective : Achromatic lens, f = 178mm, Aperture 32mm**,**Slit : German silver with knurled screw**,** Reticle : 90° cross etched on glass**,** Least count : 20 seconds**,** Eyepiece : 15X, Ramsden eyepiece Vernier : **4 verniers** (Telescope & Prism table), Base : 220mm dia., Aluminium Casting Special features: Spindle & other critical component manufactured on **CNC machine. Supplied in wooden box.** **Diffraction Grating:** Size : 89 X 38 mm**,** Aperture size : 16 X 9 mm**,** Rulings : 100,300,600 lines/mm **Hydrogen Tube:** Gas : Hydrogen research grade**,**Violet : 420, 440nm**,** Blue : 490nm Red : 670nm **Spectrum Tube Power Supply:** Input Voltage : 220V, 50 Hz AC, Output Voltage : 0-5000V (open circuit)**,** Overload : 2mA (Max.) with reset switch**,** Socket : Spring loaded **Protection window for tube with red switch** for safe operation	**INDOSAW LEYBOLD PHYWE**
6	**To determine Ionization Potential of Mercury** ***Technical Specification*** DC Power Supply : 0-3 VDC/50mA , AC Power Supply : 6.3V 0 to 25V 500mA, DC Voltmeter: 0- 30V (Moving Coil), DC Ammeter : 0- 30mA (Moving Coil)	**INDOSAW LEYBOLD PHYWE**
7	**To determine the absorption lines in the rotational spectrum of Iodine Vapour.** ***Technical Specification*** Spectrometer: 6" dia circle reading 30 seconds. Diffraction Grating :Hilger & Watts, Type, 15000 line per inch/6000 lines per cm Optical Bench : One meter long with five metallic sliders with holders Three of them are provided with lateral motion. Incandescent bulb 100W with house Glass tube of bore 3cm and length 50cm with an inlet for Iodine grains with stopper.The tube is closed at both ends. Double convex lens of 75mm dia with F.L. 10cm Double convex lens of 50mm dia with F.L. 10cm Iodine, Spirit lamp, Spirit level 10" x 10" thick Card board with hole of 3cm dia Reading lens 40/50mm diameter	**INDOSAW LEYBOLD PHYWE**

8	**To setup the Millikan oil drop apparatus and determine the charge of an electron** ***Technical Specification*** Millikan's Apparatus*:* Input Voltage : AC 220V, 50Hz, Output Power : 5W. Plate Voltage : 0~500V DC, Plate Distance : 5±0.2mm., Total Magnification : 30X Linear field of vision : =3mm., Scale division : 2±0.01mm., Objective lens : 100 lines/mm. Atomizer-Bottle material : Glass, Sprayer : Throat double pipe sprayer	**INDOSAW LEYBOLD PHYWE**
9	**To determine the wavelength of Laser light using Diffraction of Single Slit & Double Slit.** ***Technical Specification*** **OPTICAL BENCH:** Material : Aluminium alloy, Type : Hexagonal section, Scale : 0-100cm , Least count : 1mm **DIODE LASER:** Peak wavelength : 635nm, Operating voltage : 5V DC , Operating current : 250mA**,** Optical power : 0.4-0.8mW, 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 : 1 mm, Rod : 10 mm 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 : 15 mm dia. (approx.) , Wire thickness : 0.5mm (approx.) **CROSS WIRE:** Frame size : 50mm x 50mm, Clear aperture : 15 mm dia. (approx.), Wire thickness : 0.5mm (approx.) **TRANSVERSE SADDLE** Material : Aluminium, Locking : Spring loaded, Motion : X-Y axis, Holder : 10mm dia. **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.	**INDOSAW LEYBOLD PHYWE**
10	**To determine (1) wavelength and (2) angular spread of He-Ne laser using plane diffraction grating** ***Technical Specification*** **OPTICAL BENCH:** Material : Aluminium alloy, Type : Hexagonal section, Scale : 0-100cm , Least count : 1mm **He-Ne LASER:** Wavelength : 632.8 nm, Working current : 4mA ~ 6mA, Output power : > 2mW**,** Working time : > 8 hrs., Working voltage : AC 220 V ± 22 V, Input Power : <2 W Dimension : 300x62x82 mm, Weight : 1.5 kg (approx.) **SET OF OBJECTS:** It consists of Objects: Single slit, double slit, multiple slit 3, multiple slit 4, multiple slit 5, single tapered slit, fine, grating, 4 holes, circular opaque spot, gray filter, mesh, coarse grating & grid pattern. Frame Size : 50mm x 50mm **PRISM TABLE:** Disc: 75mm Diameter. Rod: 10 mm diameter. **OBJECT SCREEN:** Material : Translucent, Acrylic., Size : 300 x 300 mm, Rod : 10 mm diameter **CYLINDRICAL BASE:** Material : Ferrous, Mount : Rod 10-14mm dia: Flat object up to 10mm,Groove : Slide object,30x10mm (LxW) **GLASS SCALE:** Length : 15cm, Least Count : 1mm **SLIT HOLDER:** Clear Aperture : 45x45mm, Object holder : Clip type, Mounting Rod : 10mm diameter	**INDOSAW LEYBOLD PHYWE**

11	**To determine the wavelength of Laser light using Diffraction of Single Slit** **OPTICAL BENCH:** Material : Aluminium alloy, Type : Hexagonal section, Scale : 0-100cm , Least count : 1mm **DIODE LASER:** Peak wavelength : 635nm, Operating voltage : 5V DC , Operating current : 250mA**,** Optical power : 0.4-0.8mW, 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 : 1 mm, Rod : 10 mm 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 : 15 mm dia. (approx.) , Wire thickness : 0.5mm (approx.) **CROSS WIRE:** Frame size : 50mm x 50mm, Clear aperture : 15 mm dia. (approx.), Wire thickness : 0.5mm (approx.) **TRANSVERSE SADDLE** Material : Aluminium, Locking : Spring loaded, Motion : X-Y axis, Holder : 10mm dia. **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.	**INDOSAW** **LEYBOLD** **PHYWE**
12	**Study of V-I & power curves of solar cells, and find maximum power point & efficiency.** ***Technical Specification*** DC Ammeter : 2000µA & 200mA, DC Voltmeter : 0-20V, Ammeter Display : 3 ½ Digit , Voltmeter Display : 3 ½ Digit, Solar Cell , Restive Load : 100Ω,250Ω,500Ω & 1K,2K,5K	**INDOSAW** **LEYBOLD** **PHYWE**
13	**To study the characteristics of a Bipolar Junction Transistor in CE configuration** ***Technical Specification*** DC Supply :0-1V/100mA (Variable), :0-10V/100mA (Variable), DC Voltmeter:0-1V (Moving Coil), DC Voltmeter:0-10V (Moving Coil), DC Ammeter :0-250µA(Moving Coil) DC Ammeter:0-50mA(Moving Coil), Transistor : NPN & PNP, Interconnection :4mm patch cord, Front panel built with high class insulated sheet, Circuit & Symbol diagram printed on front panel, Mains Power :230V/50Hz	**INDOSAW** **LEYBOLD** **PHYWE**
14	**To study the various biasing configurations of BJT for normal class A operation.** ***Technical Specification*** DC Supply : +12V Fixed, Transistor : CL100S-3nos, Digital Voltmeter : 0-20V DC, Digital Ammeter :0-200mA DC, Digital Ammeter : 0-200µA DC, Resistor :1KΩ-3nos,200KΩ-3nos,2.2KΩ-2nos	**INDOSAW** **LEYBOLD** **PHYWE**
15	**To design a CE transistor amplifier of a given gain (mid-gain) using voltage divider bias.** ***Technical Specification*** Signal :1KHz/15mV Sine wave, Transistor :BC107BP-2nos, Resistor:33KΩ-2nos,330Ω-2nos,3.3KΩ-2nos,1KΩ-2nos, Capacitor:100µF-3nos,10µF-2nos, Interconnection:2mm patch cord, Front panel built with high class insulated sheet, Circuit & Symbol diagram printed on front panel, Mains Power :230V/50Hz	**INDOSAW** **LEYBOLD** **PHYWE**
	Analog Oscilloscope 30MHz	**INDOSAW** **SCIENTIFIC**

		METRAVI

16	**To study the frequency response of voltage gain of a RC-coupled transistor amplifier.** ***Technical Specification*** Signal :1KHz/15mV Sine wave, Transistor :BC107BP-2nos, Resistor:33KΩ-2nos,330Ω-2nos,3.3KΩ-2nos,1KΩ-2nos, Capacitor:100μF-3nos,10μF-2nos, Interconnection:2mm patch cord, Front panel built with high class insulated sheet, Circuit & Symbol diagram printed on front panel, Mains Power :230V/50Hz	**INDOSAW** **LEYBOLD** **PHYWE**
	Analog Oscilloscope 30MHz	**INDOSAW** **SCIENTIFIC** **METRAVI**
	Signal Generator	**INDOSAW** **SCIENTIFIC** **METRAVI**
17	**To design a Wien bridge oscillator for given frequency using an op - amp.** ***Technical Specification*** DC Supply: +5V, BJT:CL100S, Resistor : 4.7KΩ,100KΩ,6.8KΩ,3.3KΩ,680Ω,10KΩ Capacitor:0.01μF,0.047μF,0.2μF, Front panel built with high class insulated sheet Circuit & Symbol diagram printed on front panel, Mains Power :230V/50Hz	**INDOSAW** **LEYBOLD** **PHYWE**
	Analog Oscilloscope 30MHz	**INDOSAW** **SCIENTIFIC** **METRAVI**
18	**To design a phase shift oscillator of given specifications using BJT** ***Technical Specification*** DC Supply: +5V, BJT:CL100S, Resistor : 4.7KΩ,100KΩ,6.8KΩ,3.3KΩ,680Ω,10KΩ Capacitor:0.01μF,0.047μF,0.2μF, Front panel built with high class insulated sheet Circuit & Symbol diagram printed on front panel, Mains Power :230V/50Hz	**INDOSAW** **LEYBOLD** **PHYWE**
	Analog Oscilloscope 30MHz	**INDOSAW** **SCIENTIFIC** **METRAVI**
19	**To study the Colpitt`s oscillator.** ***Technical Specification*** DC Supply: +5V, Capacitor:0.047μF -4nos ,0.022μF & 100μF, Inductor:10mH,5mH &60μH Transistor:CL100S,Resistor:33kΩ,10KΩ & 47KΩ,Front panel built with high class insulated sheet, Circuit & Symbol diagram printed on front panel, Mains Power :230V/50Hz	**INDOSAW** **LEYBOLD** **PHYWE**
	Analog Oscilloscope 30MHz	**INDOSAW** **SCIENTIFIC** **METRAVI**
20	**To design a digital to Analog converter (DAC & ADC) of given specifications** ***Technical Specification*** **DAC :** Resistor:1kΩ-6nos**,** Data switch :8nos**,** DC Supply : +12V(Variable)**,** LED :8nos **ADC**: Resistor:1kΩ-12nos,470Ω,12KΩ, OpAmp:IC741-4nos, LED:4nos DC Supply:+12V(Variable)	**INDOSAW** **LEYBOLD** **PHYWE**
21	**To design an inverting amplifier using Op-amp (741) for dc voltage of given gain** ***Technical Specification*** DC Supply :+12V & -12V Fixed, DC Supply : 0-5V Variable , Resistor : 1KΩ-2nos,10KΩ OpAmp-IC741, DC Voltmeter : 0-5V-2nos, Display : 3 ½ Digit, Interconnection:2mm	**INDOSAW** **LEYBOLD** **PHYWE**

	patch cord, Front panel built with high class insulated sheet, Circuit & Symbol diagram printed on front panel, Mains Power :230V/50Hz	
22	**To design inverting& non-Inverting amplifier using Op-amp (741) and study its frequency response** ***Technical Specification*** DC Supply :+12V & -12V Fixed, DC Supply : 0-5V Variable , Resistor : 1KΩ-2nos,10KΩ OpAmp-IC741, DC Voltmeter : 0-5V-2nos, Display : 3 ½ Digit, Interconnection:2mm patch cord, Front panel built with high class insulated sheet, Circuit & Symbol diagram printed on front panel, Mains Power :230V/50Hz	**INDOSAW LEYBOLD PHYWE**
23	**To study the zero-crossing detector and comparator** ***Technical Specification*** DC Supply :+15V & -15V Fixed, DC Supply : 0-10V Variable , Resistor : 10KΩ-2nos Diode :1N4007-2nos, OpAmp-IC741-2nos, Interconnection:2mm patch cord Front panel built with high class insulated sheet, Circuit & Symbol diagram printed on front panel, Mains Power :230V/50Hz	**INDOSAW LEYBOLD PHYWE**
	Analog Oscilloscope 30MHz	**INDOSAW SCIENTIFIC METRAVI**
	Signal Generator	**INDOSAW SCIENTIFIC METRAVI**
24	**To add two dc voltages using Op-amp in inverting and non-inverting mode.** ***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, Front panel built with high class insulated sheet,Circuit & Symbol diagram printed on front panel Mains Power :230V/50Hz	**INDOSAW LEYBOLD PHYWE**
25	**To design a precision Differential amplifier of given I/O specification using Op-amp** ***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 OpAmp-IC741, Interconnection:2mm patch cord, Front panel built with high class insulated sheet, Circuit & Symbol diagram printed on front panel Mains Power :230V/50Hz	**INDOSAW LEYBOLD PHYWE**
26	**To investigate the use of an op-amp as an Integrator** **To investigate the use of an op-amp as a Differentiator.** ***Technical Specification*** DC Supply: +12V &-12V Fixed, AC Signal:10KHz, AC Voltage:1V, OPAMP-IC741 Resistor : 1KΩ,10KΩ-2nos,100KΩ-2nos,1MΩ,10MΩ,Capacitor:0.01μF-2nos,100pF Interconnection:2mm patch cord, Front panel built with high class insulated sheet Circuit & Symbol diagram printed on front panel, Mains Power :230V/50Hz	**INDOSAW LEYBOLD PHYWE**
27	**To design a circuit to simulate the solution of a 1st/2nd order differential equation**	

5h SEMESTER

Sl No	Name of the Experiment	Make
1	**Measurement of Susceptibility of Paramagnetic Solution (Quinck`s Tube Method)** ***Technical Specification*** POWER SUPPLY: Voltage : 0-16V 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 G & 2 kG, Resolution : 1G at 0 - 200G, Power : 220 V, 50 Hz AC, Hall probe : InAs ELECTROMAGNET: Coils : 500 turns., Coil Current : 8.5Amp (Max.), Connection : 4mm safety socket., U Core : 150x130mm(LxH), 40x40mm cross section., I Core : Length=150mm, 40x40mm cross section. Core material : Ferromagnetic. Bore Pipe : Iron with 5mm Pipete, Tube & Beaker are included in the set up	**INDOSAW LEYBOLD PHYWE**
2	**To measure the Magnetic Susceptibility of Solids.** ***Technical Specification*** **POWER SUPPLY:**Voltage : 0-16V 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 G & 2 kG, Resolution : 1G at 0 - 200G Power : 220 V, 50 Hz AC, Hall probe : InAs **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.	**INDOSAW LEYBOLD PHYWE**
3	**Coupling Coefficient of Piezo electric Crystal** ***Technical Specification*** Shock arrangement: Spring type, Circuit : Peak detector & hold , Amplifier: Op-amp based, Test points : Sockets at different places for signals. :Display: 3.5 digit digital Power supply : Short circuit &overload , Protected : 230V/50Hz AC	**INDOSAW LEYBOLD PHYWE MERINE**
4	**To Measure the Dielectric Constant of a Dielectric Materials (Different) with frequency. –Advance** ***Technical Specification*** HIGH VOLTAGE POWER SUPPLY: Input Voltage : 220V, ±5%, 50Hz AC, Output Voltage : 0-600V DC, Voltage Resolution : 10V, Voltage Display : Analog, Short Circuit Current : 100µ Amp POWER SUPPLY 2-12V AC/DC: Input Voltage : 220V, ±5%, 50Hz AC, Output Voltage : 2,3,4,5,6,8,10 and 12 V AC full wave rectified, unsmoothed and unregulated D.C. Overload protection : Resettable thermal trip DIELECTRIC CONSTANT KIT A Metal Rail : Metal sheet, L=350mm approx. B Capacitor plate : Aluminium, 20cm x 20cm (LxW) C Capacitor plate : Aluminium, 28cm x 28cm (LxW) D Glass sheet : 21cm x 21cm (LxW) E Polystyrene sheet : 21cm x 21cm (LxW) F Two way switch : 4mm socket, 3 nos. G Capacitor : 0.01µF & 0.001µF H Spacer : PVC (1,2,3,4,6 mm) ELECTROMETER AMPLIFIER: Input Impedance : >10 ohm, Input Current : < 0.5pA	**INDOSAW LEYBOLD PHYWE**

	Output Voltage : upto +10V,Output Current : 5mA (Short Circuit Protected), Output impedance : <1ohm Supply Voltage : 12 V AC	

5	**To determine the complex dielectric constant of and plasma frequency of metal using Surface Plasmon resonance (SPR)** ***Technical Specification*** Measuring principle : Surface Plasmon Resonance Excitation wavelength: 685 nm, power = 5 mw, Angular resolution : 0.01° Motor : Micro-controlled stepper motors Mode of operation : Concentric and coplanar movement of sample and detector in user defined steps, Rotation direction : Both - clockwise and anti-clockwise direction (0.01°), Power resolution : 0.01 mW Substrate: Gold coated substrate(3nos.),dielectric Au/prism(3nos.) Measurement media : Solid or liquid or gaseous Laser mount : Kinematic mount to align the laser beam precisely in horizontal direction with respect to prism table and detector Sensor : Silicon photo detector of high resolution (0.01mW), Measuring range of detector : 500 nm to 700 nm Flat field, Temperature range for effective performance : 5°C to 55°C	**INDOSAW LEYBOLD PHYWE**
6	**To determine the refractive index of a dielectric layer using SPR** ***Technical Specification*** Measuring principle : Surface Plasmon Resonance Excitation wavelength: 685 nm, power = 5 mw, Angular resolution : 0.01° Motor : Micro-controlled stepper motors Mode of operation : Concentric and coplanar movement of sample and detector in user defined steps, Rotation direction : Both - clockwise and anti-clockwise direction (0.01°), Power resolution : 0.01 mW Substrate: Gold coated substrate(3nos.),dielectric Au/prism(3nos.) Measurement media : Solid or liquid or gaseous Laser mount : Kinematic mount to align the laser beam precisely in horizontal direction with respect to prism table and detector	**INDOSAW LEYBOLD PHYWE**
7	**PE Hystesis Loop tester with cable test fixture and temperature variation** ***Technical Specification*** Field 1KV, XY probes output for oscilloscope, Overload protections Current limit 2 mA, Standard PZT sample, Sample holder, Silicon Oil 500 ml Bandwidth : 100Mhz,2ch,Dual trace	**INDOSAW LEYBOLD PHYWE MERINE**
8	**To study the BH curve of iron using a solenoid and determine the energy loss.** ***Technical Specification*** **DATA LOGGER Specifications:** Input channels : 4,Input channels resolution : 12 bit ADC @ 100 ksps Analog input : 0-5 V, Output channels : 12 bit DAC, Analog output : ± 12 V max 10 mA Current booster : Upto 1 A, Power Connector : 3PIN DIN, Communication : USB **POWER UNIT Specifications:** Power Supply Input Voltage : 220V, 50Hz AC Power Supply output Voltage : ± 12 V, 3PIN DIN **Electromagnet** Coils : 300, Wire : 19SWG, Cu., Connection : 4mm safety socket. U Core : 150x130mm(LxH), 40x40mm cross section., I Core : 150mm(L), 40x40mm cross section.Point Pin : Length=90mm,Core material : Ferromagnetic. **VOLTAGE SENSOR Specifications:** Voltage Sensor :±1V,Connection out : 4mm safety socket, Connection in : 6PIN BT (British Telecom) **CURRENT SENSOR Specifications:** Current Sensor :±1A, Connection out : 4mm safety socket, Connection in : 6PIN BT (British Telecom)	**INDOSAW LEYBOLD PHYWE**
9	**To measure the resistivity of a semiconductor (Ge) crystal with**	**INDOSAW**

	temperature by four-probe method (room temperature to 150° C) and to determine its band gap. ***Technical Specification*** **FOUR PROBE EXPERIMENTAL SETUP** Voltmeter Display : 3½ digit, 7segment LED, auto polarity& decimal indication. Voltage Range : X1 (0-200.0mV DC) & X10 (0-2.00 V DC), 4mm socket Current Display : 3½ digit, 7segment LED, Current Range : 0-20mA DC, 4mm socket Oven Supply : 45V AC (Switch position LOW), 60V AC (Switch position HIGH) Oven Connector : 5 Pin, DIN type, Input Voltage : 220V, 50Hz AC, Fuse : 1A, 250 V **OVEN:** Heating Element : 35 ohm, 75 Watt, Oven Supply : 45V/60V AC, Oven Connector : 5 Pin, DIN type, Ambient Temperature : 175° C, Fuse : 2A **THERMOMETER:** Type : Mercury, Temperature Range : 0-200° C, Least Count : 1° C, Length : 300mm approx. **FOUR PROBE ARRANGEMENT** Four probe : Spring type, Probe Spacing : 25mm, Crystal : Ge Wafer, P type Crystal Size : 12 x14 x 0.5mm (LxWxThickness), Resistivity : 1~ 10 ohm-cm, Orientation : <100> Connection : 4mm safety socket	**LEYBOLD PHYWE**
10	**To determine the Hall coefficient of a semiconductor sample.** ***Technical Specification*** **CONSTANT CURRENT SOURCE** Current : 0-20 mA DC, Resolution : 10 micro ampere, Power : 220V ± 10%, 50 Hz AC, Display : 3½ digit LED,Weight : 3 Kg approx. **POWER SUPPLY** Voltage : 0-16V 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 ratingCurrent 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, Input Voltage : 220 V, ± 5 %, 50 Hz AC, Axial Hall Probe : InAs, Display : 3½ Digit LED **HALL EFFECT APPARATUS** 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., Base dimension : 360x180x33mm, Weight : 8.8kg (Approx.) **GE CRYSTAL PCB** Crystal : Ge Wafer, P type, Crystal Size : 6x7 x 0.5mm (LxWxThickness), Resistivity : 1~ 10 ohm-cm, Orientation : <100>, Offset pot : Trim pot, Connection : 4mm safety socket	**INDOSAW LEYBOLD PHYWE**

5th SEMESTER

Sl No	Name of the Experiment	Make
1	**To verify the law of Malus for plane polarized light** ***Technical Specification*** **He-Ne LASER** Wavelength : 632.8 nm, Working current : 4mA ~ 6mA, Output power : > 2mW, Contour dimension, (Outer diameter x length) : f 40 mm x 250 mm, Continuous working time : > 8 hrs., Working voltage : AC 220 V ± 22 V, Input Power Rating : <2 W, Need no ground connection, Contour Dimension(lxbxh) : 300x62x82 mm, Weight : 1.5 kg (approx.) **OPTICAL BENCH** Material : Aluminium alloy, Type : Hexagonal section, Scale : 0-150cm, Least count : 1mm, Supplied with 3 fixed saddle. **POLARIZER / ANALYZER** Angle : Adjustable (0°-90°), Aperture : 21mm dia., Frame : 130mm dia., to avoids	**INDOSAW LEYBOLD PHYWE**

	scattering of lights, Rod : 10 mm dia. **PHOTO DETECTOR** Detector : Silicon photocell, Terminals : 4mm safety socket, Aperture : 1 mm, Rod : 10 mm diameter **DIGITAL MULTIMETER** Resistance: 200W, 2000, 20k, 200k & 2000k W., D.C. Voltage : 200 & 2000 mV : 20, 200 & 600 V, A.C. Voltage : 200 & 600 V, D.C. Current :200 & 2000 mA: 20 & 200 mA : 10 A, Testing : Diode & transistor, Battery : 9V **TRANSVERSE SADDLE** Material: Aluminium, Locking: Spring loaded, Motion: X-Y axis, Holder: 10mm dia.	
2	**To determine the specific rotation of sugar solution using Polarimeter.** ***Technical Specification*** **Polarimeter Tube:** Length :200mm with central bulb, metallic cap & cover glasses packed in a velvet case **Sodium Light Source:** Starting Voltage : 470 Volts, Input Voltage : 220V,50Hz, Lamp House ; 300x85mm(LxΦ), Aperture dia :25mm **Laurent's Half Shade:** Circular scale :0˚-360˚, Least count :1˚, Vernier Reading :6 min, Dimensions : Dia 12mm, length 200mm	**INDOSAW LEYBOLD PHYWE**
3	**To analyze elliptically polarized Light by using a Babinet's compensator**. ***Technical Specification*** Babinet Compensator, White Light Source (Lamp), Quarter wave plate Polariser , Analyser, Eye piece, Sodium Light Lamp 35W, Transformer with metal Box, Lamp house : 300x85mm(LxΦ), Aperture dia : 25mm	**INDOSAW LEYBOLD PHYWE**
4	**To study dependence of radiation on angle for a simple Dipole antenna.** ***Technical Specification*** **GUNN DIODE POWER SUPPLY:** Voltage Range : 0-12V continuously Variable, Current : 1A Max, Regulation : 0.2% for 10% variation in the mains, supply voltage., Ripple : 1mV rms, Modulation frequency : 1KHz±10%(900-1100Hz) Output Connector : BNC (F) for gunn oscillator and TNC (F) for pin modulator. **GONIOMETER SCALE:** Circular scale : 0-360°, Transmitter Arms : 0-50mm, Receiver Arms : 0-100mm **REFLECTORS:** Dimension : 300x300mm, Material :Aluminium, Acrylic, mild steel, Thickness : 3mm **ALUMINUM REFLECTORS** Material : Aluminium, Size (C7663) : 300 x200mm(Lx W), Size (C7664) : 300 x50mm(L x W), Thickness : 3mm **MICROWAVE TRANSMITTER:"** Biasing : DC bias, Bias Voltage : 10Volt (Max), Output Connector : BNC(F), Waveguide : WR-90 **MICROWAVE RECEIVER** Band : X, Frequency Range : 8.2 -12.4GHz, Waveguide :WR-90, Diode : Crystal diode IN23, Output Connector : BNC(F) **POLARIZING GRILL:**Size : 300 x190mm (L x W), Grill No. : 15 Nos., Aluminium, Angle position : , & 45°	**INDOSAW LEYBOLD PHYWE**
5	**To determine the wavelength and velocity of ultrasonic waves in a liquid (Kerosene Oil, Xylene, etc.) by studying the diffraction through ultrasonic grating** ***Technical Specification*** **SPECTROMETER:** Scale: Brass, dia. 150mm, Objective: Achromatic 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 (0-30div) **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, 50	**INDOSAW LEYBOLD PHYWE**

	Hz, Lamp House : 300x85mm(LxØ), Aperture dia. : 25mm **PRISM:** Size : 38 x 38 x 38 mm. ,Height : 38mm, Material : EDF **MICROMETER SLIT:** Pitch : 0.5 mm., Least Count : 0.005 mm., Range : 0 - 6.5 mm., Diameter : 38 mm approx. **RF OSCILLATOR:** Frequency Range :150MHz, Mode of wave : Sine, Amplitude : 20Vpp **RF CRYSTAL:** Crystal : Double din quartz vibrator	
6	**To study the reflection ,refraction of microwaves** ***Technical Specification*** **GUNN DIODE POWER SUPPLY:** Voltage Range : 0-12V continuously Variable, Current : 1A Max, Regulation : 0.2% for 10% variation in the mains, supply voltage., Ripple : 1mV rms, Modulation frequency : 1KHz±10%(900-1100Hz) Output Connector : BNC (F) for gunn oscillator and TNC (F) for pin modulator. **GONIOMETER SCALE:** Circular scale : 0-360°, Transmitter Arms : 0-50mm, Receiver Arms : 0-100mm **REFLECTORS:** Dimension : 300x300mm, Material :Aluminium, Acrylic, mild steel, Thickness : 3mm **ALUMINUM REFLECTORS** Material : Aluminium, Size (C7663) : 300 x200mm(Lx W), Size (C7664) : 300 x50mm(L x W), Thickness : 3mm **MICROWAVE TRANSMITTER:"** Biasing : DC bias, Bias Voltage : 10Volt (Max), Output Connector : BNC(F), Waveguide : WR-90 **MICROWAVE RECEIVER** Band : X, Frequency Range : 8.2 -12.4GHz, Waveguide :WR-90, Diode : Crystal diode IN23, Output Connector : BNC(F) **POLARIZING GRILL:** Size : 300 x190mm (L x W), Grill No. : 15 Nos., Aluminium, Angle position : , & 45°	**INDOSAW LEYBOLD PHYWE**
7	**To study polarization and double slit interference in microwaves** ***Technical Specification*** **GUNN DIODE POWER SUPPLY:** Voltage Range : 0-12V continuously Variable, Current : 1A Max, Regulation : 0.2% for 10% variation in the mains, supply voltage., Ripple : 1mV rms, Modulation frequency : 1KHz±10%(900-1100Hz) Output Connector : BNC (F) for gunn oscillator and TNC (F) for pin modulator. **GONIOMETER SCALE:** Circular scale : 0-360°, Transmitter Arms : 0-50mm, Receiver Arms : 0-100mm **REFLECTORS:** Dimension : 300x300mm, Material :Aluminium, Acrylic, mild steel, Thickness : 3mm **ALUMINUM REFLECTORS** Material : Aluminium, Size (C7663) : 300 x200mm(Lx W), Size (C7664) : 300 x50mm(L x W), Thickness : 3mm **MICROWAVE TRANSMITTER:"** Biasing : DC bias, Bias Voltage : 10Volt (Max), Output Connector : BNC(F), Waveguide : WR-90 **MICROWAVE RECEIVER** Band : X, Frequency Range : 8.2 -12.4GHz, Waveguide :WR-90, Diode : Crystal diode IN23, Output Connector : BNC(F) **POLARIZING GRILL:** Size : 300 x190mm (L x W), Grill No. : 15 Nos., Aluminium, Angle position : , & 45°	**INDOSAW LEYBOLD PHYWE**
8	**To determine refractive index of liquid by total internal reflection using wollaston's air film**	**INDOSAW LEYBOLD PHYWE**
9	**To determine the refractive Index of (1) glass and (2) a liquid by total internal reflection using a Gaussian eyepiece.** ***Technical Specification*** **SPECTROMETER:** Scale: Brass, dia. 150mm, Objective: Achromatic lens, f = 178mm,	**INDOSAW LEYBOLD PHYWE**

	Aperture 32mm, Slit: Brass with micrometer, Reticle : 90 cross etched on glass, Least count: 1 minute, Eyepiece: 10X, **Gauss eyepiece,** Vernier: 2 verniers (0-30div) **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, 50 Hz, Lamp House : 300x85mm(LxØ), Aperture dia. : 25mm **PRISM:** Size : 38 x 38 x 38 mm., Height : 38mm, Material : EDF **MICROMETER SLIT:** Pitch : 0.5 mm., Least Count : 0.005 mm., Range : 0 - 6.5 mm., Diameter : 38 mm approx	
10	**To study the polarization of light by reflection and determine the polarizing angle for air -glass interface.** ***Technical Specification*** Optical Rail, Goniometer with rail carriage, Pinhole photo detector, Diode laser with power supply, Polarizer with rail carriage, Detector output measurement unit Kinematic laser mount with rail carriage, Glass & acrylic plate with holder	**INDOSAW LEYBOLD PHYWE**
11	**To verify the Stefan`s law of radiation and to determine Stefan's constant**. ***Technical Specification*** Stefan's Constant radiation Apparatus on stand with black & silver disc Cu-Cn-Cu thermocouple on a rigid insulated board with two junctions in cotton wool. Oil bath with mustard oil, capacity 100 ml. Fuel for spirit lamp 2 x 100 ml. Spirit lamp on adjustable stand. Cotton wool in a cylindrical copper enclosure on the stand for junctions of cu-cn thermocouple. water bath copper Super sensitive micrometer as galvanometer fixed on board. Steam boiler2 liter. Capacity with plastic tubing with pinch cock. Hot plate thermostatic controlled single phase (8"). Two mercury thermometer 110 ' C for black body appt. One mercury thermometer 360 ' C for oil both. One 250 ml glass beaker , one plastic funnel. Two spiral connecting wires with connectors.	**INDOSAW LEYBOLD PHYWE**
12	**To determine value of Boltzmann constant using V-I characteristic of PN diode.** ***Technical Specification*** Selector Switch : V-I and V-T experiment, Bias & Junction Voltmeter & Current Display : 3½ digit, 7segment LED Voltage Range : 0.000-1.999V & Current Range : 0-20mA Display : 3½ digit, 7segment LED Selector Switch at V-T position/Junction :- Voltage Range : 0.000-1.999V Temperature Display : 3½ digit, 7segment LED Temperature Range : 273K to 353K Oven : Heater pin 4 & 5. Temperature pin 1 & 2 Oven Connector : 5 Pin, DIN type Diode & Transistor : 4mm safety socket Input Voltage : 220V, 50Hz AC TEMPERATURE SENSOR- Heating Element : 35 ohm Oven Connector : 5 Pin, DIN type Ambient Temperature : 353K Temperature Sensor : Pt100 Output Pin : Heater pin 4 & 5. Temperature pin 1 & 2	**INDOSAW LEYBOLD PHYWE**

DEPARTMRNT OF EDUCATION

1. PROJECTOR
2. LAPTOP
3. INVERTOR
4. ALMIRAH
5. RAVEN PROGRESSIVE MATRICES
6. BHATIA INTELLIGENT TEST
7. PHAURSTERN ATTITUDE SCALE
8. PROJECTOR SCREEN
9. PUBLIC ADDRESS SYSTEM
10. WHITE BOARD

HOD, EDUCATION

KENDRAPARA AUTONOMOUS COLLEGE, KENDRAPARA
DEPARTMENT OF CHEMISTRY

LIST OF EQUIPMENTS

1. Single pan Digital Balance – (Shimadzu brand) – ELB 300 [300g x 0.01g]
2. Digital Potentiometer – Systronic – M 318
3. Digital Colorimeter – Systronic – M 115
4. Digital pH Meter – Systronic – M 335
5. Digital Conductometer – Systronic – M 304
6. Ostwald's Viscometer (Viscosity measurements)
7. Stalagmometer (Surface tension measurements)
8. Copper Calorimeter with accessories (precision thermometer) - NISCO
9. UV Visible Spectrophotometer (Single Beam) –Labtronics - M LT-291
10. Magnetic Stirrer (with hot plate) – M KMS - 400 (1Ltr)
11. Laboratory Heating Mantle Equipment 5L Electric Heating Belt Magnetic Stirring Intelligent Digital Display
12. Digital Melting point apparatus – MPA 100 (CE LABELED)
13. Vaccum filteration Apparatus Kit – including pump
14. Single distillation units (All glass) 2 Lit/hr capacity – Riviera Glass Pvt. Ltd.
15. Electrical Thermostatic Water Bath (Electrical)
16. Fume hood
17. Kipp's Apparatus (PP)
18. Paper Chromatographic cabinet or Kit with accessories
19. Thin Layer Chromatographic cabinet or Kit with accessories
20. Emerson 2.2 cu. ft., 1200-Watt Countertop, Sensor Cooing Microwave oven
21. Reflux Condenser
22. Thermostat

26.7.19

H.O.D., Chemistry

Botany dept. Eqipments CHEMICALS FOR +3 LAB

Sl No	ITEMS	Specification of Merck	Quantity
1	Diphenyl amine reagent	250 gm	1
2	Acetaldehyde	500 ml	1
3	Glacial Acetic Acid	500 ml	1
4	Orcinol reagent	10 gm	1
5	Ferric Chloride	500 ml	1
6	Standard DNA Solution	100 ml	1
7	Perchloric Acid	500 ml	1
8	Potassium Hydroxide	500 ml	1
9	Tris Buffer	100 gm	1
10	NaCl	500 ml	1
11	EDTA	500 ml	1
12	Boric Acid	500 gm	1
13	Sodium Hydroxide(Pelletes)	500 gm	1
14	Coper Sulphate	100 gm	1
15	Chloroform	500 gm	1
16	Acetone	500 ml	1
17	Formaldehyde	500 ml	1
18	Sodium Bio carbonate	500 ml	1

19	Petroleum Ether	500 ml	1
20	Phenol	500 ml	1
21	Sudan-II	100 ml	1
22	Biurate Reagent	125 ml	1
23	Distilled Water	5 ltr	1

Class Work Materials

Sl No	Description		Quantity
1	Volvex		2
2	Chlamydomonas		2
3	Fucus		2
4	Vaucheria		2
5	Polysiphonia		2
6	Chara		2
7	Coleochaete		2
8	Riccia		2
9	Marchantia		2
10	Anthoceros		2
11	Sphagnum		2
12	Funaria		2
13	Selaginella		2
14	Equisetum		2
15	Cycas		2
16	Pinus		2
17	Gnetum		2
18	Rhizopus		2
19	Aspergillus		2
20	Penicillum		2
21	Alternaria		2
22	Puccinia		2
23	Agaricus		2
24	Albugo		2
25	Lichens		2
26	Tetrazolium Chloride		1

List of Equipments and Chemicals and Other For +3 (Hons) Laboratory.

Sl No	Description of the Item	Quantity
1	Microscope: Compound, Students Model ISI Marked	2
2	Herbarium Press	1
3	Mortar and Pestle(Large), Proceilin	4

Glass Ware

Sl No	Description of the Item	Quantity
1	Petridishes (3"dia), Corning Glass	10
2	Watch glass (3" dia) -do-	3 D
3	Slide Packs(Blue Star)	5 pkt
4	Cavity Slide(Blue Star)	1 pkt
5	Cover Slips(Blue Star)	5 pkt
6	Measuring Cylinder (Torson) (50Ml.,100Ml, 500Ml)	50-2 /100-2
7	Pipettes (10 Ml. Graduated)	5
8	Pipette Suckler	1
9	Micro Pipette Nozzle	2
10	Reagent Bottle (With Glass Stopper)(500 ml / 200 ml)	5
11	Beakers(250 ml,500 ml)Borosil Make/ Corning Glass 500 ml	4
12	Droping Bottle(Glass) 50 ml	10
13	Glass Rods	2 pkt
14	Glass Dropper with rubber balloon at base	4 Nos

Permanente Slides	Quantity
1. Embryological Slides	10
2. Embryological Slides	15
3. Anatomical Slides	2
4. Cytological Slides	10

Requirements of Computer Science Department under OHEPEE and RUSA

Dt. 27.07.2019

Sl. No.	Appliances	Quantity	Approx. Cost in Rs.
01	Air Conditioner (1.5 ton)	06 nos.	2,40,000
02	Steel Almirah (Godrej)	02 nos.	40,000
03	Laptop(Core i7, 1TB HDD)	01 no.	60,000
04	CFL Bulbs-28 Watt	10 nos.	3,000
05	CFL Philips PL-S 2P 11W/865 Ceiling Bulbs	100 nos.	10,000
06	Book Shelf	04 nos.	40,000
07	Projector Pointer	01 no.	3,000
08	Computer Chairs	35 nos.	70,000
09	Moving Office Chairs	03 nos.	20,000
10	Inverter Battery for 2KVA Inverter	02 nos.	40,000
11	Server Set Up with LAN	01 no.	1,00,000
12	Office Table with Drawer	02 nos.	20,000
13	Wall Fans	10 nos.	20,000
14	Ceiling Fans	04 nos.	6,000
15	UPS	30 nos.	90,000
16	Antivirus (Quick heal Total Security)	20 nos.	30,000
17	Computer Switch(24 Ports) (Gigabit)	01 no.	30,000
18	Modem cum Router	02 nos.	8000
		Total	**8,30,000/-**

Sanjaya Kumar Swain
HOD 27.07.19
Department Of Comp. Sc.
Kendrapara Autonomous College
Kendrapara