



## **PHYSICS**

# **BOOKS - NCERT PHYSICS (ENGLISH)**

# MOTION

**Multiple Choice Questions** 

1. A particle is moving in a circular path of radius

r. The displacement after half a circle would be

A. zero

B. $\pi$ r

C. 2r

D.  $2\pi$  r

**Answer:** 

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2. A body is thrown vertically upward with velocity u, the greatest height h to which it will rise is,

A. u/g

 $\mathsf{B.}\,u^2\,/\,2g$ 

 $\mathsf{C}.\, u^2\,/\,g$ 

D. u/2g

**Answer:** 

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3. The numerical ratio of displacement to the

distance covered is always

A. always less than 1

B. always equal to 1

C. always more than 1

D. equal or less than 1

#### **Answer:**



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4. If the displacement of an object is proportional

to square of time, then the object moves with

A. uniform velocity

B. uniform acceleration

C. increasing acceleration

D. decreasing acceleration

#### Answer:



5. From the given v-t graph (see figure), it can be

inferred that the object is



Fig. 8.1

A. in uniform motion

B. at rest

C. in non-uniform motion

D. moving with uniform acceleration

#### **Answer:**



**6.** Suppose a boy is enjoying a ride on a merry-goround which is moving with a constant speed of  $10ms^{-1}$ . It implies that the boy is A. at rest

B. moving with no acceleration

C. in accelerated motion

D. moving with uniform velocity

#### **Answer:**

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7. Area under a=(v-t) graph represents a

physical quantity which has the unit

B.m

 $C. m^3$ 

D.  $ms^{-1}$ 

**Answer:** 

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**8.** Four cars A, B and C are moving on a levelled

road. Their distance versus time graphs are

shown in Fig. Choose the correct statement



- A. Car A is faster than car D
- B. Car B is the slowest
- C. Car D is faster than car C
- D. Car C is the slowest



**9.** Which of the following figures represents uniform motion of a moving object correctly ?











**10.** Slope of a velocity – time graph gives

A. the distance

B. the displacement

C. the acceleration

D. the speed

. . . . . . .

#### Answer:

**11.** In which of the following cases of motions, the distance moved and the magnitude of displacement are equal ?

A. If the car is moving on straight road

B. If the car is moving in circular path

C. The pendulum is moving to and fro

D. The earth is revolving around the sun

#### Answer:

### Short Answer Type Questions

**1.** The displacement of a moving object in a given interval of a time is zero. Would the distance travelled by the object also be zero ? Justify your answer ?



**2.** How will the equations of motion for an object

moving with a uniform velocity change ?



**3.** A girl walks along a straight path to drop a letter in the letterbox and comes back to her initial position. Her displacement-time graph is shown in Figure. Plot a velocity-time graph for the same.





**4.** A car starts from rest and moves along the xaxis with constant acceleration  $5ms^{-2}$  for 8 seconds. If it then continues with constant velocity, what distance will the car cover in 12 seconds since it started from the rest ?



5. A motorcyclist drives from A to B with a uniform speed of  $30 kmh^{-1}$  and returns back

with a speed of  $20 km h^{-1}$ . Find its average

#### speed.



**6.** The velocity-time graph shows the motion of a cyclist. Find (i) its acceleration (ii) its velocity and (iii) the distance covered by the cyclist in 15

### seconds.





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**7.** Draw a velocity versus time graph of a stone thrown vertically upwards and then coming downwards after attaining the maximum height .

. . .



### Long Answer Type Questions

**1.** An object is dropped from rest at a height of 150m and simultanously another object is dropped from rest at a height 100m. What is the difference in their height after 2s if both the objects drop with same acceleration ? How does the difference in height vary with time ?



**2.** An object starting from rest travels 20m in first

2s and 160m in next 4s. What will be the velocity

after 7s from the start.

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3. Using follwing data, draw time-displacement
graph for a moving object.
Time (s)
0
2
4
6
8
10
12
14
16
Displacement (m)
0
2
4
4
6
4
2
0

for next 4 s and for last 6 s.

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**4.** An electron moving with a velocity of  $5 imes 10^4 m s^{-1}$  enters into a uniform electirc field and acquires a uniform acceleration of  $10^4 m s^{-2}$ in the direction of its initial motion. (i) Calculate the time in which the electron would acquire a velocity double of its initial velocity. (ii) How much distance the electron would cover in this time?



**5.** Obtain a relation for the distance travelled by an object moving with a unifrom acceleration in the interval between 4th and 5th seconds.

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6. Two stones are thrown vertically upwards simultaneously with their initial velocities  $u_1$  and  $u_2$  respectively. Prove that the heights reached by them would be in the ratio of  $u_1^2: u_2^2$ (Assume upward acceleration is -g and downward acceleration to be +g).

