

Physics for class XI (CBSE)

SHORT AND LONG ANSWER TYPE QUESTIONS FOR CLASS XI

1. Derive the kinematic equations representing uniformly accelerated motion of a body.
2. Show that the area enclosed by the velocity time graph gives the distance travelled by the body.
3. Derive the equations for the time of flight, horizontal range and the maximum height of a projectile.
4. Show that the path of a projectile is a parabola.
5. Show that there are two angles of projection for which the horizontal range is the same.
6. Obtain an expression for centripetal force of a body.
7. Establish the relation connecting angular and linear velocities.
8. Deduce Newton's third law of motion from the law of conservation of momentum.
9. Deduce the law of conservation of momentum from Newton's third law of motion.
10. State and prove the law of conservation of momentum.
11. Derive an expression for the instantaneous velocity of a rocket from the concept of law of conservation of momentum.
12. State and explain the law of conservation of energy.
13. Derive expressions for the final velocities of the bodies undergoing elastic collisions in one-dimensional motion.
14. Explain the elastic collision of two objects in two dimensional motion.
15. Prove that torque is the rate of change of angular momentum.
16. Prove that $L = I\omega$, where the symbols have their usual meanings.
17. Derive equation for the moment of inertia of (a) a uniform disc, (b) a uniform ring and (c) a uniform rod.
18. State and explain the two theorems on moment of inertia.
19. Explain what is meant by 'banking of curves'? Hence obtain an expression for the speed with which a car negotiates a curve.
20. Describe, with the help of diagrams, the variation of interatomic force and potential energy with distance between atoms.
21. Derive expressions for (a) gravitational potential, (b) gravitational potential energy, (c) escape velocity and (d) orbital velocity.
22. Prove Kepler's law of periods from the law of gravitation.
23. Describe with the help of mathematical equations, the variation of acceleration due to gravity with different factors.
24. State and prove Archimedes principle and Pascal's law.
25. Write down the postulates of kinetic theory of gases. Hence deduce Boyle's law and Charle's law from the equation derived.
26. State and prove Bernoulli's theorem. Explain its applications.
27. Derive an equation for the capillary rise, using the concept of surface tension.
28. Derive an expression for the excess pressure inside a spherical bubble and a drop.