Part-II (Class-X) Marks: 60 Time: 2:00 Hours

Unit-10 : SIMPLE HARMONIC MOTION AND WAVES

10.1 Simple Harmonic Motion
10.1.1 Motion of Mass Attached to a Spring
10.1.2 Ball and Bowl System 10.1.3 Motion of a Simple Pendulum
10.2 Damped Oscillations
10.3 Wave Motion
10.4 Types of Mechanical Waves
10.5 Waves As Carriers of Energy
10.6 Ripple Tank

Unit-11 : SOUND

11.1 Sound Waves
11.2 Characteristics of Sound
11.3 Reflection of Sound
11.4 Speed of Sound
11.5 Noise Pollution
11.6 Audible Frequency Range
11.7 Ultrasound

Unit-12 : GEOMETRICAL OPTICS

12.1 Reflection of Light
12.1.1 Laws of Reflection 12.1.2 Types of Reflection
12.2 Spherical Mirrors
12.3 Image Location by Spherical Mirror Formula
12.4 Refraction of Light
12.5 Total Internal Reflection
12.6 Refraction Through Prism
12.7 Lenses
12.8 Refraction Through Lenses
12.9 Formation of Image by Lens Equation
12.10 Applications of Lenses
12.11 Simple Microscope
12.12 Compound Microscope
12.13 Telescope
12.14 The Human Eye
12.15 Defects of Vision

Unit-13 : ELECTROSTATICS

13.1 Production of Electric Charges
13.2 Electrostatic Induction
13.3 Electroscope
13.4 Coulomb's Law
13.5 Electric Field and Electric Field Intensity
13.6 Electrostatic Potential
13.7 Capacitors and Capacitance
13.8 Different Types of Capacitors
13.9 Applications of Electrostatics
13.10 Some Hazards of Static Electricity

Unit-14 : CURRENT ELECTRICITY

14.1 Electric Current
14.2 Potential Difference
14.3 Electromotive Force (e.m.f)
14.4 Ohm's Law
14.5 V-I Characteristics of Ohmic and Non Ohmic Conductors
14.6 Specific Resistance (Resistivity)

14.7 Conductors
14.8 Insulators
14.9 Combination of Resistors
14.10 Electrical Energy and Joule's Law
14.11 Electric Power
14.12 Direct Current and Alternating Current
14.13 Hazards of Electricity
14.14 Safe Use of Electricity in Homes

Unit-15 : ELECTROMAGNETISM

15.1 Magnetic Effects of a Steady Current
15.2 Force on a Current – Carrying Conductor Placed in a Magnetic field
15.3 Turning Effect on a Current-Carrying Coil in a Magnetic Field
15.4 D.C. Motor
15.5 Electromagnetic Induction
15.6 Direction of Induced e.m.f. – Lenz's Law
15.7 A.C. Generator
15.8 Mutual Induction
15.9 Transformer
15.10 High Voltage Transmission

Unit-16 : BASIC ELECTRONICS

16.1 Thermionic Emission
16.2 Investigating the Properties of Electrons
16.3 Cathode-Ray Oscilloscope (C.R.O)
16.4 Analogue and Digital Electronics
16.5 Basic Operations of Digital Electronics-Logic Gates
16.6 AND Operation
16.7 OR Operation
16.8 NOT Operation
16.9 NAND Gate
16.10 NOR Gate
16.11 Uses of Logic Gates

Unit-17 : INFORMATION AND COMMUNICATION TECHNOLOGY

17.1 Information and Communication Technology
17.2 Components of Computer Based Information System (CBIS)
17.3 Flow of Information
17.4 Transmission of Electrical Signal Through Wires
17.5 Transmissions of Radio waves Through Space
17.6 Transmission of Light Signals Through Optical Fibers
17.7 Information Storage Devices

— Primary Memory
— Secondary Storage Devices
— Audio and Video Cassettes
— Magnetic Disks
— Hard Disk
— Compact Disc (CDs)
— Flash Drive
— Application of Computer
— Data Management
— Internet Services
— Browsers
— How to Search the Web
— Electronic Mail

Unit-18 : ATOMIC AND NUCLEAR PHYSICS

18.1 Atom and Atomic Nucleus
18.2 Natural Radioactivity
18.3 Background Radiations
18.4 Nuclear Transmutations
18.5 Half-Life and Its Measurement
18.6 Radioisotopes and their Uses

18.7 Fission Reaction
18.8 Nuclear Fusion
18.9 Hazards of Radiation and Safety Measures

LIST OF PRACTICALS FOR CLASS-IX (PART-I)

1. Measure the area of cross-section of a solid cylinder by measuring its diameter with Vernier calipers.
2. Determine the volume of a solid cylinder by measuring its length and diameter.
3. Measure the thickness of a metal strip or a wire by using a screw gauge.
4. Find the acceleration of a ball rolling down an inclined angle iron by drawing a graph between 2S and t^2.
5. Find the value of 'g' by free fall method.
6. Investigate the relation between force of limiting friction and normal reaction to find the co-efficient of sliding friction between a wooden block and horizontal surface.
7. Find the force of limiting friction by rolling a roller on a horizontal surface.
8. Determine the value of 'g' by Atwood's machine.
9. Determine the resultant of two forces graphically by using a Horizontal force table.
10. Find the unknown weight of an object by using vector addition of forces.
11. Verify the principle of moments by using a metre rod balanced on a wedge.
12. Find the unknown weight of an object by using principle of moments.
13. Find the tension in the strings by balancing a metre rod on the stands.
14. Study the effect of length of simple pendulum on its time period and hence, find the value of 'g' by calculation.
15. Prove that time period of a simple pendulum is independent of mass of the pendulum.
16. Prove that time period of a simple pendulum is independent of amplitude of vibration.
17. Determine the relationship between load and extension (Helical spring) by drawing a graph.
18. Find the density of a body heavier than water by Archimedes principle.
19. Find the density of a liquid using a disposable syringe.
20. Find the specific heat of a given solid by the method of mixture using polystyrene cup.
21. Draw a graph between temperature and time when ice is converted into water and then to steam by slow heating.
22. Find the latent heat of fusion of ice.

LIST OF PRACTICALS FOR CLASS-X (PART-II)

1. Verify the laws of refraction by using a glass slab.
2. Find the refractive index of water by using concave mirror.
3. Determine the critical angle of glass using a semi-circular glass slab and a light ray box or by prism.
4. Trace the path of a ray of light through a glass prism and measure the angle of deviation.
5. Find the focal length of a convex lens by parallax method.
6. Set up a microscope.
7. Set up a telescope.
8. Verify Ohm's law (using wire as conductor).
9. Study resistors in series circuit.
10. Study resistors in parallel circuit.
11. Find the resistance of galvanometer by half deflection method.
12. Trace the magnetic field using a bar magnet.
13. Trace the magnetic field due to a current carrying circular coil.
14. Verify the truth table of OR, AND, NOT, NOR and NAND gates.
15. Set up a NAND gate burglar Alarm.
16. Set up a NOT gate Fire Alarm.

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