Blue Print (As per PU Board)

Topic	1 mark questions	2 marks questions	3 marks questions	5 marks questions	Total Marks
Laws of Motion	–	1	1	1	10

One mark questions

1. **Why uniformly moving body comes to rest?**
   Answer: Due to opposing force /frictional force.
2. **What is the measure of inertia?**
   Answer: Gravitational mass
3. **State Newton's first law of motion.**
   Answer: Everybody continues to be in the state of rest or of uniform motion in a
   straight line unless compelled by an external force to act otherwise.
4. **What is the acceleration of a body having uniform linear motion?**
   Answer: zero
5. **State Newton's second law of motion**
   Answer: The rate of change of momentum of a body is directly proportional to the applied force and takes place in the direction in which the force acts

Two marks questions

6. **A net external force of 5 N is acting on a body of mass 10 Kg. What is the acceleration produced?**

   Answer: $F = ma \Rightarrow a = \dfrac{F}{m} = \dfrac{5}{10} = 0.5\,\text{N}$
7. **Write the S.I unit and dimensional formula for force.**
   Answer: newton---S.I unit

   $M^1 L^1 T^{-2}$ ---- dimensional formula
8. **Define newton the S.I unit of force.**

   Answer: Force is said to be one newton if it causes an acceleration of $1\,\text{ms}^{-2}$ to a

   mass of 1 Kg.
9. **What is impulsive force?**
   Answer: A large force acting for a short time to produce a finite change in momentum is called an impulsive force.

Five marks questions

10. **Write the important points to be noted about the Newton's third law of motion with regard to the usage of the terms 'action & reaction'.**
    Answer: 1. Action and reaction are nothing but force.
    2. Forces always occur in pairs. $F_{AB} = -F_{BA}$ that is force on A by B is equal to negative force on
    B by A.
    3. There is no cause and effect relation implied in third law.
    4. The force on B by A and the force on B by A act at the same instant.
    5. Action and reaction forces act on different bodies and not on the same body.
    6. By considering system of two bodies as a whole F_{AB} & F_{BA} are internal forces of the system
    $(A+B)$. They add up to give a null force.

11. **When do we say that the particle is in equilibrium under the action of 'n'**
    number of forces say F_1, F_2, F_3 ------- F_n
    Answer: A particle is said to be in equilibrium under the action of 'n' number of forces say
    F_1, F_2, F_3 ------- F_n if they can be represented by the sides of a closed n-sided polygon with arrows taken in order.

12. **Write the steps to be followed to solve problems in mechanics.**
    Answer: (a) Using the given data a free body diagram should be drawn.

    (b) One of the convenient part should be chosen as one system

    (c) A separate diagram which shows this system and the forces acting on it is written

    (d) The magnitude and the directions of all the forces are represented.

    (e) The rest should be treated as unknown to be determined using Newton's laws of motion

    (f) The remaining part of the problem can be solved by considering
    another part of the diagram and Newton's third law of motion.