

PHYSICS (THEORY)

CLASS XI (SCIENCE)

Total Time: 3 Hours

Total Marks: 85

SECTION 'A' (COMPULSORY)

MULTIPLE CHOICE QUESTIONS (M.C.Qs)

NOTE: This Section consists of 17 MCQs and all are to be answered.
Each MCQ carry 1 marks.

1. Choose the correct answer from the given options:

(i) Random errors can be eliminated by:

- (a) taking number of observations and their mean. ✓
(b) measuring the quantity with more than one instrument
(c) eliminating the cause (d) careful observations

(ii) Two projectiles are fired from the same point with the same speed at angles of projection 60° and 30° respectively. Which one of the following is true?

- (a) The range will be same ✓
(b) Their maximum height will be same
(c) Their landing velocity will be same
(d) their time of flight will be same

(iii) The rate of change of linear momentum of a body is called a:

- (a) Linear force (b) Angular force
(c) Power (d) Impulse ✓

(iv) If the external torque acting on a body is zero, then its

- (a) angular momentum is zero
(b) angular momentum is conserved ✓
(c) angular acceleration is maximum
(d) rotational motion is maximum

(v) When one joule of work is done on a body in one second, power of body is said to be:

- (a) One watt ✓ (b) 0.5 watt
(c) zero (d) 100 watt

(vi) One piston in a hydraulic lift has an area that is twice the area of the other. When the pressure at the smaller piston is increased by Δp the pressure at the larger piston:

- (a) increases by $2\Delta p$ ✓ (b) increases by $\Delta p/2$

(c) increases by Δp

(d) increases by $4\Delta p$

(vii) If the cross-sectional area of a pipe decreases, what happens to the fluid velocity?

- (a) Increases ✓ (b) Decreases
(c) Remains the same (d) Depends on the fluid density

(viii) A $2\mu C$ point charge is located a distance "d" away from $6\mu C$ point charge, what is the ratio of F_{12}/F_{21} ?

- (a) $1/3$ (b) 3 (c) 1 ✓ (d) 12

(ix) Capacitors are used in electric power supply system to:

- (a) Improve power factor (b) Reduce line current
(c) Provide voltage stability ✓ (d) switching

(x) A potential difference is applied across the ends of a wire. If the potential difference is doubled, then the drift velocity of free electrons will:

- (a) be quadrupled (b) be doubled ✓
(c) be halved (d) remain unchanged

(xi) A simple harmonic oscillator has amplitude A and time period t . Its maximum speed is:

- (a) $\frac{4A}{t}$ (b) $\frac{2A}{t}$ (c) $\frac{4\pi A}{t}$ (d) $\frac{2\pi A}{t}$ ✓

(xii) The speed of sound in a gas is proportional to:

- (a) square root of isothermal elasticity ✓
(b) square root of adiabatic elasticity
(c) isothermal elasticity (d) adiabatic elasticity

(xiii) Optically active substances are those substances which

- (a) produce polarized light
(b) rotate the plane of polarization of polarized light ✓
(c) produce double refraction
(d) convert a plane polarized light into circularly polarized light

(xiv) Process of mapping the sampled analog voltage values to discrete voltage levels is called:

- (a) sampling (b) sampling frequency
(c) quantizing (d) encoding

The S.I unit of angular momentum is:

- (a) $J - S$ ✓ (b) $\frac{J}{S}$ (c) $\frac{S}{J}$ (d) $J - S^2$

(xv) The angle between centripetal and tangential accelerations in circular motion is:

- (a) 180° (b) 90° ✓ (c) 0° (d) 45°

(xvi) Distance between two consecutive nodes in a standing wave is:

- (a) $\frac{\lambda}{4}$ (b) λ (c) $\frac{\lambda}{2}$ ✓ (d) $\frac{\lambda}{3}$