UNIT: 1- LAWS OF MOTION

I. Answer the following briefly.

1. Define Inertia. Give its classification.
2. Define Linear Momentum. Give the units
3. State Newton's law of Inertia (or) Newton's First law.
4. Classify the types of force based on their application.
5. Define resultant force.
6. What are Balanced and Unbalanced forces? (or) Distinguish between Balanced and Unbalanced force.
7. What is meant by Equilibrant?
8. What is meant by moment of a force?
9. How do you measure the moment of a couple?
10. Write the applications of Torque
11. State the principle of moments
12. State Newton's Second law of motion and derive an expression for force. Give units of Force
13. Define the units of Force in terms of (i) S.I. unit and (ii) C.G.S unit
14. Define unit force
15. Define Gravitational Unit of force.
16. What is Impulsive Force? Define Impulse. Give its unit.
17. Define Newton's III law of motion.
18. Derive an expression for law of conservation of linear momentum.
19. When two bodies of different masses are dropped from the same height, which body will fall faster? Why?
20. What is meant by centripetal acceleration and centripetal force?
21. Discuss the ways in which change in momentum can be achieved.
22. Why automobiles are fixed with springs and shock absorbers?
23. What is meant by acceleration due to gravity? Give its SI unit.
24. What is meant by apparent weight?
25. Why a person falling freely in a roller coaster (or) on a swing (or) in a vertical giant wheel feel an apparent weight loss?
26. Why astronauts are found floating in space?
27. Discuss the effect of force on a body.

II. Answer in Detail

1. What are the types of inertia? Give an example for each one.
2. Deduce the equation of force by using Newton's Second law of motion
3. State and prove law of conservation of linear momentum.
4. Describe Rocket propulsion
5. State and Derive the mathematical expression for Newton's Universal law of Gravity
6. Give the applications of Newton's universal law of gravitation.
7. List the concepts proposed by Galileo about force, motion and inertia of bodies.
8. Discuss the applications of torque.
9. Give examples of Newton's third law.
10. Obtain relation between g and G
11. Illustrate concept of apparent weight with an example
12. Explain the concept of weightlessness.