1. Define Scalar and vector quantities. Give two examples of each.

2. Name at least five types of motion. Explain any two of them with example.

3. What is distance and displacement? What is their SI unit of measurement?

4. Write all the equations of motion. Using these equations solve -
   (A) A car is moving with a velocity 20 m/s. It is accelerated at rate of 2 m/s² for 10 sec. Find the final velocity of the car.

5. A car starts from rest and uniformly accelerates up to a velocity of 78 m/s in 13 seconds. Find the displacement of the car during these 13 seconds.
1. Scalar Quantities – They are defined as those quantities which has only magnitude but no specific direction. Eg :- Length, mars etc.

Vector Quantities - They are defined as those quantities which than magnitude as well as direction. Eg – Velocity, Weight etc.

2. (i) Translatory motion
(ii) Rotary motion
(iii) Oscillatory motion
(iv) Vibratory motion
(v) Rolling motion

Translatory Motion – It is a motion in which all points of a moving body move uniformly in the same line as direction through same distance at the same time. E.g.- a can moving on straight line.

Rotary motion - A body is said to be in a rotary motion as circular motion if it moves about a fixed axis without changing the radius of its motion e.g. blade3s of a fan.

3. Distance - The total path covered by any object is called as its distance. it is a scalar quantities. Displacement – The shortest path covered by any object is called as its displacement. It is a vector quantity The SI unit of their measurement is meters.

4. \[ V = u + at \]
\[ S = ut + \frac{1}{2}at^2 \]
\[ V^2 = u^2 + 2as \]

Where, \( u \) – initial velocity
\( v \) - final velocity
\( S \) - displacement
\( a \) - acceleration
\( t \) - time taken

(a) \( u = 20 \text{ m/s} \)
\( a = 2 \text{ m/s}^2 \)
\( t = 10 \text{ sec} \)
\( V = ? \)
\[ \therefore V = u + at \]
\[ V = 20 + 2 \times 10 \]
\[ V = 40 \text{ m/s} \]

5 Since can starts from rest \[ \therefore u = 0 \]
\[ V = 78 \text{ m/s} \]
\[ t = 13 \text{ sec.} \]

Using \[ V = u + at \]
\[ 78 = 0 + a \times 13 \]
\[ \therefore a = \frac{78}{13} = 6 \text{ m/s}^2 \]

Now using \[ S = ut + \frac{1}{2} \times a \times t^2 \]
\[ S = 0 \times 13 + \frac{1}{2} \times 6 \times 13^2 \]
\[ S = 507 \text{ m} \]