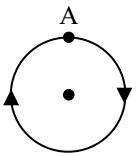
EXERCISE # 1

Theoretical Questions

Q.1 Selvi goes for a morning walk in the park near her house. She starts from point 'A' walks a circular path or radius 7 meter and returns to same point 'A'.

(i) What is her displacement

(ii) Find the distance she has walked



Q.2 Classify the following as motion along a straight line, circular or oscillatory motion:

(i) Motion of your hands while running.

(ii) Motion of a horse pulling a cart on a straight road.

(iii) Motion of a child in a merry-go-round.

(iv) Motion of a child on a see-saw.

(v) Motion of the hammer of an electric bell.

(vi) Motion of a train on a straight bridge.

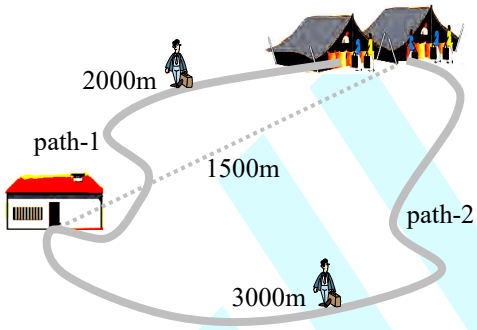
Q.3 A simple pendulum takes 32 s to complete 20 oscillations. What is the time period of the pendulum?

Q.4 The distance between two stations is 240 km. A train takes 4 hours to cover this distance. Calculate the speed of the train.

Q.5 Mani and Shankar walk from their home to the market in 20 minutes, Mani takes path 1 while Shankar takes path 2.

(i) What do you infer about their speeds ?

(ii) Who has the greater velocity? Why ?



Q.6 Which of the following are not correct?

(i) The basic unit of time is second.

(ii) Every object moves with a constant speed.

(iii) Distances between two cities are measured in kilometers.

(iv) The time period of a given pendulum is not constant.

(v) The speed of a train is expressed in m/h.

Q.7 The odometer of a car reads 57321.0 km when the clock shows the time 08:30 AM. What is the distance moved by the car, if at 08:50 AM, the odometer reading has changed to 57336.0 km? Calculate the speed of the car in km/min during this time. Express the speed in km/h also.

Q.8 Salma takes 15 minutes from her house to reach her school on a bicycle. If the bicycle has a speed of 2 m/s, calculate the distance between her house and the school.

Q.9 Show the shape of the distance-time graph for the motion in the following cases:

(i) A car moving with a constant speed.

(ii) A car parked on a side road.

Q.10 Which of the following relations is correct?

(i) Speed = Distance × Time

(ii) $\text{Speed} = \frac{\text{Distance}}{\text{Time}}$

(iii) $\text{Speed} = \frac{\text{Time}}{\text{Distance}}$

(iv) $\text{Speed} = \frac{1}{\text{Distance} \times \text{Time}}$

Q.11 A car moves with a speed of 40 km/h for 15 minutes and then with a speed of 60 km/h for the next 15 minutes. The total distance covered by the car is:

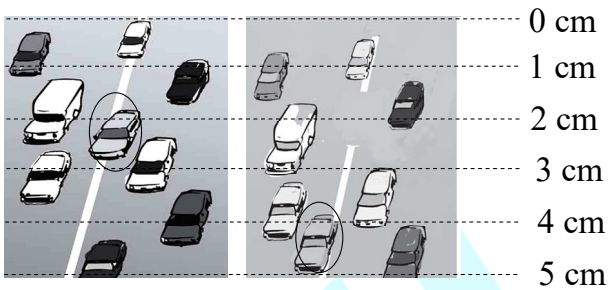
(i) 100 km (ii) 25 km

(iii) 15 km (iv) 10 km

Q.12 Raju is travelling in a train moving at a speed of 72 km/h. In order to stop the train, the driver decreases the speed. The rate of decrease in speed of the moving body is known as deceleration.

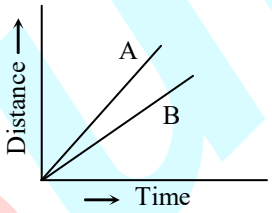
If the declaration of the train is $10 m/s^2$, how much time will it take to come to a stop?

Q.13 Suppose the two photographs, shown in figure 1 and figure 2 had been taken at an interval of 50 seconds. If a distance of 100 metres is shown by 1 cm in these photographs, calculate the speed of the blue car.



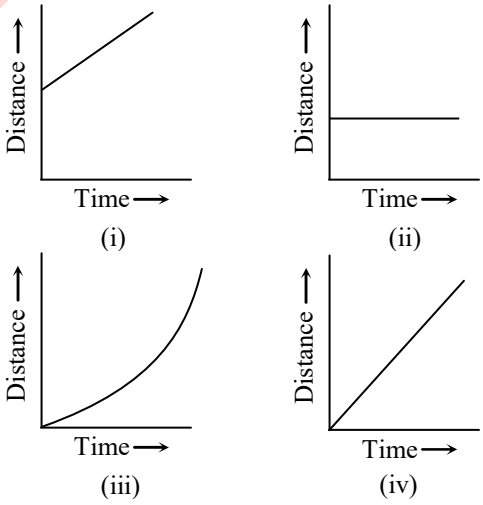
figur 1 figrue 2

Q.14 Figure shows the distance-time graph for the motion of two vehicles A and B. Which one of them is moving faster?



Distance time graph for the motion of two cars

Q.15 Which of the following distance-time graphs shows a truck moving with speed which is not constant?

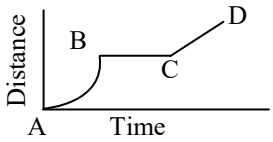


Q.16 The given graph depicts the motion of a bus. Interpret the motion of the bus.

(a) AB represents .....

(b) BC represents .....

(c) CD represents .....



EXERCISE # 2

Single Correct Answer type Questions

Q.1 A boy 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

Q.2 In case of a moving body-
(A) Displacement > Distance
(B) Displacement < Distance
(C) Displacement ≥ Distance
(D) Displacement ≤ Distance

Q.3 A distance is always -
(A) Shortest length between two points
(B) path covered by and object between two points
(C) product of length and time
(D) none of these

Q.4 Which of the following is not characteristic of displacement ?
(A) It is always positive
(B) It has both magnitude and direction
(C) It can be zero
(D) Its magnitude is less than or equal to the actual path length of the object

Q.5 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

Q.6 A distance-
(A) Is always positive
(B) Is always negative
(C) May be positive as well as negative
(D) Is neither positive nor negative

Q.7 A particle is travelling 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

Q.8 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) 7km

Q.9 A car acceleration uniformaly from 18 km/h to 36 km/h in 5s. The acceleration in ms^{-2} is-
(A) 1 (B) 2
(C) 3 (D) 4

Q.10 The brakes applied to a car produce a negative acceleration of $6ms^{-2}$. If the car stops after 2 seconds, the initial velocity of the car is-
(A) $6ms^{-1}$ (B) 12 ms^{-1}
(C) 24 ms^{-1} (D) Zero

Q.11 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}

Q.12 In 12 minutes a car whose speed is 35 kmh^{-1} travels a distance of-
(A) 7 km (B) 3.5 km
(C) 14 km (D) 28 km

Q.13 A body is moving along a straight line at 20 ms^{-1} undergoes an acceleration of 4ms^{-2}. After 2 s. its speed will be-
(A) 8 ms^{-1} (B) 12 ms^{-1}
(C) 16 ms^{-1} (D) 28 ms^{-1}

Q.14 A car increases its speed from 36 km/h to 54 km/h in 10s. Its acceleration is-
(A) 30 ms^{-2} (B) 3 ms^{-2}
(C) 18 ms^{-2} (D) 0.5 ms^{-2}

Q.15 The device used to measure speed of a vehicle is -
(A) Odometer (B) Speedometer
(C) Thermometer (D) Voltmeter

Q.16 The duration of the day from the moment the sun is over head today to the moment the Sun is overhead tomorrow is determined by-
(A) the rotation of Earth around the sun
(B) the revolution of Earth on its axis
(C) the inclination of the axis of rotation of the Earth from its plane of revolution
(D) The rotation and revolution of Earth around the sun.

Q.17 The increase in the speed of a car is proportional to the additional petrol put into the engine. Is it possible to accelerate a car without putting more petrol or less petrol into the engine ?
(A) Yet it is possible, if we add additional peterol
(B) Not possible, the statement is wrong
(C) May be possible if there is a leakage in the car
(D) Yes it is possible provided the car moves in circular path.

ANSWER KEY

EXERCISE-2

Ques	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans	A	D	B	A	B	A	B	C	A	B	C	A	D	D	B
Ques	16	17													
Ans	B	D													