

Examrace

Competitive Exams: Physics MCQs (Practice_Test 12 of 35)

Doorsteptutor material for competitive exams is prepared by world's top subject experts: [get questions, notes, tests, video lectures and more](#)- for all subjects of your exam.

1. An elastic collision conserves
 - a. kinetic energy but not momentum
 - b. momentum but not kinetic energy
 - c. neither momentum nor kinetic energy
 - d. both kinetic energy and momentum

2. Two planets A and B have the same material density. If the radius of A is twice that of B, then the ratio of the escape velocity V_A/V_B is
 - a. 2
 - b. -2
 - c. $1/\sqrt{2}$
 - d. $\frac{1}{2}$

3. A satellite is moving in a circular orbit at a height of 100 km above the earth's surface. A person inside the satellite feels weightless because
 - a. acceleration due to gravity is almost zero at such a height
 - b. the earth does not exert any force on the person
 - c. the centripetal force makes the satellite move in circular orbit
 - d. the forces due to the earth and the moon are almost compensated at such a height

4. A rod length 'l' is inclined at an angle α with x-axis, An observer moving at a velocity V along the x-axis, will measure the angle of inclination as α' (with $\gamma = 1/\sqrt{1 - V^2/C^2}$) given by
 - a. $\tan^{-1} \tan \alpha$
 - b. $\tan^{-1} \gamma \tan \alpha$
 - c. $\tan^{-1} (\tan \alpha / \gamma)$
 - d. $\tan^{-1} (\gamma / \tan \alpha)$

5. Which one of the following is an example of steady and non-uniform flow?
- The flow of a liquid through a straight horizontal pipe at a constant rate
 - The flow of a liquid through a straight horizontal pipe at a changing rate
 - The flow of a liquid through a conical pipe at a constant rate
 - The flow of a liquid through a conical pipe at a changing rate
6. Water rises to a height h , in a capillary tube, when dipped in water. If the height of this capillary tube, above the water surface is less than h , then
- the water level will go down
 - the water level will come to the top but the radius of curvature of the meniscus will increase
 - the water level will come to the top but the radius of curvature of the meniscus will decrease
 - the water will flow out of the capillary
7. A soap bubble of radius r_1 is blown at the end of a capillary tube of length L and radius R . If η is the viscosity of air and T is the surface tension of soap bubble. Then the time taken for the radius of the bubble to reduce to r_2 due to flow of air through the capillary. Is equal to
8. An oil drop of diameter 4×10^{-4} m falls through air. If the densities of oil and air are 900 kg m^{-3} and 1.293 kg m^{-3} respectively and the coefficient of viscosity of air is $2.0 \times 10^{-5} \text{ Nm}^{-2}\text{s}$, then the terminal velocity of oil drop will be
- $0.2 \times 10^{-4} \text{ m/s}$
 - $2 \times 10^{-4} \text{ m/s}$
 - $4 \times 10^{-4} \text{ m/s}$
 - $8 \times 10^{-4} \text{ m/s}$
9. When a harmonic wave is propagating through a medium, the displacement 'y' of a particle of the medium is represented by $y = 10 \sin \frac{2\pi}{5} (1800t - x)$. The time period will be
- $\frac{1}{360}$ sec
 - $\frac{1}{36}$ sec
 - 36 sec
 - 360 sec

10. Consider the mechanical vibrating systems shown in Figures A. B. C and D The vibrations are simple harmonic in:
- A and C
 - A, B and C
 - B and D
 - A, B, C and D
11. The displacement of a particle executing simple harmonic motion is given by $y = 4 \sin(2t + \phi)$ The period of oscillations is
- $2/\pi$
 - $\pi/2$
 - π
 - 2π
12. If three tuning forks of frequencies 512, 513 and 514 are sounded together simultaneously, then the number of beats per second is
- 0
 - 1
 - 2
 - 3
13. A particle of mass m describes an elliptical orbit: This motion can be shown to be the sum of two simple harmonic motions at right angles to each other having
- the same frequency but different amplitudes
 - the same frequency and the same amplitude
 - different frequencies but the same amplitude
 - different frequencies and different amplitudes
14. Two sound waves of same amplitude can interfere destructively if
- their frequencies are equal and their phase difference is zero
 - their frequencies are equal and their phase difference is 180°
 - their phase difference is 90° irrespective of frequencies
 - their phase difference is 180° and their frequencies are unequal.
15. Tuning fork A when sounded with tuning fork B of frequency 480 Hz gives 5 beats per second. When the prongs of A are loaded with wax, it gives 3 beats per second. The

original frequency of A is

- a. 475 Hz
- b. 485 Hz
- c. 483 Hz
- d. 477 Hz

Developed by: [Mindsprite Solutions](#)