INTERMEDIATE FIRST YEAR PHYSICS IMPORTANT QUESTIONS

8- Marks

Chapter – 06 – Work, Energy & Power

1. Develop the notation of work and kinetic energy and show that it leads to work-energy theorem?
2. What are collisions? Explain the possible types of collisions? Develop the theory of one dimensional Elastic collision?
3. State and prove law of conservation of energy in case of freely falling body? What are the conditions under which the law of conservation of energy is applicable?

Chapter – 08 – Oscillations

4. Define simple harmonic motion. Show that the motion of projection of a particle performing uniform circular motion, on any diameter is simple harmonic?
5. Show that the motion of a simple pendulum is simple harmonic and hence derive an equation for its time period. Define second pendulum?
6. Derive the equation for the kinetic energy and potential energy of a simple harmonic oscillator
7. and show that the total energy of a particle in simple harmonic motion is constant at any point on its path?

Chapter – 13 – Thermodynamics

8. State second law of Thermodynamics, how is the heat engine different from a refrigerator?
9. Explain the reversible and irreversible process. Describe the working of Carnot engine? Obtain an expression for the efficiency?

4-Marks

Chapter – 04 Motion is a Plane

1. Show that the maximum height reached by a projectile launched at an angle of 45^0 is one quarter of its range?
2. Show that the trajectory of an object thrown at certain angle with the horizontal is a parabola?
3. State parallelogram law of vectors. Derive an expression for the magnitude and direction of the resultant vector?

Chapter – 05 – Laws of Motion

4. Explain the advantage and disadvantage of friction?
5. Mentions the method used to reduce the friction?
6. State Newton's second law of motion? Hence derive the equation of motion F =ma?
7. Define the terms momentum and impulse. State and explain the law of conservation of linear momentum?

Chapter – 07 – System of Particles

8. Distinguish between centre of mass and centre of gravity?
9. Define vector product. Explain different properties of vector product with examples?
10. Define angular velocity and derive its equation, $v = r\omega$?

Chapter – 09 – Gravitations

11. What is orbital velocity? Obtain an expression for it?
12. What is escape velocity? Obtain an expression for it?
13. What is geostationary satellite? State its uses?

Chapter – 10 – Mechanical Properties of Solids

14. Describe the behavior of a wire under gradually increasing load?
15. Define strain energy and derive the equation for the same?

Chapter – 12 – Thermal Properties of Matter

16. In what way is the anomalous behavior of water advantageous to aquatic animals?
17. Explain conduction, convection and radiation with examples?
18. Write short notes on triple point of water?

2-Marks

1. What is the discovery of C V Raman?
2. What is the contribution of S Chandra Sekhar to Physics?
3. What is meant by a physics?
4. Distinguish between accuracy and precision?
5. How can systematic errors be minimized or eliminated?
6. Distinguish between fundamental units and derived units?
7. Why do we have different units for the same physical quantity?
8. If $A = i + j$ what is the angle between vector 45 with x-axis?
9. What is inertia? What gives the measure of inertia?
10. Two forces of magnitudes 3 units and 5 units act at 600 with each other. What is the magnitude of their resultant?
11. When two right angled vectors of magnitude 7 units and 24 units combine, what is the magnitude of their resultant?
12. If $P = 2 i + 4 j + 14k$ and $Q = 4 i + 4j + 10k$. Find the magnitude of $P + Q$?
13. When a bullet is fired from a gun, the gun gives a kick in the backward direction. Explain?
14. A bomb is exploded into two pieces, the pieces must travel in opposite directions. Explain?
15. Why should a helicopter necessarily have two propellers?
16. Is it necessary that a mass should be present at the centre of mass of any system?
17. Why are spokes provided in a bicycle wheel?
18. By spinning eggs on a table top, how will you distinguish a hardboiled egg from a raw egg?
19. Define viscosity. What is the C.G.S unit for coefficient of viscosity?
20. What is the principle behind the carburetor of an automobile?
21. Why are drops and bubbles spherical?
22. Give an expression for the excess pressure in a liquid drop?
23. What is Angle of Contact?
24. Give an expression for the excess pressure for the soap bubble in air?
25. Why gap are left between rails on a railway track?
26. Ventilators provided in rooms just below the roof. Why?
27. Distinguish between heat and temperature?
28. Can a substance contract on heating? Give an example?
29. What is Green House Effect? Explain Global Warming?
30. What is latent heat of Vapourisation?
31. We cannot open or close the door by applying force at the hinges. Why?
32. The roof buildings are often painted white during summer. Why?
33. Define Mean Free Path?
34. State Boyle's law and Charles' law?
35. State Dalton's Law of Partial Pressure?
36. When does a real gas behave like an ideal gas?
37. What is the expression between pressure and kinetic energy of a gas molecule?
38. State Newton's Law of Cooling?
39. What is magnus effect?
40. Pressure of an ideal gas in a container is independent of shape of the container. Explain?