DEPARTMENT OF PHYSICS

QUESTION BANK

I SEM: Mechanics and Properties of Matter

1. What are physical quantities? Give an example. Write the dimensional formal for work and gravitational constant.
2. State law of conservation of energy. Illustrate it with an example.
3. State and explain law of conservation of linear momentum.
4. Derive relativistic velocity addition theorem.
5. State postulates of special theory of relativity.
6. What is time dilation? Explain.
7. State Newton's laws of motion.
8. What is centre of mass? Explain.
9. Derive an expression for moment of inertia of rectangular lamina about an axis passing through its center and perpendicular to its plane.
10. Give the theory of compound pendulum.
11. State Keplers laws of planetary motion.
12. What is central force? Give an example.
13. Show that for a particle moving in a central force field, the motion is planar.
14. Obtain the relation between three moduli of elasticity.
15. State and explain Hooke's law . What is Poisson ratio.?
16. Derive an expression for workdone in Stretching.
17. Obtain an expression for Coefficient of Viscosity by Stoke's method.
18. Compare stream line flow and turbulent flow.
19. Obtain an expression for orbital velocity of a satellite in a circular orbit.
20. What is an escape velocity?
21. Define surface energy. Write the relation between surface tension and surface energy and explain the terms.
22. Obtain an expression for moment of inertia of flywheel.
23. Write the relation between torque and angular momentum.
24. What are the basic idea of global positioning system.
25. Give the theory of torsional pendulum.
26. Obtain an expression for excess pressure inside spherical liquid drop.