

ATTACHMENT-1 (LABORATORY EQUIPMENT)

BOTANY

ESTIMATE COST RS. 10,50,000.00

Sl. N	Name of the apparatus/ equipments/ c	Requirement in unit, Litre, Kilograms grams
1	Gram's staining Kit	05 Unit
2	Turbidometry	05 Unit
3	Hemocytometry	05 Unit
4	Colony Counter	02 Unit
5	Thin Layer Chromatography	15 Unit
6	Paper Chromatography JAR	30 Unit
7	Paper Chromatography Whatsman	20 Sheets
8	UV Chamber For TLC	01 Unit
9	Gel Electrophoresis	01 Unit
10	UV Visible Spectrophotometer	01 Unit
11	PCR	01 Unit
12	Compound microscope	05 unit
13	Centrifuge 8 x 15 ml	02 Unit
14	Centrifuge 4 x 50 ml	02 Unit
15	Cooling Centrifuge	02 Unit
16	Ganong's Respirometer	04 Unit
17	Magnetic stirrer	02 Unit
18	Shaker	02 Unit
19	Water Bath	01 Unit
20	Tissue Liser	01 Unit
21	Laminar Air Flow	01 Unit
22	Auto Clave	1 pc
23	Homoginiser	1 pc
24	pH meter	1 pc
25	Elect. Weighing machine	1 pc
26	Hot air oven	1 pc
27	Soxhilate Apparatus	01 pc
28	Rotary Evaporator	01 pc
29	Incubator	1 pc
30	Inoculation loop	5 Pcs
31	L- sprader	5 Pcs
32	Plankton net	1 Unit
33	Moter Pestle	10 pc
34	Tissue Ppaer	50 pcs
35	Cork Borer	10 Pcs
	Glassware	
36	Glass slides	100 pcs
37	Tets tubes (20 ml)	50 pcs
38	Tets tubes (10 ml)	50 pcs
39	Conical Flask 50 ml	50 pcs
40	Conical Flask 100 ml	51 pcs
41	Conical Flask 250 ml	52 pcs
42	Conical Flask 500 ml	53 pcs
43	Beaker 50 ml	10 Pcs
44	Beaker 100 ml	10 Pcs
45	Beaker 250 ml	10 Pcs
46	Beaker 500 ml	10 Pcs

47	Funnel	5 Pcs
48	Measuring Cylinder 5 ml	5 Pcs
49	Measuring Cylinder 10 ml	5 Pcs
50	Measuring Cylinder 100 ml	5 Pcs
51	Measuring Cylinder 500 ml	5 Pcs
52	Petri dish	30 pcs
53	Microbial Culture Tube 20 ml	20 pc
	Slides	
73	Aspergillus	02 Unit
74	Penicillium	Slides
75	Saccharomyces	Slides
76	Puccinia	Slides
77	Agaricus	Slides
78	Albugo	Slides
79	Riccia	Slides
80	Marchantia	Slides
81	Anthoceros	Slides
82	Funaria	Slides
83	Psilotum	Slides
84	Selaginella	Slides
85	Marselia	Slides
86	Pteris	Slides
87	Cycas	Slides
88	Pinus	Slides
89	Gnetum	Slides
90	Types Of Bacteria Permanent Slides	02 Unit
	Models	
101	Models of Viruses-T-Phase and TMV	02 Unit
102	DNA Model	1 UNITS
103	Vertical Garden	
104	Hydroponics	
105	Refrigerator Five Star 165 Litter	

DEPARTMENT OF CHEMISTRY

Sl. No.	Name of Chemicals (Glasswares)	Requirement
1	Burette	50 ml X 24
2	Pipette	10 ml X 24
3	Pipette	25 ml X 24
4	Pipette	0.1 ml X 24
5	Conical Flask	100 ml X 24
6	Conical Flask	50 ml X 24
7	Conical Flask	500 ml X 24
8	Beaker	50 ml X 24
9	Beaker	100 ml X 24
10	Beaker	200 ml X 24
11	Beaker	500 ml X 24
12	Watch glass	X 24
13	Crystallisation Basin	X 24
14	Glazed tile	X 24
15	Wire gauze	X 36
16	Test tube	20 gross
17	China Dish	X 24
18	Copper wire	X 24
19	Blue glass	X 24
20	Nichrome wire	X 36
21	Conical flask	250 ml X 24
22	Tongue	X 36
23	Test tube holder	X 36
24	Filter paper	X 24

✓ ~~Conical flask~~ 500 ml

Sl. No.	Name of Practical Equipments	Requirement
1	ostwald's viscometer	X 02
2	Tensiometer (Surface tension measurements)	X 01
3	Digital PH- meter with accessories	X 02
4	Digital Conductivity meter with accessories	X 02
5	Potentiometer with accessories	X 01
6	Colorimeter	X 01
7	Calorimeter with accessories (precision thermometer)	X 01
8	Visible spectrophotometer (single beam)	X 01
9	Magnetic stirrer (with/ without hot plate)	X 02
10	Heating mantle	X 01
11	Meating point apparatus	X 02
12	Vaccum pump for filtration	X 01
13	Single distillation units (All glass) 2 lit/hr capacity	X 02
14	Single pan digital balance with precision 0.01 gm and 0.001 gm	X 02
15	Water bath (electrical)	X 01
16	fume hood	X 01
17	Kipp's apparatus (PP)	X 02
18	Fire Extinguishers	X 02
19	Aspirator for chromatographic developer	X 01
20	Air oven (up to 300° C)	X 01
21	Microwave oven (Kitchen quality)	X 01

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11/8/22

DEPARTMENT OF ELECTRONICS SCIENCE

S.N	NAME OF THE INSTRUMENT /EQUIPMENTS	QUANTITY
1	Verification of the maximum power transfer theorem	01
2	Verification of superposition theorem	01
3	verification of Thevenin's Theorem	01
4	study of the I-V characteristics of PN-junction diode	02
5	study of the I-V characteristics of Zener diode	02
6	Transistor PNP/NPN kit	02
7	Study of SCR Kit	01
8	Study of JFET Kit	01
9	study of MOSFET kit	01
10	Study of LED Kit	01
11	study the half wave rectifier and full wave rectifier	01
12	Study of two-stage RC-coupled CE amplifier	01
13	Study of Series and Parallel Resonance circuits	01
14	UJT characteristics and relaxation oscillator	01
15	Study of Op-amp characteristics	01
16	Study of IC 555 as an astable multivibrator	01
17	Study of IC 555 as monostable multivibrator	01
18	Design MUX /DEMUX	01
19	Study of Colpitt's and crystal oscillator using transistor	01
20	Study of Clocked RS, D and JK Flip-Flops using NAND gates	01
21	Study of LVDT and RTD kit	01
22	To study the Characteristics of LDR, Photodiode, and Phototransistor:	01
23	Study of ASK,FSK,PSK	01
24	Study of AM,FM,PM	01
25	Study of I-V characteristics of DIAC and TRIAC	01
26	Study of PLL and 555 timer Ics	01
27	R-2R ladder D/A converter using ICS	01
28	Design of snubber circuit	01
29	Study of TDM,FDM	01

Beckhu Nith Mehera
H.O.D of Electronics

**DEPARTMENT OF ELECTRONICS SCIENCE ,
LIST OF BOOKS**

Serial Number	Book Name	Edition	Author Name
1	Introductory Circuit Analysis	5th Edition	Robert L. Boylestad
2	A Textbook of Applied Electronics	7th Edition	P. S. Sedha
3	Principles of Electronics	7th Edition	A. P. Malvino
4	Principles of Electronics	10th Edition	V. K. Mehta and Rohit Mehta
5	Digital Electronics	1st Edition	S. K. Mandal
6	Digital Circuits and Systems	Not specified	Venugopal
7	Fundamentals of Digital Circuits	2nd Edition	Anand Kumar
8	OP-Amps and Linear Integrated Circuit	4th Edition	R. A. Gayakwad
9	Electronic Instrumentation	Not specified	H. S. Kalsi
10	Instrumentation Devices and Systems	Not specified	C. S. Rangan, G. R. Sarma and V. S. Mani
11	The 8051 Microcontrollers and Embedded Systems	Not specified	Muhammad Ali Mazidi
12	Microprocessor Architecture: Programming and Applications with the 8085	Not specified	R. S. Gaonkar
13	Semiconductor Devices: Basic Principles	Not specified	Jasprit Singh
14	Principles of Electronic Communication Systems	3rd Edition	Frenzel
15	Op-Amps and Linear IC's	4th Edition	R. A. Gayakwad
16	Basic Electrical Engineering	6th Edition	V. K. Mehta and Rohit Mehta
17	Mathematical Physics	Not specified	H. K. Dass
18	Electromagnetic Field Theory Fundamentals	Not specified	B. S. Guru and H. R. Hiziroglu
19	Advanced Chip Design: Practical Examples in Verilog	Not specified	Kishore K. Mishra
20	Fundamentals of Digital Signal Processing Using MATLAB	Not specified	R. J. Schilling and S. L. Harris
21	Microwave Engineering	Not specified	D. M. Pozar
22	Electromagnetic Waves & Radiating Systems	Not specified	Jordan & Balmain

DEPARTMENT OF ZOOLOGY

Sl.N	Name of The Equipment	Unit
1	Phytoplankton tow net -2	1
2	Plankton handnet-2	1
3	Hanna Checktemp Digital Thermometer HI98501-2	1
4	Digital turbidity meter-	1
5	Digital pH meter and electrode	1
6	Laboratory hot air oven	1
7	Nikon aculon binocular 10x42	1
8	Knee hammer for reflex action experiment	1
9	Microtome machine	1
10	Refrigerator 5 star	1
11	Electrophoresis gel cassette ,electrode and power pack	1
12	Laboratory animal cage for rat	1
13	Spectrophotometer uv /visible	1
14	Elisa kit for growth hormone	1
15	Haemocytometer- Neubauer chamber	1
16	Sahalis haemoglobinometer	1
17	Sphygmomanometer	1
18	Centrifuge machine	1
19	Occular micrometer	1
20	Stage micrometer	1
21	Autoclave	1
22	Vaccum pump	1
23	Micropipette adjustable and tips	1
24	Waterbath with shaker	1
25	Weight balance	1
26	Bunsen burner	1
27	Gas cylinder For burner	1
28	Laminar flow cabinet	1
29	Binocular light microscope	1
30	Homogenizer	1
31	Stereomicroscope	1
32	Digital PCR	1
33	Conductivity metre	1
34	Sides	1
35	WM of euglena	1
36	Wm of paramecium	1
37	Wm of binary fission paramecium	1
38	Conjugation in paramecium	1
39	Sycon ts /ls	1
40	Spicules	1
41	Spongin fiber	1
42	Egg of fasciola	1
43	Larval form miracidium	1
44	Sporocyst	1
45	Radia	1
46	Cercaria	1
47	Meta cercaria	1
48	Nature proglotid of taenia	1

49	Cysticercus	1
50	Rhabditi form larva	1
51	Gizzard and typhlosolar region of earth worm	1
52	Section of balanoglossus through proboscis	1
53	Section of amphioxus through pharygeal	1
54	Doliolum	1
55	Salpa	1
56	Herdmania spicules	1
57	Study of whole mounts and sections of developmental stages of frog through permanent slides: Cleavage stages, blastula, gastrula, neurula, tail-bud stage, tadpole (external and internal gill stages).	1
58	Study of whole mounts of developmental stages of chick through permanent slides:	1
59	Primitive streak (13 and 18 hours), 21, 24, 28, 33, 36, 48, 72, and 96 hours of incubation (Hamilton and Hamburger stages).	1
60	Permanent stage mitosis and meiosis	1
61	Polytene chromosome	1
62	Lambrush chromosome	1
63	Slides of oesophagus, stomach, deodenum, ilium, rectum, liver, trachea, lungs, kidney	1
64	Models	1
65	Eye	1
66	Ear	1
67	Haert	1
68	Kidney	1
69	Brain	1
70	Lungs	1
71	Dna	1
72	T rna	
73	Glassware	50
74	Conical flask 50ml, 100,mls, 250mls-	8
75	Quartz micro Cuvette-	10
76	Test tube stand-	100
77	Test tubes -	10
78	Measuring cylinders-	10
79	BOD bottle-	
80	Breakers- 100 ml, 200ml, 100ml-50 each	20
81	Glass rod-	20
82	Test tube holder-	10
83	Erlenmeyer flask	5
84	Micropippette-	10 pices
85	Whatman paper 1	10 pkt
86	Filter pape-	5kgs
87	Paparfin block for microtome-	100
88	Petriplate -	100
89	Covered petridishes-	50 pkts
90	Glass slide-	20
91	Cover slip-	

Physics Equipment LIST

(43)

Sl. No.	Name of the equipment	Quantity
1.	C/C++ Compiler	
2.	Scilab	2
3.	Desktop Computers	2
4.	UPS	10
5.	Laser Printer(Colour Printer)	10
6.	Computer Tables	2
7.	Chairs	10
8.	Photoelectric Effect Apparatus	10
9.	Planck's Constant Apparatus	2
10.	e/m by Thomson Apparatus	2
11.	Millikan Oil Drop Demonstration	2
12.	Hall Effect Apparatus	2
13.	Semiconductor Band Gap Apparatus	2
14.	Four Probe Resistivity Apparatus	2
15.	GM Counter	2
16.	Radioactive Source Set (licensed)	2
17.	Scintillation Detector	2
18.	Optical Fiber Communication Trainer	2
19.	Laser Kit (He-Ne/Diode)	2
20.	Spectrometer	2
21.	Diffraction Grating	2
22.	Michelson Interferometer	5
23.	Fabry-Perot Etalon	2
24.	Solar Cell Characteristics Kit	2
25.	PN Junction Diode Trainer	5
26.	Zener Diode Characteristics Kit	5
27.	LED Characteristics Kit	2
28.	Photodiode Characteristics Kit	2
29.	Phototransistor Kit	2
30.	CRO/DSO	2
31.	Digital Multimeter	2
32.	Regulated DC Power Supply	5
33.	Breadboards	10
34.	Connecting Wires	10 sets
35.	Safety Goggles	5
37.	Analog Ammeter	5
38.	Analog Voltmeter	5
39.	Digital Multimeter	5
40.	Galvanometer	5
41.	Potentiometer	5
42.	Meter Bridge	5
43.	Wheatstone Bridge	5
44.	Carey Foster Bridge	5
45.	Resistance Box	5
46.	Rheostat	5
47.	Ballistic Galvanometer	3

		3
		2
48.	Electromagnet	2
49.	Hall Effect Apparatus	2
50.	B-H Curve Apparatus	2
51.	Helmholtz Coils	2
52.	Compass Box	10
53.	Connecting Wires	10
54.	Keys & Plugs	10
55.	Magnet Sets	3
56.	Function Generator	3
57.	Digital Storage Oscilloscope (DSO)	3
58.	Signal Generator	3
59.	Dual Trace CRO	3
60.	BJT Transistor Kit	2
61.	FET/MOSFET Kit	3
62.	IC 555 Timer	3
63.	Op-Amp IC 741	3
64.	Logic Gate Trainer	3
65.	Digital IC Trainer	3
66.	FET/MOSFET Kit	3
67.	IC 555 Timer	10
68.	BNC Cables	3
69.	Oscilloscope Probes	3
70.	LCR Meter	3
71.	Frequency Counter	3
72.	Tool Kit	3
73.	Calorimeter (Copper/Aluminium)	2
74.	Joule's Calorimeter	2
75.	Lee's Disc Apparatus	2
76.	Thermal Conductivity Apparatus	2
77.	Newton's Law of Cooling Apparatus	3
78.	Stefan's Law Apparatus	2
79.	Linear Expansion Apparatus	2
80.	Searle's Thermal Conductivity Apparatus	2
81.	Constant Temperature Water Bath	2
82.	Steam Generator	5
83.	Thermocouple Kit	5
84.	Digital Thermometer	5
85.	Mercury/Alcohol Thermometer	2
86.	RC coupled transistor Amplifier	4
87.	Digital Balance	5
88.	Beakers and Measuring Cylinders	5
89.	Heat Resistant Glassware	2
90.	Hot Plate	2
91.	Magnetic Stirrer	2
92.	Platinum resistance thermometer	4
93.	Spirit Lamp/Bunsen Burner	1
94.	Fire Extinguisher	5
95.	Capillary Tube	3
96.	Travelling Microscope	

97.	Optical Bench	6
98.	Electric Tuning fork	2
99.	Prism (Small and Big)	10
100.	Sodium Lamp	3
101.	Mercury Lamp	3
102.	Wien-Bridge oscillator	2
103.	Colpitt's oscillator	2
104.	NOT gate kit	3
105.	AND, OR, NOT, XOR gate kit	2
106.	half adder kit	2
107.	full adder kit	2
108.	four-bit binary adder	2
109.	half-subtractor kit	2
110.	full-subtractor kit	2
111.	adder, subtractor using full adder kit	2
112.	Flip-Flop(RS, JK, D, T) using NAND gate kit	2
113.	Astable multivibrator using IC-555 timer kit	2
114.	Monostable multivibrator using IC-555 timer kit	2
115.	Quinck's Tube Apparatus	2
116.	B-H Curve tracing kit	2
117.	Malus's Law apparatus	2
118.	Polarimeter	2
119.	Stefan's constant apparatus	2
120.	Maxwell's needle apparatus	2
121.	Hooke's law apparatus	2
122.	Boltzman Constant Apparatus (Pn junction)	2
123.	Melde's apparatus	1
124.	Babinet compensator apparatus	3
125.	Quarter wave plate	3
126.	half wave plate	2
127.	Nicol prism	2
128.	RF signal generator	2
129.	DeSauty's bridge	2
130.	Thevenin and Norton theorem(kit)	2

+2 Physics lab Equipments

Sl.no	Apparatus Required	Quantity	Tentative cost per item	Tentative cost
1	Ammeter	10	250	2500
2	Battery eliminator	10	850	8500
3	Daniell cell	5	450	2250
4	Drawing board	30	82	2460
5	Friction apparatus complete set with weight box	5	2800	14000
6	Galvanometer	10	585	5850
7	Parallelogram apparatus	10	625	6250
8	Key one way	10	40	400
9	Jockey pencil type	10	120	1200
10	Two-way key	5	72	360
11	Lacianche cell	5	785	3925
12	Meter bridge	10	900	9000
13	Multimeter digital	10	920	9200
14	Magnetic compass	10	36	360
15	Optical bench (1 meter long)	10	1500	15000
16	Prism (Indian glass)	20	52	1040
17	Potentiometer	10	900	9000
18	Plier	5	220	1100
19	Cutter	5	200	1000
20	Screwdriver(box set)	3	320	960
21	Scissor	5	87	435
22	Resistance box (different range 0.1 to 10 ohm)	2	870	1740
23	□ 1 to 10 ohms	2	895	1790
24	□ 1 to 100 ohms	2	790	1580
25	□ 1 to 1000 ohms	2	620	1240
26	□ 1 to 100000 ohms	2	780	1560
27	Dry cell 10V (chargeable)	5	1200	6000
28	Dry cell charger	5	140	700
29	Rheostat	10	540	5400
30	Resistance coil different range 1-5ohms)	10	92	920
31	Resonance apparatus	3	1400	4200
32	Spherometer	20	1105	22100
33	Screw gauge	20	160	3200
34	Wooden scale (1-50 cm, 1-100 cm)	20	150	3000
35	Stopwatch	10	455	4550
36	Sonometer	5	2200	11000

Sl.no	Apparatus Required	Quantity	Tentative cost per Item	Tentative cost
37	Tuning fork with pad	20	280	5600
38	Drawing Pins	5 pack	50	250
39	Zener diode apparatus	5	3100	15500
40	Vernier calliper	20	220	4400
41	Voltmeter (different range)	10	250	2500
42	Beakers	5	80	400
43	Connecting wires	half kg	320	
44	Concave mirror	20	45	900
45	Convex mirror	20	62	1240
46	Convex lens	20	78	1560
47	Concave lens	20	80	1600
48	Plane mirror	20	8	160
49	Glass slab	20	78	1560
50	Pendulum box	5	200	1000
51	Hanger weights 500 gm	5 set	200	1000
52	Insulated copperwire	half kg	40	
53	Meter tape (1-100 meter)	5	120	600
54	Soldering iron	3	250	750
55	U-shaped magnet	10	60	600
56	Copper calorimeter	10	290	2900
57	Telescope	2	1250	2500
58	P-N junction diode set up	5	3100	15500
59	Balance (Physical)	5	1800	9000
60	Metallic Cylinders	10	100	1000
61	Metal Sphere	10	100	1000
62	Potentiometer	10	2100	21000
63	WEIGHT BOX	10	340	3400
64	INCLINED PLANE	5	585	2925
65	TRAVELLING MICROSCOPE	5	4900	24500
66	OPTICAL BENCH	5	1200	6000
67	STEP DOWN TRANSFORMER	2	1700	3400
68	GEOMETRY BOX	2	100	200
69	Milliammeter	10	210	2100
70	Microammeter	10	400	4000
71	Sand paper	5	40	200
72	ohms law apparatus	5	800	4000
	total			105575