CAMBRIAN PUBLIC SCHOOL

KANKE ROAD, RANCHI

REVISION ASSIGNMENT

Subject: Physics (042) **Class: XI**

Chapter: Motion in a Straight Line

Very Short & Short Answer Questions

1) A particle moves along a straight line such that its displacement x (in meters) at time t (in seconds) is given by $x = 3t^2 - 5t + 8$

Find:

a) The initial velocity of the particle (at $t = 0$).

b) The acceleration of the particle.

2) Differentiate between **distance** and **displacement**. Can the magnitude of displacement be greater than the distance travelled by an object? Justify your answer.

Short Answer Questions (3 Marks Each)

3) Derive the second equation of motion, $s = ut + \frac{1}{2}at^2$, using the calculus method.

4) A ball is thrown vertically upwards with a velocity of 20 m/s from the top of a 25 m high building. Taking $g = 10$ m/s^2:

a) How high will the ball rise from the ground?

b) How long will it take to reach the ground?

Long Answer Question (5 Marks)

5) **a)** Define **relative velocity** in one dimension. Write the expression for the relative velocity of object A with respect to object B when both are moving along the same straight line in:

i) The same direction

ii) Opposite directions

b) Two parallel rail tracks run north-south. Train A moves north with a speed of 54 km/h, and Train B moves south with a speed of 90 km/h. Calculate:

i) The relative velocity of B with respect to A.

ii) The velocity of ground with respect to B.

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