

PAPER CODE = 6475

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	Two S.H.M having displacements are $x_1 = a \sin \omega t$ and $x_2 = b \cos \omega t$. The path difference between them will be : (A) Zero (B) $\frac{\pi}{4}$ (C) $\frac{\pi}{2}$ (D) π
2	A particle of 1 Kg moving with initial velocity 5 ms^{-1} is acting upon by a constant force 10N. After 5 seconds its velocity becomes : (A) 50 ms^{-1} (B) 55 ms^{-1} (C) 5 ms^{-1} (D) 10 ms^{-1}
3	Dolphins detect small differences in the shape, size and thickness of objects through : (A) Beats (B) Radio waves (C) Echolocation (D) Both A and B
4	The ratio of dimensions of torque to angular momentum is : (A) I : T (B) M : T (C) T : I (D) L : T
5	Potential energy associated to the molecules of an ideal gas is considered to be : (A) 100 J (B) Low (C) Zero (D) High
6	A particle moves in a circle of radius r . In half the period of revolution, its displacement and distance covered are : (A) $2r, \pi r$ (B) $2r, 2\pi r$ (C) $\sqrt{2}r, \pi r$ (D) $r, \pi r$
7	The magnitude of $-\hat{i} \cdot (\hat{k} \times \hat{j})$ is equal to : (A) 0 (B) $-2\hat{i}$ (C) 1 (D) $2\hat{i}$
8	The percentage uncertainty in mass and radius of earth is 2% and 5% respectively. The total percentage uncertainty in the volume of earth is : (A) 7% (B) 15% (C) 9% (D) 2%
9	The frequency of heart of normal human being is : (A) 1.2 Hz (B) 0.83 Hz (C) 72 Hz (D) 2 Hz
10	The magnifying power of a magnifying glass is 3. Its focal length will be : (A) 15 cm (B) 20 cm (C) 8.3 cm (D) 12.5 cm
11	A flywheel gains an angular speed of 540 rev / min in 9 second. Its angular acceleration is : (A) $9 \pi \text{ rad s}^{-2}$ (B) $6 \pi \text{ rad s}^{-2}$ (C) $12 \pi \text{ rad s}^{-2}$ (D) $2 \pi \text{ rad s}^{-2}$
12	The horizontal range of a projectile is : (A) Equal to height at 30° (B) Double of height at 45° (C) One fourth of the height at 90° (D) Four times of height at 45°
13	The efficiency of diesel engine is : (A) 25% to 35% (B) 35% to 40 % (C) 45% to 50% (D) 20% to 25%
14	A mass is lifted to a height in 10 seconds. Now if the same mass is lifted to the same height in 20 seconds then work done in two cases are in the ratio : (A) 1 : 2 (B) 2 : 1 (C) 1 : 1 (D) 4 : 1
15	Which of the vector can not be represented on graph : (A) Unit vector (B) Position vector (C) Negative vector (D) Null vector
16	Energy cannot flow away in the : (A) Transverse waves (B) Stationary waves (C) Longitudinal waves (D) Sound waves
17	The direction in which light energy is carried called a : (A) Ray (B) Wave front (C) Locus (D) Spherical wave