DAV Public School, Thermal Colony, Panipat
Assignment Chapter – 3 (Motion in a straight line)

Q1: A body covers one- third of its journey with speed 'u', next third with speed 'v' and the last third with speed 'w'. calculate the average speed of the body during the entire journey. $Ans: \left[\frac{3uvw}{uv+vw+uw}\right]$

Q2: The distance x of a particle moving in one dimension, under the action of a constant force is related to time t by the equation, t= $\sqrt{x} + 3$, where x is in meters and t is in sec. find the displacement of the particle when its velocity is zero. Ans. [0)

Q3: A drivers takes 2.0 sec to apply the brakes after he sees a need for it. This is called the reaction time of the driver. If he is driving a car at a speed of 54 km/hr and the brakes cause a deceleration of 6 m/sec^2, find the distance travelled by the car after he sees a need to put he brakes. Ans: [21.75 m]

Q4: If x, y, z be the distances described by a particle during the pth, qth, and rth sec. respectively, prove that (q-r)x + (r-p)y + (p-q)z =0

Q5: A body covers 12 m in 2nd sec. and 20 m in 4th sec. how much distance will it cover in 4 sec after the 5th sec. Ans: [136m]

Q6: The displacement of a body is given to be proportional to the cube of time elapsed. What is the nature of the acceleration of the body?

Q7: A ball thrown vertically upwards with a speed of 19.6 m/s from the top of a tower returns to the earth in 6 s. find the height of the tower. Ans: [58.8 m]

Q8: Two straight lines drawn on the same displacement – time graph make angle 30^0 and 60^0 with time axis respectively. Which line represent greater velocity? What is the ratio of the two velocities?

Q9: Two trains A and B of length 400 m each are moving on two parallel tracks with a uniform speed of 72 km/hr in the same direction, with A ahead of B. The Driver of B decides to overtakes A and accelerates by 1 m/sec^2. If after 50 sec, the guard of B just brushes past the drivers of A, what was the original distance between them? Ans: 1250 m

Q10: A jet airplane travelling at the speed of 500 km/hr ejects its products of combustion at the speed of 1500 km/hr relative to the jet plane. What is the speed of latter with respect to an observer on the ground? Ans: 1000 km/hr