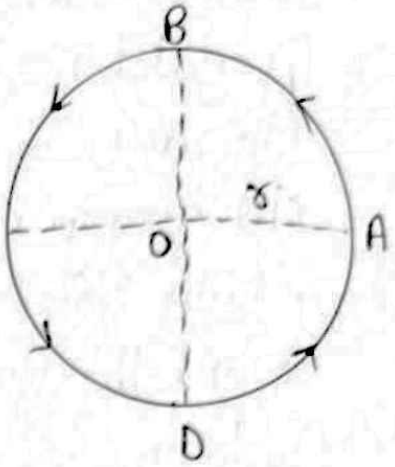
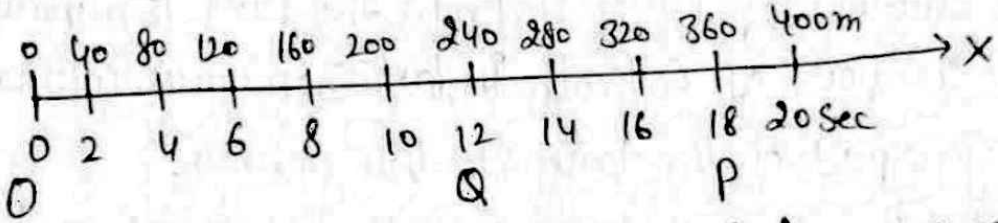
11th PHYSICS

CH-3, ASSIGNMENT-1

1. A particle moves along a path of radius r. It starts from point A and moves anticlockwise. Find the distance travelled by the particle as it (i) moves from A to B (ii) from A to C (iii) from A to D and (iv) completes one revolution. Also find the magnitude of the displacement in each case.



2. A car is moving along x-axis. It moves from O to P in 18 sec and returns from P to Q in 6 s. What are the average velocity and average speed of the car in going from (i) O to P and (ii) from O to P and back to Q?



3. A body travels from A to B at 40 m/s and from B to A at 60 m/s. Calculate the average speed and average velocity.

4. On a 60 km track, a train travels the first 30 km with uniform speed of 30 km/h. How fast the train travel the next 30 km so as to average 40 km/h for the entire trip?

5. A body covers one-third of its journey with velocity 'u', next one-third with speed 'v' and the last one-third with speed 'w'. Calculate the average speed of the body during entire trip.

6. A body travelling along a st. line traversed one-half of the total distance with velocity v_0. The remaining part of the distance was covered with a velocity v_1 for half the time and with

velocity v_2 for the other half of time. find the mean velocity averaged over the whole time of motion.

7. A cyclist moving on a circular track of radius 100m completes one revolution in 4 minutes. What is his (i) average speed (ii) average velocity in one full revolution?

8. A body travels first half of the total distance with velocity v_1 and the second half with velocity v_2. Calculate the average velocity.

9. A car covers the first half of the distance b/w two places at a speed of 40 km/h and and the second half at 60 km/h. What is the average speed of the car?

10. A train moves with speed of 30 km/h in the first 15 minutes, with another speed of 40 km/h the next 15 minutes and then with a speed of 60 km/h in last 30 minutes. Calculate the average speed of the train for this journey.

11. A body travels a distance S_1 with velocity v_1 and distance S_2 with velocity v_2 in same direction. Calculate the average velocity of the body.

12. A car travels along a st. line for the first half time with speed 50 km/h and the second half time with speed 60 km/h. find the average speed of the car.

13. A particle covers half of its total distance with speed v_1 and the rest half distance with speed v_2. Its average speed during the complete journey is

(a) $\frac{v_1+v_2}{2}$ (b) $\frac{v_1v_2}{v_1+v_2}$ (c) $\frac{2v_1v_2}{v_1+v_2}$ (d) $\frac{v_1^2v_2^2}{v_1^2+v_2^2}$ (Main 2011)

14. A car moves from X to Y with a uniform speed v_u and returns to X with a uniform speed v_d. The average speed for this round trip is

(a) $\sqrt{v_u v_d}$ (b) $\frac{v_d v_u}{v_d + v_u}$ (c) $\frac{v_u + v_d}{2}$ (d) $\frac{2 v_d v_u}{v_d + v_u}$ (2007)

15. A car runs at a constant speed on a circular track of radius 100m, taking 62.8 seconds for every circular track lap. The average velocity and average speed for each circular lap respectively is

(a) 10m/s, 0 (b) 0, 0 (c) 0, 10m/s (d) 10m/s, 10m/s

16. A car moves a distance of 200m. It covers the first half of the distance at speed 40km/h and second half of distance at speed v. The average speed is 48km/h. The value of v is

(a) 56km/h (b) 60km/h (c) 50km/h (d) 48km/h

17. A bus travelling the first one-third distance at a speed of 10km/h, the next one-third at ~~a distance~~ 20km/h and at last one-third at 60km/h. The average speed of the bus is

(a) 9 km/h (b) 16 km/h (c) 18 km/h (d) 48 km/h

18. In which of the following examples of motion can ~~be~~ the body be considered approximately a point object:

(i) a ~~rail~~ railway carriage moving without jerks between two stations.

(ii) a monkey sitting on the top of a man cycling smoothly on a circular track.

(iii) a spinning cricket ball that turns sharply on hitting the ground, and

(iv) tumbling beaker that has slipped off the edge of a table?

19. (i) Are rest and motion absolute or relative terms?

(ii) Can an object be at rest as well as in motion at the same time?

(iii) Under what conditions can an object in motion be considered a point object?

(iv) A bullet fired vertically upwards falls at the same place after some time. What is the displacement of the bullet?

(v) Will the displacement of an object change on shifting the position of origin of the co-ordinate system?

20. (i) Define the following terms and write the SI units:

(a) displacement (b) distance (c) Instantaneous velocity.

(ii) Differentiate between average speed and instantaneous speed of an object.

(iii) What are the characteristics of displacement and uniform motion?

ANSWER KEY

(1) (i) $\sqrt{2}r$ (ii) $2r$ (iii) $\sqrt{2}r$ (iv) $2\pi r$ (2) (i) 20 m/s (ii) 20 m/s

(3) 48 m/s, 0 (4) 60 Km/h (5) $\frac{3uvw}{uv+vw+uw}$ (6) $\frac{2v_0(v_1+v_2)}{v_1+v_2+2v_0}$

(7) (i) 50π meter/minute (ii) 0 (8) $\frac{2v_1v_2}{v_1+v_2}$ (9) 48 Km/h (10) 47.5 Km/h

(11) $\frac{(s_1+s_2)v_1v_2}{s_1v_2+s_2v_1}$ (12) 55 Km/h (13) c (14) d (15) c

(16) b (17) c