

**PAPER CODE = 6471**

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

|     |  |
|-----|--|
| 1-1 | The ratio of 1 femtometer to 1 nanometer is :<br>(A) $10^{-6}$ (B) $10^6$ (C) $10^{-7}$ (D) $10^8$   |
| 2   | In the relation $F = 6\pi\eta r v$ . Dimensions of coefficient of viscosity $\eta$ is :<br>(A) $[M^{-1}LT^{-1}]$ (B) $[ML^{-1}T]$ (C) $[M^{-1}L^{-1}T]$ (D) $[ML^{-1}T^{-1}]$  |
| 3   | If $\vec{F} = (2\hat{i} + 4\hat{j})N$ ; $\vec{d} = (5\hat{i} + 2\hat{j})m$ work done is :<br>(A) 15 J (B) 18 J (C) Zero (D) -18 J  |
| 4   | The sum of two perpendicular forces 8 N and 6 N is :<br>(A) 2 N (B) 14 N (C) 10 N (D) -2 N   |
| 5   | The distance covered by a freely falling body in first 2 seconds, when its initial velocity was zero :<br>(A) 9.8 m (B) 39.2 m (C) 19.6 m (D) 4.9 m  |
| 6   | Value of solar constant is :<br>(A) $1.4Wm^{-2}$ (B) $1400Wm^{-2}$ (C) $14kWm^{-2}$ (D) $1.0kWm^{-2}$  |
| 7   | Relation between the speed of disc and hoop at the bottom of an incline is :<br>(A) $V_{disc} = \sqrt{\frac{3}{4}}V_{hoop}$ (B) $V_{disc} = \sqrt{\frac{4}{3}}V_{hoop}$ (C) $V_{disc} = \sqrt{\frac{2}{5}}V_{hoop}$ (D) $V_{disc} = 2V_{hoop}$ |
| 8   | 2 revolutions are equal to :<br>(A) $\pi$ rad (B) $\frac{3\pi}{2}$ rad (C) $2\pi$ rad (D) $4\pi$ rad   |
| 9   | Terminal velocity $V_t$ is related with the radius $r$ of a spherical object as :<br>(A) $v_t \propto r^2$ (B) $v_t \propto r$ (C) $v_t \propto \frac{1}{r}$ (D) $v_t \propto \frac{1}{r^2}$   |
| 10  | The unit of $\frac{1}{2}\rho v^2$ in Bernoulli's equation is same as that of :<br>(A) Energy (B) Pressure (C) Work (D) Power   |
| 11  | Base units of spring constant is :<br>(A) $kg^{-1}s^{-2}$ (B) $kg^{-1}ms^{-2}$ (C) $kgms^{-2}$ (D) $kg s^{-2}$   |
| 12  | Speed of sound at $0^\circ C$ , in air is :<br>(A) $332ms^{-1}$ (B) $280ms^{-1}$ (C) $1400ms^{-1}$ (D) $5500ms^{-1}$   |
| 13  | Two identical waves moving in same direction produce :<br>(A) Interference (B) Beats (C) Stationary waves (D) Diffraction  |
| 14  | Bragg's equation is :<br>(A) $2d \sin \theta = n\frac{\lambda}{2}$ (B) $d \sin \theta = n\lambda$ (C) $d \sin \theta = n\frac{\lambda}{2}$ (D) $d \sin \theta = 2\lambda$  |
| 15  | If $f_o = 100cm$ ; $f_e = 5cm$ length and magnifying power of an astronomical telescope is :<br>(A) 0.05 cm ; 20 (B) 95 cm ; 20 (C) 20 cm ; 500 (D) 105 cm ; 20  |
| 16  | Root mean square velocity is related to the absolute temperature of an ideal gas as :<br>(A) $V_{rms} \propto T$ (B) $V_{rms} \propto T^2$ (C) $V_{rms} \propto \sqrt{T}$ (D) $V_{rms} \propto \frac{1}{\sqrt{T}}$                             |
| 17  | If P = Pressure ; V = Volume of a gas PΔV represents :<br>(A) Work (B) Density (C) Power (D) Temperature   |