

महाराष्ट्र राज्य माध्यमिक व उच्च माध्यमिक शिक्षण मंडळ, पुणे-४११ ००४

परिपत्रक क्र. रा.मं./पापुई-२

/२९८४, दि. २२/५/२०१५

राज्यातील सर्व मान्यताप्राप्त कनिष्ठ महाविद्यालय प्रमुखांना कळविण्यात येते की, इ. ११ वी व १२ वी भौतिकशास्त्र, रसायनशास्त्र व जीवशास्त्र या विषयांच्या प्रात्यक्षिकच्या २० विद्यार्थ्यांसाठी प्रयोग करतांना आवश्यक असणारे साहित्य, रसायने यांची यादी खालीलप्रमाणे देण्यात येत आहे. त्याप्रमाणे प्रत्येक कनिष्ठ महाविद्यालयाच्या प्रयोगशाळेत हे साहित्य असणे अत्यावश्यक आहे.

LIST OF APPARATUS XI SCIENCE (PHYSICS)

FOR THE BATCH OF 20 STUDENTS

Sr. No.	Apparatus	Quantity	Sr. No.	Apparatus	Quantity
	Experiment			ACTIVITY	
1	Hollow cylinder	10 --12		Apparatus	
2	Rectangular block	10 --12	36	Trolley /Roller	10--12
3	Thin metal wire	10 --12	37	Specific gravity bottle /OR	10--12
4	Glass plate (small)	10--12		volume dialometer	
5	Sphere (Ball bearings)	10--12	38	Round bottom flask	10--12
6	Spherometer	20		with narrow neck	
7	Plane glass plate	20	39	Transformer (6-0-6)	10--12
8	Watch glass (curved surfaces)	10--12	40	Semiconductor diode	10--12
9	Parallelogram boards (wooden board with pulleys)	10--12	41	Resistance	10--12
10	Unknown weight (20 - 30g)	4--5			
11	Small plane mirror	10--12			
12	Inclined plane apparatus	10--12			
13	Wooden block	10--12			
14	Pulleys, fix/ separate	10--12			
15	Pan /Hangers	10--12			
16	Set of weights, 100g, 200g	20--25			
17	Spirit level	10--12			
18	Solid sphere	10--12			
19	Thermometer	10--12			
20	Copper Calorimeter	10--12			
21	Measuring cylinder	10--12			
22	Tripod	10--12			
23	An illuminated object	10--12			
24	Screen	10--12			
25	Concave mirror	10--12			
26	Convex mirror	10--12			
27	Mirror or lens holder / stand	10--12			
28	Concave lens	10--12			
29	Convex lens	10--12			
30	Prism	20			
31	Drawing Board	20			
32	Drawing Pins	100			
33	Pins	100			
34	Glass block	10--12			
35	Index pin	10--12			

LIST OF APPARATUS XII SCIENCE (PHYSICS
FOR THE BATCH OF 20 STUDENTS

Sr. No.	Apparatus	Quantity	Sr.No.	Apparatus	Quantity
	EXPT. / ACTIVITY			ACTIVITY	
1	Searle's apparatus	10--12	1	Bob of simple pendulum	10--12
2	Slotted weights 500g each	50--60	2	Thread bundle	1
3	Unknown weight (Sand bag)	4--5	3	Water & other liquid	
4	Light spiral spring	10--12	4	G clamps	6--8
	(with clamping arrangement)		5	Detergent powder / Soap solution	
5	Slotted weight 50g	90--95	6	LDR Kit	8--10
6	Hanger 500g	10--12	7	Filament lamp (5V, 6W)	8--10
7	Capillary with capillary stand	10--12	8	Carbon resistance	10--15
8	Constant temperature enclosure	10--12	9	IC	10--15
9	Thimble fitted with cork	10--12	10	Transistor (SL100 , SK100)	10--15
10	Sonometer	10--12	11	Capacitor	10--15
11	Tuning forks	7-8 SET	12	Diode	10--15
12	Bridges	20--24	13	Red LED	10--15
13	Rubber pad	10--12	14	Green LED	10--15
14	Glass / Plastic Jars	10--12	15	Diode 1N, 400 / DR25	10--15
15	Resonance tube	10--12	16	House hold circuit kit	8--10
16	Meter bridge	10--12	17	Fuse	10--15
17	Unknown wire resistance	20--24	18	Wooden board	10--12
18	Slider / Jockey	10--12	19	Switches	30--40
19	Galvanometer	10--12	20	Sockets	30--40
20	Carbon Resistance	20--24	21	Connecting wires	250m
21	Potentiometer	10--12	22	A.C. Power supply	6--8
22	Two way / Four way key	10--12	23	A.C.Voltmeter	6--8
23	Diode characteristic kit	10--12	24	A.C. milliammeter	6--8
24	Transistor characteristic kit	10--12	25	Soft iron rod	6--8
25	Zener diode kit	10--12	26	Transformer	6--8
26	Milliammeter (0-50 mA)	10--12	27	1KHz oscillator	6--8
27	Microammeter (0 - 50 mA)	10--12	28	Inductor	6--8
28	Daniel cell / dry cell	10--12	29	Polaroids	6--8
29	Leclanche cell	10--12	30	Monochromatic light	3--4

- Note-
- 1) This list is for twenty students performing the same experiment at a time .
 - 2) Maximum two students should be allotted one set of apparatus for performing an experiment.
 - 3) Maximum two different experiments can be carried out in one turn within a batch of 20 students.

LIST OF COMMON APPARATUS FOR XI AND XII SCIENCE (PHYSICS)
FOR THE BATCH OF 20 STUDENTS

Sr.no.	Apparatus	Quantity
1	D.C. Power supply	10--12
2	Resistance box (0 - 5000 ohm)	20 -24
3	Voltmeter (0- 10V)	20 -24
4	Milliammeter (0 - 500mA)	20 -24
5	Resistances (wire)	20 - 25
6	Magnifying lens	15 - 20
7	Steel pan (small)	20 -25
8	Vernier Callipers	20 -25
9	Micrometer screw guage	20 - 25
10	Thermometer	20 - 25
11	Weight box (0-500g)	12 to 15
12	Bob of simple pendulum	12 to 15
13	Rheostat (95 ohm)	20 - 25
14	Plug keys	25 - 30
15	Tap keys	25 - 30
16	Meter scale	20 -25
17	Half meter scale	20 - 25
18	Retort stand with clamps	20 - 25
19	Beakers	20 - 24
20	Travelling Microscope	10--12
21	Burner (gas)	20 - 24
22	Measuring cylinders	10 to 12
23	Rough/ Electronic balance	2 to 3
24	Set of weight 100g + hanger	10 to 12
25	Set of weight 200g + Hanger	10 to 12
26	Set of weight 50g + Hanger	10 to 12
27	DMM	20 -25
28	Hot water bath	5 to 6
29	Connecting wires	200m- 300m
30	Stop watch	10--12
31	Tripod	10--12

Sub- Chemistry
List of requirements for Std. XI & XII practicals
For a batch of 20 students
(A) List of Apparatus

Sr. No.	Name of the Apparatus	Quantity	Sr. No.	Name of the Apparatus	Quantity
1	Beaker 50,100,250 ml	20 each	22	Platinum wire	02
2	Bunsen burner	20	23	Polythene bottle(250ml)	20
3	Burette (25 ml)	20	24	Porcelain dish	20
4	Burette Stand	20	25	Rubber cork	20
5	Capillary tube	1 Box	26	Salt bridge (KCl)	02
6	Charcoal block	20	27	Sodium fusion tube	1 gross
7	Chromatography paper (whatman -42)	20	28	Spatula	20
8	Conical flask (100 ,250ml)	20 each	29	Stirrer	20
9	Copper rod	05	30	Test tube holder	20
10	Digital balance	05	31	Test tube stand	20
11	Digital Stop watch	10	32	Test tubes	100
12	Dropper	20	33	Thermometer 1/10°c	20
13	Evaporating dish	20	34	Thermometer 360°c	20
14	Filter paper (regular)	--	35	Thiele's tube	20
15	Funnel	20	36	Tripod stand	20
16	Gas jar with lid	05	37	Voltmeter	05
17	Glass rod	20	38	Watch glass	20
18	Glass tube 4" long	20	39	Water bath	05
19	Measuring cylinder (5ml, 10 ml, 50 ml, 100 1000 ml)	20 each	40	Wire gauze	20
20	Pair of tongs	20	41	Zinc rod	05
21	Pipette(10 ml)	20			

(B) List of Chemicals for
Std. XI & XII practicals

Sr. No.	Name of Chemical	Sr. No.	Name of Chemical
1	2,4 dinitrophenyl hydrazine	64	Manganese dioxide
2	Acetanilide	65	Manganous chloride
3	Acetic acid	66	Mercuric chloride (Hg Cl ₂)
4	Acetic anhydride	67	Mercuric nitrate
5	Acetone	68	Mercurous nitrate
6	Alum	69	Methyl orange indicator
7	Aluminium chloride	70	Methyl acetate
8	Aluminium Sulphate	71	Methylated spirit
9	Ammonium carbonate	72	Million's reagent
10	Ammonium chloride	73	Molisch's reagent
11	Ammonium molybdate	74	Naphthalene
12	Ammonium oxalate	75	Nessler's reagent
13	Ammonium Phosphate	76	Nikel Sulphate
14	Ammonium Sulphate	77	Ninhydrine reagent
15	Ammonium Thiocyanate	78	Nitric acid
16	Ammonium Thiocyanide	79	Oxalic acid
17	Aniline	80	O-xylene
18	β. naphthol	81	p- toluene
19	Barium carbonate	82	PH paper

20	Barium chloride	83	Phenolphthalein indicator
21	Barium nitrate	84	Phthalic acid
22	Benedict's reagent	85	Perchloric acid
23	Benzaldehyde	86	Picric acid
24	Benzoic acid	87	Potassium bromide
25	Blue ink	88	Potassium chromate
26	Borax powder	89	Potassium dichromate
27	Bromine water (liq. bromine)	90	Potassium Ferricyanide
28	Cadmium nitrate	91	Potassium Ferrocyanide
29	Calcium chloride	92	Potassium hydroxide
30	Carbolic acid (phenol)	93	Potassium iodate
31	Carbon tetrachloride	94	Potassium iodide
32	Chlorine water	95	Potassium permanganate
33	Chloroform	96	Red ink
34	Cobalt Chloride	97	Red and blue litmus
35	Cobalt nitrate	99	Resorcinol
36	Copper Sulphate	100	Schiffs reagent
37	Cu-foil	101	Silver nitrate
38	Di sodium hydrogen phosphate	102	Sodium acetate
39	Dimethyl Glyoxime	103	Sodium carbonate
40	Diphenyl amine	105	Sodium chloride
41	Ethyl alcohol	106	Sodium hydrogen carbonate
42	Fehling's solution	107	Sodium hydroxide
43	Ferrous ammonium Sulphate (FAS)	108	Sodium hypochloride
44	Ferric Chloride	109	Sodium metal
45	Ferric Sulphate	110	Sodium nitrite
46	Ferrous sulphate	111	Sodium oxalate
47	Furfural solution	112	Sodium rhodizonate
48	Gelatin	113	Sodium sulphite
49	Gum	114	Sodium Thiosulphate
50	Huble's reagent	115	Starch
51	Hydrochloric acid	116	Starch iodide paper
52	Hydrogen peroxide	117	Succinic acid
53	Iodine crystal	118	Sulphuric acid
54	Iron Sulphate sticks	119	Titan yellow
55	Lead Acetate	120	Tollen's Reagent
56	Lead nitrate	121	Turmeric paper
57	Lead Oxide	122	Universal Indicator
58	Liquid Paraffin	123	Zinc dust
59	Liquor Ammonia	124	Zinc Sulphate
60	m- xylene		
61	Magnesium phosphate		
62	Magnesium Sulphate		
63	p- xylene		

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Biology

List of requirements for XI and XII Biology practicals.

For a batch of 20 students:

Asset	No.	Consumables
Microscopes-Compound	5	Glycerin
Microscopes-Dissecting	5	Stains-Methylene blue, safranin, acetocarmine, light green.
Spirit lamps/burners	5	Acetic acid
Test tubes	3 dz.	Acetone
Burettes	1	HCl
Pipettes	5	NaOH
Glass slides	20	Con.HNO ₃
Cover slips	20	Urea
Beakers	10	Glucose
Petri plates	10	Albumin
Dissection box	2	Sulphur powder
Chromatography chambers	2	Sulphosalicylic acid
Ganong's Respirometer	1	Oxalic acid
Dropper	5	pH papers (broad and narrow range)
Cavity slide	20	Blotting papers
Biological charts as per syllabus		Filter papers
Black roller boards	5	mercury
Preserved plant and Animal specimens and permanent slides as per Syllabus (as specified/ Sanctioned by ethical committee and Forest Department)		Chromatography papers
		Benedict's reagent/Fehling's reagents
		Sudan III/IV
		Phenolphthalein indicator
		Denatured spirit

स्वाक्षरीत /-
सचिव
राज्यमंडळ