**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. Write the characteristics of displacement.
2. Draw displacement time graph for uniformly accelerated motion. What is its shape?
3. Sameer went on his bike from Delhi to Gurgaon at a speed of 60 km/hr and came back at a speed of 40 km/hr. what is his average speed for entire journey.
4. What causes variation in velocity of a particle.
5. Displacement of a particle is given by the expression X = 3t2 + 7t – 9, where X is in meter and t is in seconds. Find acceleration.
6. A particle thrown upwards. It attains a height(h) after 5 seconds and again after 9s comes back. What is the speed of the particle at a height h?
7. A balloon is ascending at the rate of 4.9 m/s. A pocket is dropped from the balloon when situated at a height of 245 m. how long does it take the packet to reach the ground? What is its final velocity?
8. A car moving on a straight highway with speed of 126 km/hr is brought to stop within a distance of 200 m. What is the retardation of the car ( assumed uniform) and how long does it take for the car to stop?
9. Define V= U + at by calculus method.
10. Can speed of an object be negative? Justify

**SECTION- B**

1. Derive the equation of motion by graphical method.

OR

Derive the equation of motion by calculus.

1. Verify all the equations of motion by dimension method.
2. Find the dimensions of these physical quantity-
3. FORCE
4. PRESSURE
5. WORK
6. ENERGY
7. POWER
8. A three wheeler starts from rest, accelerates uniformly with 1 m/s2 on a straight road for 10 s, and then moves with uniform velocity. Plot the distance covered by the vehicle during the nth second (n= 1,2,3….) versus n. What do you expect this plot to be during accelerated motion: a straight line or a parabola.