

**NEET PHYSICS**

*Topic: One D Motion*

Q.1 A car covers half of the distance with speed 60 km/hr and rest of the half with speed 30 km/hr. The average speed of the car is -

- (1) 45 km/hr      (2) 40 km/hr      (3) 20.0 km/hr      (4) 50 km/hr

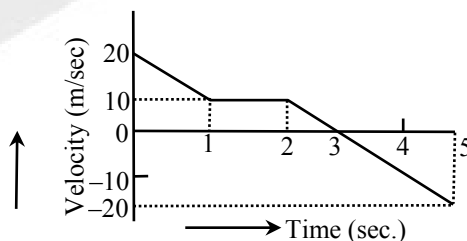
Q.2 A motor car covers  $1/3^{\text{rd}}$  part of total distance with  $v_1 = 10$  km/hr, second  $1/3^{\text{rd}}$  part with  $v_2 = 20$  km/hr and rest  $1/3^{\text{rd}}$  part with  $v_3 = 60$  km/hr. What is the average speed of the car?

- (1) 18 km/hr      (2) 45 km/hr  
 (3) 6 km/hr      (4) 22.5 km/hr

Q.3 A car travels first  $1/3$  of the distance AB at 30 km/hr, next  $1/3$  of the distance at 40 km/hr, last  $1/3$  of the distance at 24 km/hr. Its average speed in km/hr for the whole journey is -

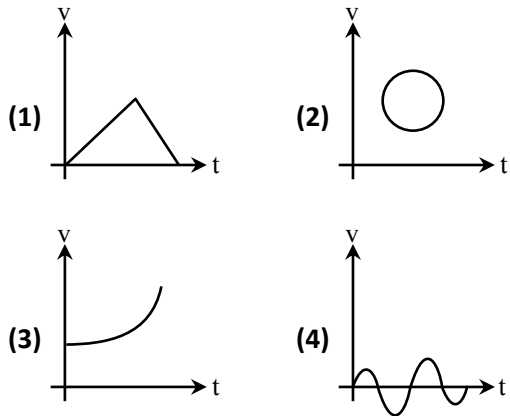
- (1) 40      (2) 35  
 (3) 30      (4) 28

Q.4 From figure the distance travelled in 5 second is -

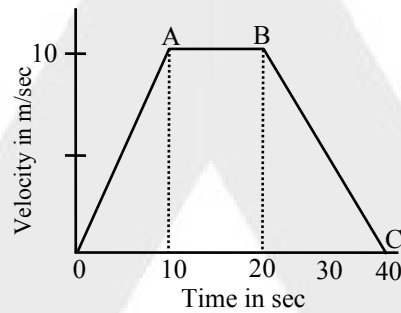


- (1) 10m      (2) 30m  
 (3) 50m      (4) zero

Q.5 Which one of the following curves do not represent motion in one dimension-

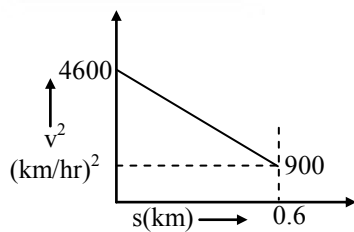


Q.6 The adjoining curve represents the velocity-time graph of a particle, its acceleration values along OA, AB and BC in metre/sec<sup>2</sup> are respectively-



- (1) 1, 0, -0.5
- (2) 1, 0, 0.5
- (3) 1, 1, 0.5
- (4) 1, 0.5, 0

Q.7 A graph between the square of the velocity of a particle and the distance (s) moved is shown in figure. The acceleration of the particle in kilometers per hour square is-



- (1) 2250
- (2) 3084
- (3) -2250
- (4) -3084

- Q.8 A person walks up a stalled escalator in 90 sec. When standing on the same escalator now moving, he is carried in 60 sec. The time he would take to walk up the moving escalator will be-
- (1) 27 s                      (2) 72 s  
(3) 18 s                      (4) 36 s
- Q.9 Position of a particle moving along x-axis is given by  $x = 2 + 8t - 4t^2$ . The distance travelled by the particle from  $t = 0$  to  $t = 2$  is-
- (1) 0                          (2) 8  
(3) 12                        (4) 16
- Q.10 A train moves in north direction with a speed of 54 km/hr and a monkey running on the roof of the train, against its motion with a velocity of 18 km/hr with respect to the train then the velocity of monkey as observed by a man standing on the ground-
- (1) 5 m/s due south    (2) 25 m/s due south  
(3) 10 m/s due south    (4) 10 m/s due north
- Q.11 A bird is flying with a speed of 40 km/hr in the north direction. A train is moving with a speed of 40 km/hr in the west direction. A passenger sitting in the train will see the bird moving with velocity-
- (1) 40 km/hr in NE direction  
(2)  $40\sqrt{2}$  km/hr in NE direction  
(3) 40 km/hr in NW direction  
(4)  $40\sqrt{2}$  km/hr in NW direction
- Q.12 A man is walking on a road with a velocity 3km/hr. Suddenly rain starts falling. The velocity of rain is 10 km/hr in vertically downward direction the relative velocity of the rain with respect to man is-
- (1)  $\sqrt{13}$  km/hr              (2)  $\sqrt{7}$  km/hr  
(3)  $\sqrt{109}$  km/hr              (4) 13 km/hr
- Q.13 The deceleration experienced by a moving motor boat, after its engine is cut off is given by  $\frac{dv}{dt} = -kv^3$ , where k is constant. If  $v_0$  is the magnitude of the velocity at cut off, the magnitude of the velocity at a time t after the cut-off is-
- (1)  $\frac{v_0}{2}$                         (2)  $v_0$

(3)  $v_0 e^{-k/t}$

(4)  $\frac{v_0}{\sqrt{(2v_0^2 kt + 1)}}$

Q.14 The displacement of a particle is given by

$$y = a + bt + ct^2 - dt^4$$

The initial velocity and acceleration are respectively-

(1)  $b, -4d$

(2)  $-b, 2c$

(3)  $b, 2c$

(4)  $2c, -4d$

Q.15 The displacement of a particle is represented by the following equation :

$$s = 3t^3 + 7t^2 + 5t + 8$$

where  $s$  is in metre and  $t$  in second. The acceleration of the particle at  $t = 1$  is-

(1)  $14 \text{ m/s}^2$

(2)  $18 \text{ m/s}^2$

(3)  $32 \text{ m/s}^2$

(4) zero

Q.16 A boat is sailing at a velocity  $3\hat{i} + 4\hat{j}$  with respect to ground and water in river is flowing with a velocity  $-3\hat{i} - 4\hat{j}$ . Relative velocity of the boat with respect to water is-

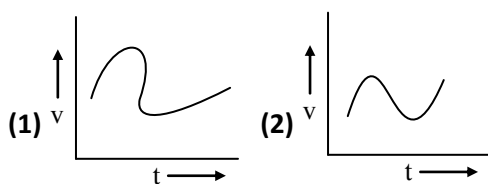
(1)  $8\hat{j}$

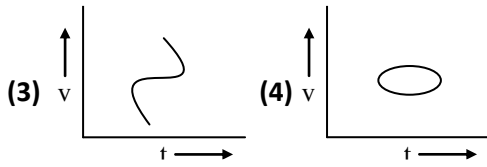
(2)  $5\sqrt{2}$

(3)  $6\hat{i} + 8\hat{j}$

(4)  $-6\hat{i} - 8\hat{j}$

Q.17 Which of the following velocity-time graph shows a realistic situation for a body in motion ?





**Q.18** If a ball is thrown vertically upwards with speed  $u$ , the distance covered during the last 't' seconds of its ascent is-

- (1)  $ut$                       (2)  $\frac{1}{2}gt^2$   
 (3)  $ut - \frac{1}{2}gt^2$               (4)  $(u + gt)t$

**Q.19** If the distance covered by a particle is given by the relation  $x = at^2$ . The particle is moving with-

- (1) constant acceleration  
 (2) zero acceleration  
 (3) variable acceleration  
 (4) none of these

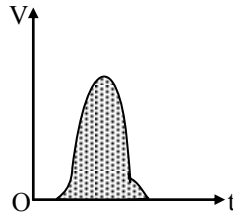
**Q. 20** Starting from rest, the acceleration of a particle is  $a = 2(t - 1)$ . The velocity of the particle at  $t = 5s$  is-

- (1) 15 m/s                      (2) 25 m/s  
 (3) 5 m/s                        (4) None of these

**Q.21** A 100 m long train crosses a man travelling at 5 km/hr, in opposite direction, in 7.2 seconds then the velocity of train is-

- (1) 40 km/hr                      (2) 25 km/hr  
 (3) 20 km/hr                      (4) 45 km/hr

Q.22 Figure below shows the velocity time graph of a one dimensional motion. Which of the following characteristic of the particle is represented by the shaded area ?



- (1) Speed                      (2) Distance covered  
(3) Acceleration            (4) Momentum

Q.23 In a straight line motion of the distance travelled is proportional to the square root of the time taken. The acceleration of the particle is proportional to-

- (1)  $v$                             (2)  $v^2$   
(3)  $v^3$                             (4)  $\sqrt{v}$

Q.24 A body starts from rest is moving under a constant acceleration up to 20 sec. If it moves  $S_1$  distance in first 10 sec., and  $S_2$  distance in next 10 sec then  $S_2$  will be equal to-

- (1)  $S_1$                             (2)  $2S_1$   
(3)  $3S_1$                             (4)  $4S_1$

These questions of two statements each, printed as Assertion and Reason. While answering these Questions you are required to choose any one of the following four responses.

- (A) If both Assertion & Reason are true & the Reason is a correct explanation of the Assertion.  
(B) If both Assertion and Reason are true but Reason is not a correct explanation of the Assertion.  
(C) If Assertion is true but the Reason is false.  
(D) If Assertion & Reason both are false.

Q.25 Assertion : A body can have acceleration even if its velocity is zero at a given instant of time.

Reason : A body is momentarily at rest when it reverses its direction of motion.

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

Q.26 Assertion : If the displacement of the body is zero, the distance covered by it may not be zero.

Reason : The displacement depends only on end points ; the distance (path length) depends on the actual path.

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

Q.27 Assertion : The magnitude of average velocity of the object over an interval of time is either smaller than or equal to the average speed of the object over the same interval.

Reason : Path length (distance) is either equal or greater than the magnitude of displacement.

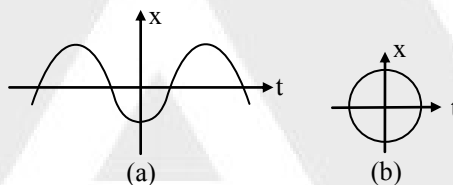
(1) A (2) B (3) C (4) D

Q.28 Assertion : The distance and displacement both are equal when the particle moves in a straight line.

Reason : Because in straight line motion distance travelled = | displacement |.

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

Q.29 Assertion : Graph (a) represent one dimensional motion of a particle. While graph (b) can not represent 1 - D motion of the particle.



Reason : In 1 - D motion, there is only one value of displacement at one particular time.

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

Q.30 Assertion : In general | Displacement |  $\leq$  distance.

Reason : The instantaneous speed is equal to the magnitude of the instantaneous velocity.

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

## ANSWER KEY

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<b>Que.</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>Ans.</b>	2	1	3	3	2	1	4	4	2	4
<b>Que.</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>
<b>Ans.</b>	2	3	4	3	3	3	2	2	1	1
<b>Que.</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>
<b>Ans.</b>	4	2	3	3	1	1	1	4	1	2

