SCIENCE

MOTION

1. A body whose position with respect to surrounding does not change, is said to be in a state of :

(A) Rest (B) Motion (C) Vibration (D) Oscillation

ANS . A

2. In case of a moving body :

(A) Displacement > Distance (B) Displacement < Distance

(C) Displacement ≥ Distance (D) Displacement ≤ Distance

ANS . D

3. Vector quantities are those which have :

(A) Only direction (B) Only Magnitude

(C) Magnitude and direction both (D) None of these

ANS . C

4. What is true about scalar quantities ?

(A) Scalars quantities have direction also. (B) Scalars can be added arithmetically.

(C) There are special law to add scalars. (D) Scalars have special method to represent.

ANS . B

5. A body is said to be in motion if :

(A) Its position with respect to surrounding objects remains same

(B) Its position with respect to surrounding objects keep on changing

(C) Both (A) and (B)

(D) Neither (A) nor (B)

ANS . B

6. A distance is always :

(A) shortest length between two points (B) path covered by an object between two points

(C) product of length and time (D) none of the above

ANS . B

7. A displacement :

(A) is always positive (B) is always negative

(C) may be positive as well as negative (D) is neither positive nor negative

ANS . C

8. Examples of vector quantities are :

(A) velocity, length and mass (B) speed, length and mass

(C) time, displacement and mass (D) velocity, displacement and force

ANS . D

9. Which of the following is not characteristic of displacement ?

(A) It is always positive.

(B) Is has both magnitude and direction.

(C) It can be zero.

(D) Its magnitude is less than or equal the actual path length of the object.

AN S . A

10. S.I. unit of displacement is :

(A) m (B) ms^{-1} (C) ms^{-2} (D) None of these

ANS . A

11. Which of the following is not a vector ?

(A) Speed (B) Velocity (C) Weight (D) Acceleration

ANS . A

12. Time is an example of :

(A) Scalar (B) Vector

(C) Scalar or vector (D) Neither scalar nor vector

ANS . A

13. In five minutes distance between a pole and a car changes progressively. What is true about the car ?

(A) Car is at rest (B) Car is in motion

(C) Nothing can be said with this information (D) None of the above

ANS . B

14. A distance :

(A) Is always positive (B) Is always negative

(C) May be positive as well as negative (D) Is neither positive nor negative

ANS . A

15. When a body covers equal distance in equal intervals of time, its motion is said to be :

(A) Non-uniform (B) Uniform (C) Accelerated (D) Back and forth

ANS . B

16 The motion along a straight line is called :

(A) Vibratory (B) Stationary (C) Circular (D) Linear

ANS . D

17 A particle is traveling with a constant speed. This means :

(A) Its position remains constant as time passes.

(B) It covers equal distance in equal interval of time

(C) Its acceleration is zero

(D) It does not change its direction of motion

ANS . B

18 The rate of change of displacement is :

(A) Speed (B) Velocity (C) Acceleration (D) Retardation

ANS . B

19 Speed is never :

(A) zero (B) Fraction (C) Negative (D) Positive

ANS . C

20. The motion of a body covering different distances in same intervals of time is said to be :

(A) Zig - Zag (B) Fast (C) Slow (D) Variable

ANS . D

21 Unit of velocity is :

(A) ms (B) ms^{-1} (C) ms^2 (D) none of these

ANS . B

22 A speed :

(A) is always positive (B) is always negative

(C) may be positive as well as negative (D) is neither zero nor negative

ANS . A

23 A particle moves with a uniform velocity :

(A) The particle must be at rest (B) The particle moves along a curved path

(C) The particle moves along a circle (D) The particle moves along a straight line

ANS .D

24. A quantity has value of -6.0 ms^{-1}. It may be the :

(A) Speed of a particle (B) Velocity of a particle

(C) Position of a particle (D) Displacement of a particle

ANS . B

25 In 10 minutes, a car with speed of 60 kmh^{-1} travels a distance of :

(A) 6 km (B) 600 km (C) 10 km (D) 7 km

ANS . C

26. A particle covers equal distances in equal intervals of times, it is said to be moving with uniform :

(A) Speed (B) Velocity (C) Acceleration (D) Retardation

ANS . A

27 The SI unit of the average velocity is :

(A) m/s (B) km/s (C) cm/s (D) mm/s

ANS . A

28. Mere per second is not the unit of :

(A) Speed (B) Velocity (C) Displacement (D) None of them

ANS . C

29 A car accelerated uniformly from 18 km/h to 36 km/h in 5 s. The accelerating is ms^{-2} is :

(A) 1 (B) 2 (C) 3 (D) 4

ANS . A

30 Out of energy and acceleration which is vector ?

(A) Acceleration (B) Energy (C) Both (D) None of these

ANS . A

31 C.G.S. unit of acceleration is :

(A) ms^{-2} (B) cm s^{-2} (C) ms^2 (D) cm s^2

ANS . B

32 A train starting from a railway station and moving with inform acceleration, attains a speed of 40 kmh^{-1} in 10 minutes, Is acceleration is :

(A) 18.5 ms^{-2} (B) 1.85 cm s^{-2} (C) 18.5 cms^{-2} (D) 1.85 m s^{-2}

ANS . B

33. The brakes applied to a cap produce a negative acceleration of $6ms^{-2}$. If the car stops after 2 seconds, the initial velocity of the car is :

(A) $6\ ms^{-1}$ (B) $12\ ms^{-1}$ (C) $24\ ms^{-1}$ (D) zero

ANS . B

34 A body is moving with uniform velocity of $10\ ms^{-1}$. The velocity of the body after 10 s is :

(A) $100\ ms^{-1}$ (B) $50\ ms^{-1}$ (C) $10\ ms^{-1}$ (D) $5\ ms^{-1}$

ANS . C

35. In 12 minutes a car whose speed is $35\ kmh^{-1}$ travels of distance of :

(A) 7 km (B) 3.5 km (C) 14 km (D) 28 km

ANS . A

36 A body is moving along a straight line at $20\ ms^{-1}$ undergoes an acceleration of $4\ ms^{-2}$. After 2 s, its speed will be:

(A) $8\ ms^{-2}$ (B) $12\ ms^{-1}$ (C) $16\ ms^{-2}$ (D) $28\ ms^{-2}$

ANS . D

37. A car increase its speed from $20\ kmh^{-1}$ to $50\ kmh^{-1}$ is 10 sec., its acceleration is :

(A) $30\ ms^{-1}$ (B) $3\ ms^{-1}$ (C) $18\ ms^{-1}$ (D) $0.83\ ms^{-1}$

ANS . D

38. When the distance travelled by an object is directly proportional to the time, it is said to travel with :

(A) zero velocity (B) constant speed (C) constant acceleration (D) uniform velocity

ANS . B

39 A body freely failing from rest has a velocity V after it falls through a height h. The distance it has to fall further for its velocity to be come double is :

(A) 3 h (B) 6 h (C) 8 h (D) 10 h

ANS . A

40. The velocity of bullet is reduced from 200m/s to 100 m/s while traveling through a wooden block of thickness 10 cm. The retardation, assuming it to be uniform will be :

(A) $10 \times 10^4\ m/s^2$ (B) $1.2 \times 10^4\ m/s^2$ (C) $13.5 \times 10^4\ m/s^2$ (D) $15 \times 10^4\ m/s^2$

ANS . D

41 A body starts falling from height 'h' and travels distance h/2 during the last second of motion. The find of travel (in sec.) is :

(A) $\sqrt{2}-1$ (B) $2+\sqrt{2}$ (C) $\sqrt{2}+\sqrt{3}$ (D) $\sqrt{3}+2$

ANS . B

42 Area between speed - time graph and time axis gives :

(A) Distance (B) Velocity (C) Speed (D) None of these

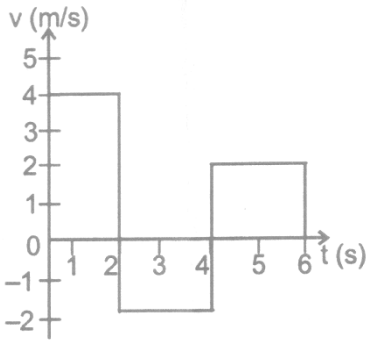
ANS . A

43 An object undergoes an acceleration of 8 ms^{-2} starting from rest. Distance traveled is 1 s is :

(A) 2 m (B) 4m (C) 6m (D) 8 m

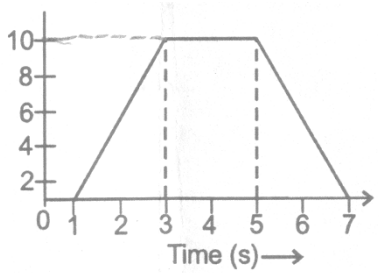
ANS . B

44 The velocity-time graph of a body moving in a straight line is shown in figure. The displacement and distance travelled by the body is 6 seconds are respectively.



ANS . A

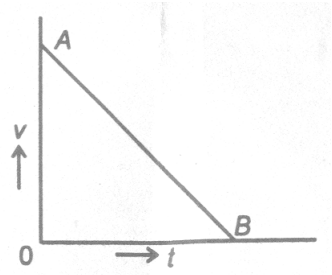
45 For the velocity time graph shown in figure, the distance covered by the body in the last two seconds of its motion is what fraction is of the total distance covered in all the seven seconds ?



(A) 1/2 (B) 1/4 (C) 1/3 (D) 2/3

ANS . B

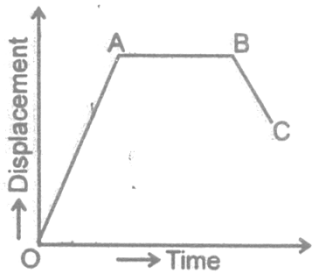
46. Velocity-time graph AB (Figure) shows that the body has :



(A) A uniform acceleration
(B) A non-uniform retardation
(C) Uniform speed
(D) Initial velocity O*A* and is moving with uniform retardation

ANS . D

47 In figure BC represents a body moving :



(A) Backward with uniform velocity
(B) Forward with uniform velocity
(C) Backward with non-uniform velocity
(D) Forward with non-uniform velocity

ANS . A

48 1^c is equal to :

(A) 57.3^0 (B) 573^0 (C) 180^0 (D) 360^0

ANS . A

49. An athlete complete one round of a circular track of diameter 200 m in 40 s. What will be the displacement at the end of 2 minutes 40 s.?

(A) 2200 m (B) 220 m (C) 22 m (D) Zero

ANS . D

50 What will be the distance in the above equation ?

(A) 2512 m (B) 2500 m (C) 2200 m (D) Zero

ANS . A

51 The distance traveled by a body is directly proportional to the time, then the body is said to have :

(A) Zero speed (B) Zero velocity (C) Constant speed (D) None of these

ANS . C

52 An athlete runs along a circular track of diameter 28m. The displacement of the athlete after he completes one circle is :

(A) 28 m (B) 88 m (C) 44 m (D) Zero

ANS . D

53 A boy is running along a circular track of radius 7 m. He completes one circle in 10 second. The average velocity of the boy is :

(A) 4.4 m^{-1} (B) 0.7 ms^{-1} (C) Zero (D) 70 ms^{-1}

ANS . C

54 A body is moving with a uniform speed of 5 ms^{-1} in a circular path of radius 5 m. The acceleration of the body is :

(A) 25 ms^{-2} (B) 15 ms^{-2} (C) 5 ms^{-2} (D) 1 ms^{-2}

ANS . C

55. Unit of angular velocity is :

(A) red (B) m/s (C) rad/s^2 (D) rad/s

ANS . D

56 The bodies in circular paths of radii 1 : 2 take same time to compete their circles. The ratio of their linear speeds is :

(A) 1 : 2 (B) 2 : 1 (C) 1 : 3 (D) 3 : 1

ANS . A

57 In a circular path of radius 1m, a mass of 2kg moves with a constant speed 10 ms^{-1}. The angular speed in radian/sec. is :

(A) 5 (B) 10 (C) 15 (D) 20

ANS . B

58 The relation among v, ω and r is :

(A) $\omega = \frac{v}{r}$ (B) $v = \frac{\omega}{r}$ (C) $\omega = \frac{r}{v}$ (D) None of these

ANS . A

59 Uniform circular motion is an example of :

(A) Variable acceleration (B) Constant acceleration

(C) A and B both (D) None of these

AN S . B

60 Rate of change of angular velocity refer to :

(A) angular speed (B) angular displacement

(C) angular acceleration (D) None of these

ANS . C

61. A car travels $\left(\frac{1}{4}\right)^{th}$ of a circle with radius r. The ratio of the distance to its displacement is :

(A) $1;\frac{\pi}{2\sqrt{2}}$ (B) $\frac{\pi}{2\sqrt{2}}:1$ (C) $2\sqrt{2}:\pi$ (D) $\pi 2\sqrt{2}:1$

ANS . B

62. A body goes from A to B with a velocity of 20 m/s and comes back B to A with a velocity of 30m/s. The average velocity of the body during the whole journey is

(A) zero (B) 25m/s (C) 24 m/s (D) none of these

ANS . B

63 If an object covering distances in direst proportion to the square of time lapsed, then the acceleration is

(A) increasing (B) decreasing (C) constant (D) none of these

ANS . C

64 Distance travelled by a freely falling body is proportional to :-

(A) mass of the body (B) square of the acceleration due to gravity

(C) square of the time of fall (D) time of all

ANS . C

65. The rate of change of displacement with time is :-

(A) speed (B) acceleration (C) retardation (D) velocity

ANS . D

66 Which of the following is not vector quantity ?

(A) Retardation (B) Acceleration due to gravity

(C) Average speed (D) Displacement

ANS . C

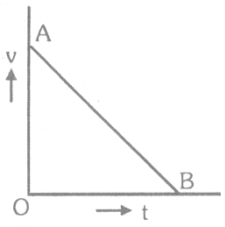
67. If the time-displacement graph of a particle is parallel to the time-axis then velocity of the particle is :-

(A) infinity (B) unity

(C) equal to acceleration of the body (D) zero

ANS . D

68 In the velocity-time graph, AB shows that the body has :-



(A) uniform acceleration

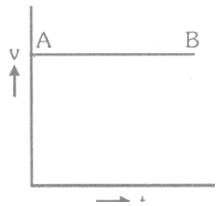
(B) non-uniform retardation

(C) uniform speed

(D) intitial velocity OA and is moving with uniform retardation

ANS . D

69 In th e given velocity-time graph, AB shows that the body has



(A) uniform acceleration

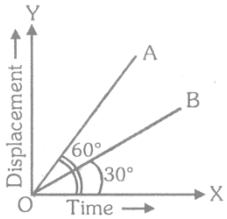
(B) uniform retardation

(C) uniform velocity throughout its motion and has zero initial velocity

(D) non of these

ANS . D

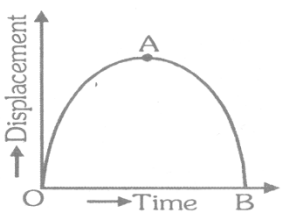
70 If the displacement-time graph for the two particles A and B are straight lines inclined of 30^0 and 60^0 with the time axis. then ratio of the velocities $v_A:v_B$ will be



(A) 1 : 2 (B) 1 : 3

(C) $\sqrt{3}$: 1 (D) 1 : 3

71 In the given figure, velocity of the body at A is



(A) zero (B) unity

(C) maximum (D) infinite

ANS . A

72 The velocity-time graph for a body with nonuniform motion is a

(A) straight line (B) straight line parallel to x-axis

(C) straight line parallel to y-axis (D) curved line

ANS . D

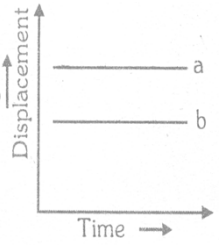
73. Area under a velocity-time graph gives

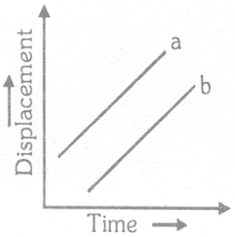
(A) time taken by a moving object (B) distance travelled by a moving object

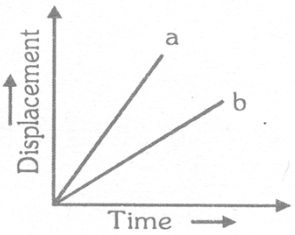
(C) acceleration of moving object (D) retardation of a moving object

ANS . B

74 Which one of the following represents the time-displacement graph of two objects a and b moving with zero relative speed ?

(A) 

(B) 

(C) 

(D) none of these

ANS . B

75 Displacement y (in m) of a body varies with time :

$t = (in\ \sec.) as\ \ y = \frac{-2}{3}t^2 + 16t + 2$

How long does the body take to come to rest ?

(A) 8 sec (B) 10 sec (C) 12 sec (D) 16 sec

ANS . C

76 A particle moves along x-axis in such a way that its coordinate (x) varies with time (t) according to the expression , $x = (2 - 5t + 6t^2)m.$ Then the initial velocity of the particle is

(A) -5 m/sec (B) -3 m/sec (C) 6 m/sec (D) 3 m/sec

ANS . A

77 If a body is thrown up with an initial velocity u and covers a maximum height of h, then h is equal to :-

(A) $\frac{u^2}{2g}$ (B) $\frac{u}{2g}$ (C) $2u^2g$ (D) none of these

ANS . A

78. A body is thrown vertically upwards and rises to a height of 10m. The velocity with which the body was thrown upwards is ($g = 9.8\ m/s^2$)

(A) 16 m/s (B) 15 m/s (C) 14 m/s (D) 12 m/s

ANS . C

79 A truck running along a straight line increases its sped uniformly from 30m/s to 60m/s over a time interval 1 min. The distance travelled during this time interval is

(A) 900 m (B) 1800 m (C) 2700 m (D) 3600 m

ANS . C

80. A car ravels $\frac{1}{3}rd$ distance on a straight road with a velocity of 10km/hr, next $\frac{1}{3}rd$ with velocity 20km/hr and the last $\frac{1}{3}rd$ with velocity 60km/hr. What is the average velocity of the car in the whole journey ?

(A) 4 km/hr (B) 6 km/hr (C) 12 km/hr (D) 18 km/hr

ANS . D

81 A motor ship covers the distance of 300 km between two localities on a river in 10 hrs downstream and in 12 hrs upstream. Find the flow velocity of the river assuming that these velocities are constant .

(A) 2.0 km/hr (B) 2.5 km/hr (C) 3 km/hr (D) 3.5 km/hr

ANS . B

82 Driver of a train travelling at 115 km/hr sees on a same track. 100m infront of him, a slow train travelling in the same direction at 25 km/hr . The least retardation that must be applied to faster train to avoid a collision is

(A) 3.125 m/s^2 (B)3.5 m/s^2 (C) 2.75 m/s^2 (D) 3.0 m/s^2

ANS . A

83. Distance of the moon from the earth is 4×10^8 m. The time taken by a radar signal transmitted from the earth to reach the moon is

(A) 5.2 s (B) 1.3 s (C) 2.6 s (D) 0.70 s

ANS . B

84 A stone is dropped into a well in which the level of water is h, below the top of the well. If v is velocity of sound, then time T after which the splash is heard is equal to

(A) $\frac{2h}{v}$ (B) $\sqrt{\frac{2h}{v}}+\frac{h}{g}$ (C) $\sqrt{\frac{2h}{g}}+\frac{h}{v}$ (D) $\sqrt{\frac{h}{2g}}+\frac{2h}{v}$

ANS . C

85 A stone weighing 2 kg falls from the top of a tower 100 m high and buries itself 2m deep in the sand. The time of penetration

(A) 0.09 sec (B) 0.9 sec (C) 2.1 sec (D) 1.3 sec

ANS . A

86. The velocity of a body at any instant is 10 m/s. After 5 sec. velocity of the particle is 20 m/s. The velocity at 3 seconds before is

(A) 8 m/ sec (B) 4 m/ sec (C) 6 m/ sec (D) 7 m/ sec

ANS . B

87. A body covers 200cm in the first 2 sec . and 220 cm in next 4sec. What is the velocity of the body at the end of 7th second ?

(A) 40 cm/ sec (B) 20 cm/ sec (C) 10 cm/ sec (D) 5 cm/ sec

ANS . C

88 A boat takes 2 hrs. to travel 8km and back in still water lake with water velocity of 4km/hr. then the time taken for going upstream of 8km and coming back is :-

(A) 120 min (B) 160 min (C) 200 min (D) non of these

ANS . B

89 If two bodies of different masses m_1 and m_2 are dropped from different heights h_1 and h_2, then ratio of the times taken by the two to drop through these distances is :-

(A) $h_1 : h_2$ (B) h_2/h_1 (B) $\sqrt{h_1} : \sqrt{h_2}$ (D) $h_1^2 : h_2^2$

ANS . C

90. A ball is dropped on the floor from a height of 10m. If rebounds to a height of 2.5m. If the ball is in contact with the floor for 0.01 sec, then average acceleration during contact is :-

(A) 2100 m/s^2 (B) 1400 m/s^2 (C) 700 m/s^2 (D) 400 m/s^2

ANS . A

91 A stone is thrown vertically upward with an initial velocity u from the top of a tower, reaches the ground with a velocity 3u. The height of the tower is :-

(A) $\frac{3u^2}{g}$ (B) $\frac{4u^2}{g}$ (C) $\frac{6u^2}{g}$ (D) $\frac{9u^2}{g}$

ANS . B

92 If a ball is thrown up with a certain velocity . It attains a height of 40m and comes back to the thrower , then :-

(A) total distance covered by it is 40 m (B) total displacement covered by it is 80 m

(C) total displacement is zero (D) total distance covered by it is zero

ANS . C

93. Acceleration of a body projected upwards with a certain velocity is

(A) 9.8 m/s^2 (B) -9.8 m/s^2 (C) zero (D) insufficient data

ANS . B

94. If a body of mass 0.10kg is moving on circular path of diameter 1.0 m at the rate of 10 revolutions per 31.4 sec, then centripetal force acting on the body (n = 3.14) is

(A) 0.2 Newton (B) 2.0 Newton (C) 0.02 Newton (D) 20.0 Newton

ANS . A

95 The earth's radius is 6400 km. It makes one revolution about its own axis in 24 hrs. The centripetal acceleration of a point on its equator is nearly

(A) 340 cm/s^2 (B) 34 cm/s^2 (C) 3.4 cm/s^2 (D) 0.34 cm/s^2

ANS . C

96. The acceleration of a point on the rim of flywheel 1m in diameter. If it makes 1200 revolutions per minute is

(A) $8\pi^2\ m/s^2$ (B) $80\pi^2\ m/s^2$ (C) $800\pi^2\ m/s^2$ (D) none of these

ANS . C

97 A phonograph record on turn table rotates at 30 rpm. The linear speed of a point on the record at the needle at the beginning of the recording when it is at a distance of 14 cm from the centre is

(A) 22 cm/sec (B) 44 cm/sec (C) 48 cm/sec (D) 52 cm/sec

ANS . B

98 The relationship between average speed, time and distance is

(A) Average speed = distance × time (B) $\text{Average speed} = \frac{\text{total distance}}{\textit{total time}}$

(C) Time = average speed / distance (D) Distance = average speed × time

ANS . B

99 A body moving along a circular path has

(A) both radial speed (B) constant velocity

(C) no radial acceleration (D) no tangential velocity

ANS . A

100 Speed of a body describing its motion is

(A) direction (B) state (C) type (D) rapidity

ANS . D