



महाराष्ट्र राज्य माध्यमिक व उच्च माध्यमिक शिक्षण मंडळ
पुणे विभागीय मंडळ, पुणे
शिवाजीनगर, पुणे ४११००४
Shivajinagar, Pune - 411005



इ. 12वी प्रात्यक्षिक परीक्षा पूर्वतयारी

उच्च माध्यमिक प्रमाणपत्र परीक्षा (इ. १२ वी), फेब्रु.-मार्च २०२६-२७
साठी मार्गदर्शक ऑनलाईन सत्र

मा. श्री. औदुंबर उकिरडे
विभागीय अध्यक्ष

मा. डॉ. मिनाक्षी राजूत
विभागीय सचिव

सदर मार्गदर्शन व्हिडिओ कॉन्फरन्सिंग (V.C.) द्वारे
सर्व संबंधित प्राचार्यांसाठी आणि विषय शिक्षकांसाठी अनिवार्य



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विषय : भौतिकशास्त्र (54)

मार्गदर्शक तज्ञ :

**डॉ. गोविंद कुलकर्णी.
श्री. मनीष सुपाते**

सदर मार्गदर्शन व्हिडिओ कॉन्फरन्सिंग (V.C.) द्वारे
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BASIC REQUIREMENTS OF PHYSICS LABORATORY

1. Adequate, well-ventilated room
2. Sufficient working tables
3. Electrical power supply with safe wiring, generator backup
4. Water supply/sink, black board
5. Storage cupboards/racks
6. Proper lighting, fans, fire extinguisher
7. There should be 20 students per batch
8. There should be two students per each experiment set



Sr.No	Name of Experiment (STD 11th)
1	Use of vernier calliper
2	Use of micrometer screw gauge
3	Use of spherometer
4	Parallelogram law of vectors
5	Coefficient of static friction
6	Travelling Microscope
7	Focal length of convex lens by displacement method
8	R.I. of liquid by concave mirror
9	Refractive index of prism
10	Determination of magnetic moment of a short bar magnet using a deflection magnetometer
11	Thermistor
12	Diode characteristics
	Complete minimum 10 experiments in the academic year.



Sr.No	Name of Activities (STD 11th)
1	Refractive index of a convex lens (using spherometer & auto collimation method)
2	Law of moments
3	Rolling friction
4	Coefficient of restitution
5	'J' by electric method
6	Refractive index of glass by total internal reflection
7	Study of resistor using colour code
8	Study of potential divider circuit Complete minimum 06 activities in the academic year.



Sr.No	Name of Experiment (STD 12th)
1	Spring Mass Oscillator
2	Surface tension
3	Newtons law of cooling
4	Sonometer I law of length
5	Sonometer II law of tension
6	Resonance tube
7	Current sensitivity
8	Law of resistances using meter bridge
9	Resistance of galvanometer by Kelvin's method
10	E_1/E_2 using potentiometer
11	Internal resistance of cell
12	μ_1/μ_2 by suspension method

Sr.No	Name of Experiment (STD 12th)
13	Characteristics of Zener diode
14	Study of logic gates
15	Characteristics of Transistor Complete minimum 12 experiments in the academic year.



Sr.No	Activities (STD 12th)
1	Effect of detergent on surface tension
2	Seconds pendulum
3	Melde's experiment
4	Factors affecting the rate of loss of heat of liquid
5	Diffraction
6	Household circuit
7	Variation of potential drop
8	Use of multimeter
9	Light dependent resistor Complete minimum 07 activities in the academic year.



Sr. No	Name of Experiment (STD 12th)	Apparatus
1	Spring Mass Oscillator	Light spiral spring with clamping arrangement & attached pointer, meter scale, hanger, weight box, stop watch
2	Surface tension	Travelling microscope, beaker, capillary tube, cork with pointer, stand with clamp, water
3	Newtons law of cooling	A thimble or calorimeter, constant temperature enclosure, a thermometer, stop clock, hot water bath
4	Sonometer I law of length	Sonometer, slotted weights with hanger, set of tuning forks, rubber pad, light paper rider, meter scale
5	Sonometer II law of tension	Sonometer, slotted weights with hanger, a tuning fork of known frequency, rubber pad, light paper rider, meter scale
6	Resonance tube	A long plastic jar filled with water, resonance tube, set of tuning forks, retort stand, meter scale, vernier calliper, rubber pad.



Sr.No	Name of Experiment (STD 12th)	Apparatus
7	Current sensitivity	Moving coil table galvanometer, cell, plug key, reversing key, high resistance box, connecting wires etc.
8	Law of resistances using meter bridge	Meter bridge, two resistances, galvanometer, resistance box, rheostat, cell, jockey, plug key, connecting wires etc.
9	Resistance of galvanometer by Kelvin's method	Meter bridge, , galvanometer, resistance box, a rheostat, cell or battery, jockey, plug key, connecting wires etc.
10	E_1/E_2 using potentiometer	A potentiometer, a rheostat, a plug key, two cells, jockey, four-way key, battery, galvanometer, connecting wires etc.
11	Internal resistance of cell	A potentiometer, a plug key, jockey, battery , resistance box, galvanometer, rheostat, cell, connecting wires etc.
12	μ_1/ μ_2 by suspension method	A pair of bar magnets (A & B)(preferably having different magnetic moment), retort stand, thread, stop watch etc.



Sr. No	Name of Experiment (STD 12th)	Apparatus
13	Characteristics of Zener diode	Zener diode kit, milliammeter, voltmeter, connecting wires etc.
14	Study of logic gates	5V DC power supply, IC block, probes, digital multimeter, IC7408(AND GATE), IC7432(OR GATE), IC7402(NOT GATE), IC7400(NAND GATE), IC7404(AND NOT)
15	Characteristics of Transistor Complete minimum 12 experiments in the academic year.	Characteristics of Transistor kit, DC power supply, milliammeter, millivoltmeter



Sr.No	Activities (STD 12th)	Apparatus
1	Effect of detergent on surface tension	Travelling microscope, beaker, index pin, stand, water, detergent powder
2	Seconds pendulum	Metal sphere(bob), inextensible string, retort stand, meter scale, stop watch , vernier calliper
3	Melde's experiment	A tuning fork, light flexible string, light pan, weight box, rubber, meter scale.
4	Factors affecting the rate of loss of heat of liquid	Two calorimeter of same area of cross section, two thermometers, stand, hot water bath, liquid(water)
5	Diffraction	Diffraction grating, laser pointer, stands, screen, meter scale
6	Household circuit	On-Off switches, three pin sockets, connecting wires, bulbs, fuse, power supply etc.
7	Variation of potential drop	Potentiometer, battery, plug key, voltmeter, rheostat, jockey, connecting wires.
8	Use of multimeter	Multimeter, transistor (npn & pnp), diode, LED
9	Light dependent resistor Complete minimum 07 activities in the academic year.	L.D.R., filament lamp(16W,3W), meter scale, D.C. power supply, digital multimeter



ANNUAL PRACTICAL EXAMINATION (STD.XI & XII)

TIME : 3 HOURS

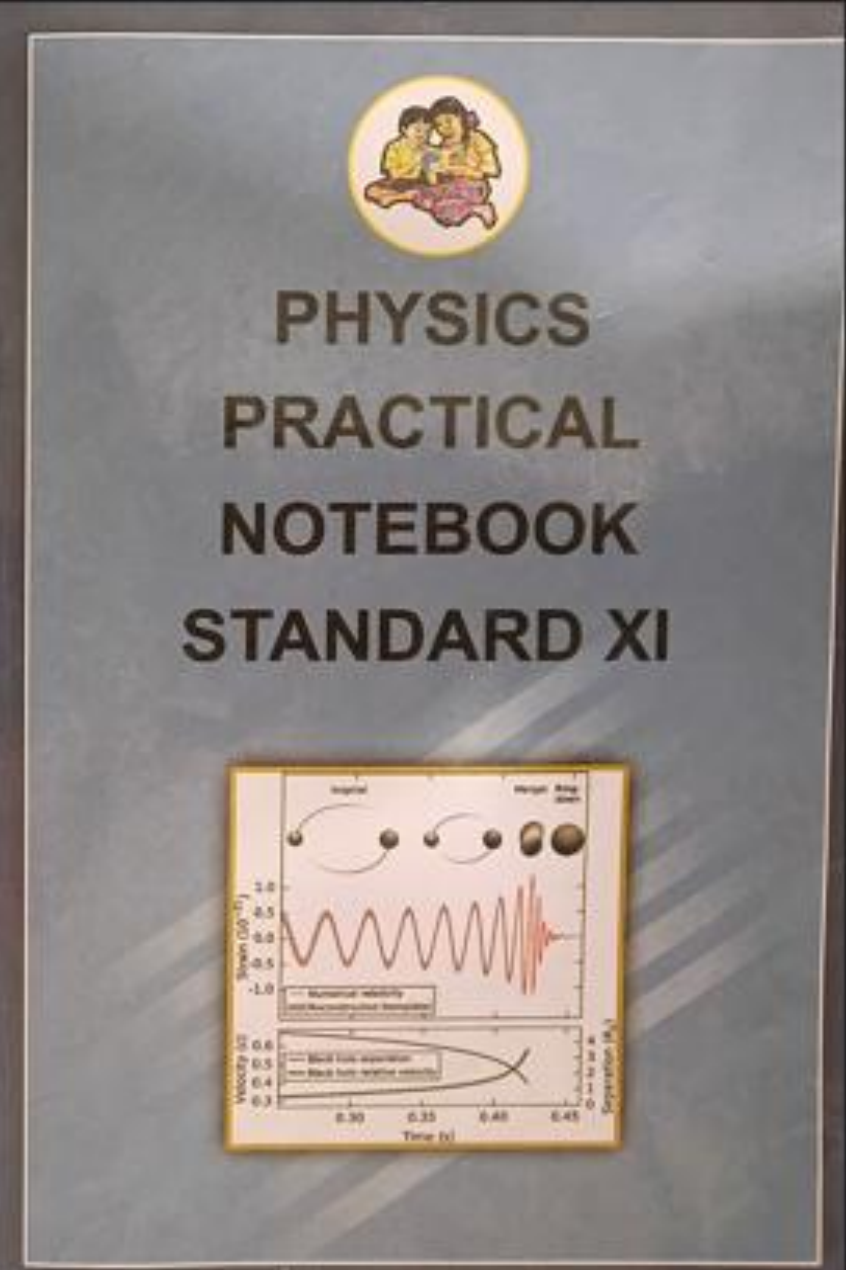
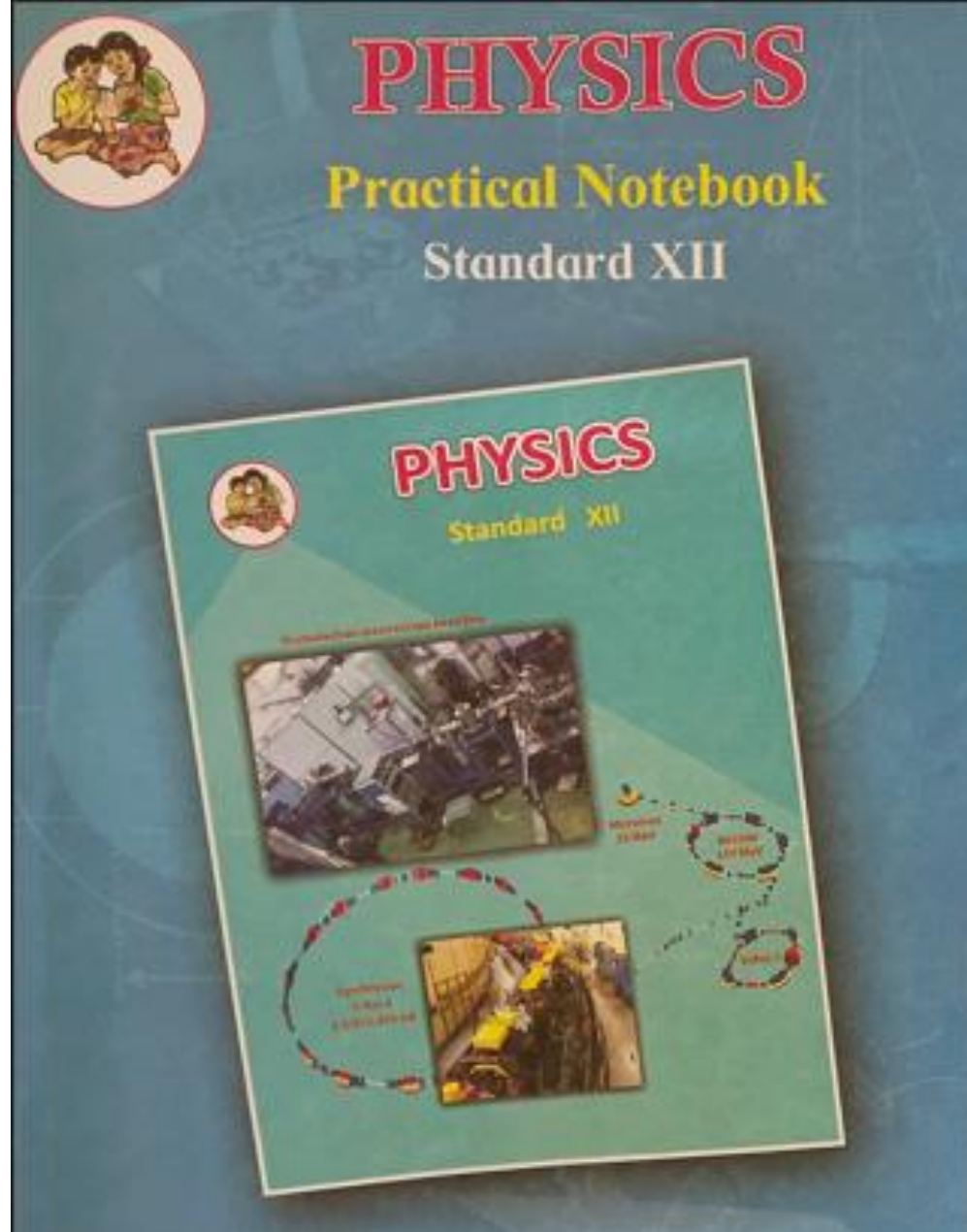
TOTAL MARKS : 30

A	ONE LONG EXPERIMENT (1 HOUR 30 MINUTES)	10 MARKS
1	Circuit diagram/Ray diagram/Experimental diagram	1 mark
2	Setting of apparatus/ circuit connections	1 mark
3	Formula with explanation/law	1 mark
4	Performance with proper recording of observations	3 mark
5	Graph/calculation or both	2 mark
6	Result with proper unit/conclusion	2 mark



B	ONE SHORT EXPERIMENT (45 MINUTES)	5 marks
1	Circuit diagram/Ray diagram/Experimental diagram	1 mark
2	Performance with proper recording of observations	2 mark
3	Graph/calculation or both	1 mark
4	Result with proper unit/conclusion	1 mark
C	ANY ONE ACTIVITY (45 MINUTES)	5 marks
1	Performance with proper recording of observations	3 mark
2	Write-up of activity	1 mark
3	Result with proper unit/conclusion	1 mark
D	Viva based on experiments/activities performed during the year (15 MINUTES)	5 marks
E	Certified journal OR completed practical notebook published by Balbharati	5 marks

Minimum 12 experiments & 7 activities should be performed in a year





1. Practical notebook (Handbook) published by balbharati.
2. Journal - same practical book published by balbharati and made by respective school/ college.
3. Compulsory for individual students.
4. Certified journal according to board norms.



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धन्यवाद !