**General Instructions:**

1. There are 14 questions in all. All questions are compulsory.
2. This question paper has two sections: Section A, Section B.
3. Section A contains ten questions of two marks each, Section B contains four questions of five  marks each.
4. There is no overall choice. However, an internal choice has been provided in one question of five marks.
5. You may use log tables if necessary but use of a calculator is not allowed.

**SECTION- A**

1. Find the dimension of given physical quantity- Force and Acceleration.
2. Convert the SI unit of force into CGS unit ( Newton to Dyne).
3. Verify any one equation of motion by dimension method.
4. Displacement of a particle is given by the expression X = 4t2 + 8t – 10, where X is in meter and t is in seconds. Find acceleration.
5. Sameer went on his bike from Delhi to Gurgaon at a speed of 80 km/hr and came back at a speed of 100 km/hr. what is his average speed for entire journey.
6. A balloon is ascending at the rate of 5 m/s. A pocket is dropped from the balloon when situated at a height of 250 m. how long does it take the packet to reach the ground? What is its final velocity?
7. Define S = ut + ½ at2 by calculus method.
8. Can velocity of an object be negative? Justify.
9. Draw displacement time graph for uniformly accelerated motion. What is its shape?
10. Derive the last equation of motion with the help of first two.

**SECTION-B**

1. Define parallelogram law of vector addition and also derive the equation for resultant.
2. Find the dimensions of these physical quantity-
3. VELOCITY
4. ACCELERATION
5. MOMENTUM
6. AREA
7. DENSITY
8. Define Relative velocity with suitable example.

A motorboat traveling 4 m/s, East encounters a current traveling 3.0 m/s, North.

1. What is the resultant velocity of the motorboat?
2. If the width of the river is 80 meters wide, then how much time does it take the boat to travel shore to shore?
3. What distance downstream does the boat reach the opposite shore?
4. On a two lane road, car A is travelling with a speed of 36 km/h. Two cars B & C approach car A in opposite direction with a speed of 54 km/h at a certain instant, when the distance AB = AC, both being 1 km, B decides to overtake A before C does. What minimum acceleration of car B is required to avoid an accident?

OR

Define-

* 1. Vectors
  2. Scalars
  3. Dot & cross product [ with example]
  4. Triangle law of addition
  5. Vector addition & subtraction