REVISION TEST PAPER

Motion in One Dimension

1. *What do you understand by the terms (i) rest (ii) motion ? Support*

2. *By giving three examples define the following : (a) Scalar quantity (b) Vector quantity.*

3. *Pick out the scalar and vector quantities from the following list :*
(i) Mass (ii) Displacement (iii) Density
(iv) Distance (v) Momentum (vi) Acceleration
(vii) Temperature (viii) Time (ix) Force (x) Pressure

4. **(a)** *What do you understand by the terms distance and displacement?*
(b) *State their C.G.S. and S.I. units.*
(c) *Give two differences between distance and displacement.*

5. **(a)** *Define (i) speed (ii) velocity.*
(b) *State the units of above in C.G.S. and S.I. system.*
(c) *Give two differences between speed and velocity.*

6. *By giving one example each define (i) uniform velocity (ii) variable velocity (iii) average velocity.*

7. **(a)** *Define the term acceleration.*
(b) *When is acceleration (i) positive? (ii) negative?*
(c) *State the unit of acceleration in C.G.S. and S.I. systems.*

8. *Give an example of a body which covers a certain distance but its displacement is zero.*

9. *Give an example of an accelerated body, moving with uniform speed. Explain your answer.*

10. *What is the relation between distance and time, when :*
(i) *body is moving with a uniform velocity?*
(ii) *body is moving with variable velocity?*

11. *The Shatabadi Express covers a distance of 450 km in 5 hr between Amritsar and Delhi. What is average speed of train in*
(i) *km* hr^{-1} *(ii)* ms^{-1}.

12. *An athlete runs around a circular path of circumference 360 m in 1 minute and reaches the starting point. Calculate (i) distance covered by the athlete (ii) displacement (iii) average speed (iv) average velocity.*

13. *A train takes 80 minutes to travel from station P to Q and 40 minutes to return from Q to P. If the distance between P to Q is 60 km, calculate (i) average speed (ii) average velocity of train.*

14. *A car covers 90 km in 1.5 hours towards east. Calculate (i) displacement of car (ii) velocity of car in (a) km* hr^{-1} *(b)* ms^{-1}.

15. *A race horse runs straight towards north and covers 540 m in one minute. Calculate (i) displacement of horse (ii) velocity in (a)* ms^{-1} *(b) kmhr*$^{-1}$.

16. *The change in velocity of 54 km* hr^{-1} *takes place in one minute for a motor bike. Calculate acceleration in (i) kmhr*$^{-2}$ *(ii)* ms^{-2}.

17. *A body starts from rest and picks up a velocity of 15* ms^{-1} *in 3 s. Find the acceleration in (i)* ms^{-2} *(ii) km* hr^{-2}.

18. A speeding car slows down from 108 km hr^{-1} to 36 km hr^{-1} in 4 s. Calculate de-acceleration in (i) ms^{-2} (ii) km hr^{-2}.

19. *Draw displacement-time graphs in the following situations :*
(i) *When the body is stationary.*
(ii) *When the body is moving with a uniform velocity.*
(iii) *When the body is moving with variable velocity.*

20. *Draw the velocity-time graph for following situations :*
(i) *When a body is moving with a uniform velocity.*
(ii) *When a body is moving with variable velocity, but uniform acceleration.*
(iii) *When a body is moving with variable velocity and uniform retardation.*
(iv) *When a body is moving with variable velocity and variable acceleration.*

21. *How can you calculate the following ?*

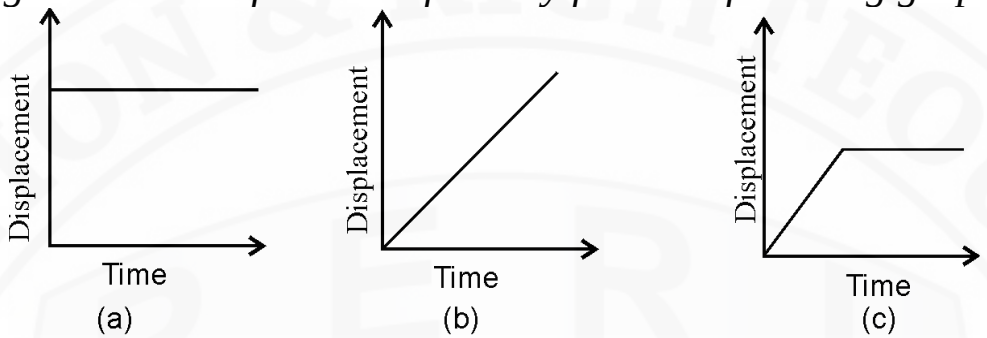
(i) *Velocity from displacement-time graph.*

(ii) *Acceleration from velocity-time graph.*

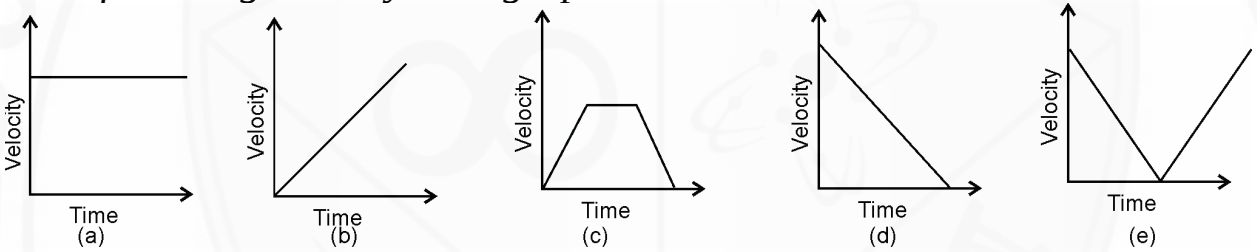
(iii) *Displacement from velocity-time graph.*

(iv) *Velocity from acceleration-time graph.*

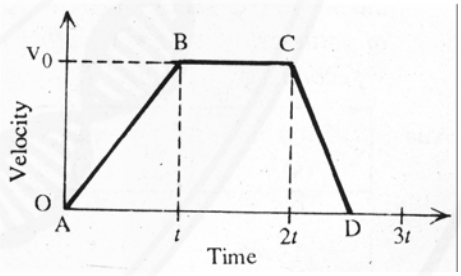
22. *Suggest the kind of motion of a body from the following graphs :*



23. *Suggest real life examples about the motion of body from the following velocity-time graphs:*



24. *Diagram shows a velocity-time graph for a car starting from rest. The graph has three sections AB, BC and CD.*



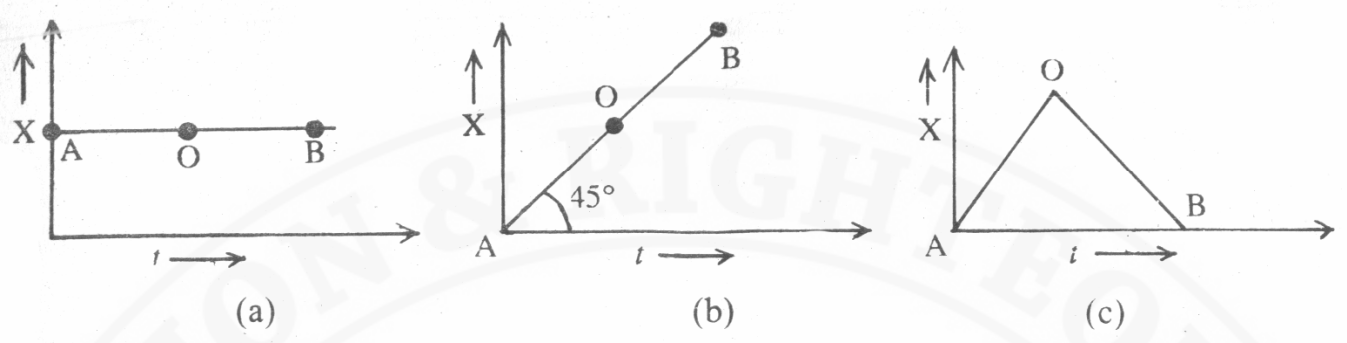
(a) *From the study of graph, state how the distance travelled in any section is determined.*

(b) *In which section the car has zero acceleration?*

(c) *Is the magnitude of acceleration higher or lower than that of retardation? Give a reason.*

25. *A body at rest is thrown downward from the top of a tower. Draw a distance time-graph for its free fall under gravity during first 3 seconds. Show your table of values starting t = 0 with interval of 1 second [g = 10 ms^{-2}].*

26. *Write down the type of motion of a body during A – O –B in each of the following distance- time graphs :*



27. *An object covers a distance S in time t as follows.*

S (metres)	0	4	10	10	8	5	0
t (seconds)	0	2	5	10	12	15	20

Plot a graph, taking t on x- axis. and S on y-axis. Determine displacement of object at time (i) 7 s. (ii) 13 s.

28.

Displacement (m)	0	4	8	12	16	20
Time (s)	0	1	2	3	4	5

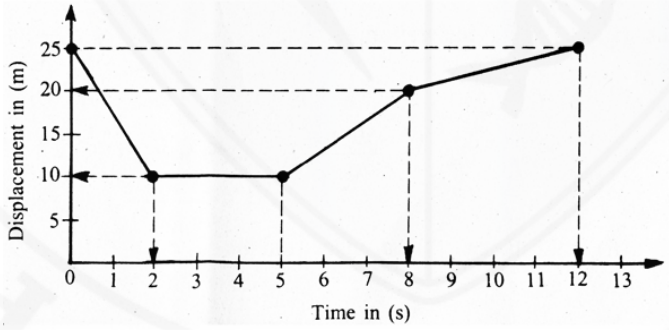
From the displacement-time table given above draw a graph choosing a suitable scale. From the graph calculate (i) average velocity (ii) displacement between 1.5 s and 3.5 s.

29. *From the displacement–time graph shown below calculate :*

(i) *Velocity between 0 – 2 s.*

(ii) *Velocity between 8 s – 12 s*

(iii) *Average velocity between 5 s — 12 s.*



30. *A ball is thrown vertically upwards, returns back to the thrower in 6s. Assuming there is no air friction, plot a velocity -time graph. From the graph calculate :*

(i) *De-acceleration* ***(ii)*** *Acceleration*

(iii) *Total distance covered by ball* ***(iv)*** *Average velocity.*

31.

Velocity in (ms^{-1})	20	20	1	20	0
Time in (seconds)	0	5	7	10	15

The table above shows the velocity of a motor bike at various intervals of time.

(i) *Plot the velocity-time graph.*

(ii) *Calculate de-acceleration between* 5 s – 7 s.

(iii) *Calculate acceleration between* 7 s *and* 10 s.

(iv) *Calculate de-acceleration between* 10 s *and* 15 s.

(v) *Total distance travelled by motor-bike.*

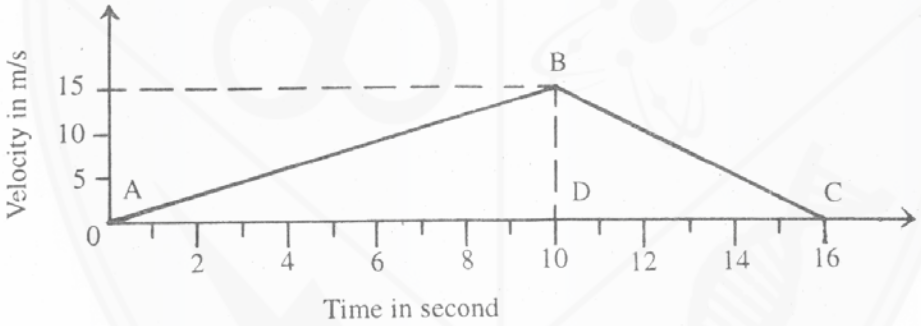
(vi) *Average velocity of motor bike.*

32. *The diagram alongside is a velocity-time graph. From the graph calculate:*

(i) *Acceleration of the body.*

(ii) *De-acceleration of the body.*

(iii) *Total distance covered by the body.*

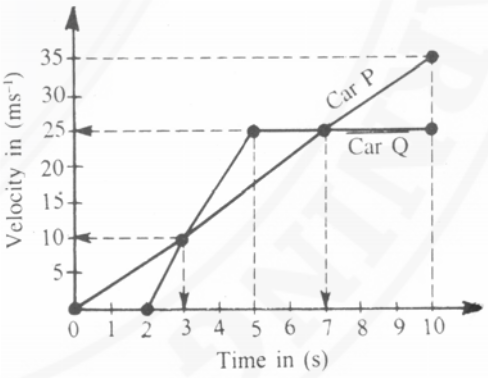


33. *Figure alongside shows a velocity-time graph for two cars P and Q, starting from the same point in same direction. Calculate :*

(i) *Acceleration of car P.*

(ii) *Acceleration of car Q, between* 2 s – 5 s.

(iii) *At what time intervals, both cars have same velocity ?*



(iv) *Which car is ahead after 10 s and how much ?*

34. *An aeroplane lands at 216 km hr^{-1} and stops after covering a runway of 2 km. Calculate (i) acceleration (ii) time in which it comes to rest.*

35. *A cyclist driving the 36 km hr^{-1}, stops his mount in 2 s, by the application of brakes. Calculate the (i) retardation (ii) distance covered during the action of application of brakes.*

36. *A motor bike running at 90 km hr^{-1} is slowed down to 54 km hr^{-1} by the application of brakes, over a distance of 40 m. If the brakes are applied with same force, calculate the*

(i) total distance travelled by the bike. (ii) total time in which bike comes to rest.

37. *A packet is dropped from a stationary helicopter, hovering at a height 'h' from ground level, reaches the ground in 12 s. Calculate*

(i) value of 'h' (ii) final velocity of packet on reaching ground level [g = 9.8 ms^{-2}]

38. *A packet dropped from a helicopter reaches the water level of a river in 7.5 s and then travels for 4m within the water, before coming to rest. Calculate (i) height of helicopter above the level of water (ii) final velocity of packet, before hitting water (iii) retardation offered by water. [Take g = 10 ms^{-2}].*

39. *A spaceship is moving in space with a velocity of 50 kms^{-1}. Its engines fire for 10 s, such that its velocity increases to 60 kms^{-1} . Calculate the total distance travelled by the spaceship in ½ minute from the time of firing its engines.*

40. *A spaceship is moving in space with a velocity of 60 kms^{-1}. It fires its retro-engines for 20 s and the velocity is reduced to 55 kms^{-1}. Calculate the distance travelled by spaceship in 40 s, from the time of firing retro-engines.*