

(EPC03-0001H)

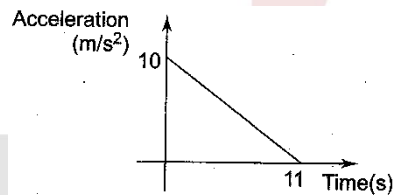
- A car moving on a straight road covers one third of the distance with 20 km/h and the rest with 60 km/h. The average speed is
  - A) 40 km/h
  - B) 80 km/h
  - C)  $46\frac{2}{3}$  km/h
  - D) 36 km/h

(EPC03-0002E)

- If the displacement of a particle is directly proportional to the square of time. Then particle is moving with
  - A) Uniform acceleration
  - B) Variable acceleration
  - C) Uniform velocity
  - D) Variable acceleration but uniform velocity

(EPC03-0003E)

- A particle starts from rest. Its acceleration ( $a$ ) versus time ( $t$ ) is as shown in Figure. The maximum speed of the particle will be:



- A) 110 m/s
- B) 55 m/s
- C) 550 m/s
- D) 660 m/s

(EPC03-0004E)

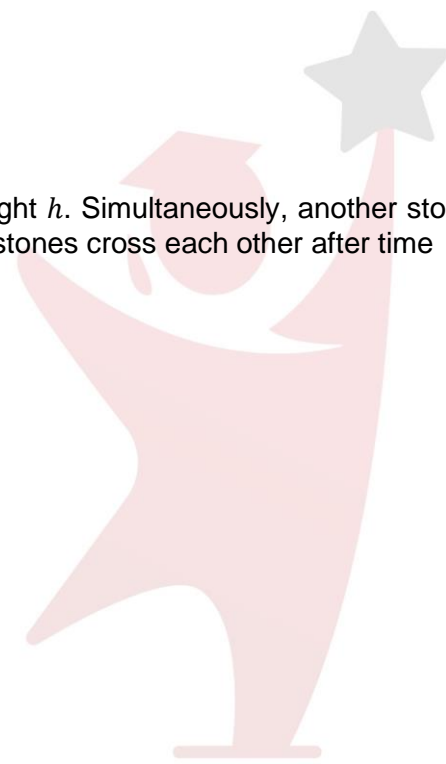
- When two bodies move towards each other with constant speeds, the distance between them decreases at the rate of 6 m/s. If they move in the same direction with the same speeds, the distance between them increases at the rate of 4 m/s. Then their speeds are
  - A) 5 m/s and 1 m/s
  - B) 3 m/s and 3 m/s
  - C) 4 m/s and 2 m/s
  - D) none of the above

(EPC03-0005M)

- A stone is dropped from a height  $h$ . Simultaneously, another stone is thrown up from the ground which reaches a height  $4h$ . The two stones cross each other after time
  - A)  $\sqrt{\frac{h}{2g}}$
  - B)  $\sqrt{\frac{h}{8g}}$
  - C)  $\sqrt{8hg}$
  - D)  $\sqrt{2hg}$

(EPC03-0006M)

- The speed with which a ball should be thrown down, so that it bounces 10 m higher than its original level, assuming no energy loss in striking the ground, is
  - A) 10 m/s
  - B) 14 m/s
  - C) 20 m/s
  - D) None of the above



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(EPC03-0008E)

- A stone, thrown vertically upwards from the top of a tower with an initial velocity  $u$ , 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)  $\frac{9u^2}{g}$

(EPC03-0010E)

- A body, released from the top of a tower of height  $h$ , takes time  $t$  to reach the ground. At time  $t/2$  its height from the ground was

- A)  $h/4$
- B)  $h/3$
- C)  $h/2$
- D)  $3h/4$

(EPC03-0011H)

- A ball is dropped from a great height. One second later, another ball is dropped from the same height. The distance between them 3 s after the first ball is dropped is ( $g = 10 \text{ m/s}^2$ )

- A) 25 m
- B) 20 m
- C) 50 m
- D) 10 m

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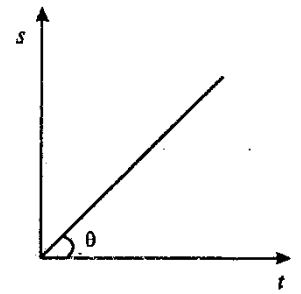
(EPC03-0012E)

- A car travels for a certain time. Its speed during the first half time is  $v_1$  and that during the second half time is  $v_2$ . Find the average speed.

- A)  $v_1 + v_2$   
 B)  $\frac{v_1 + v_2}{2}$   
 C)  $\frac{2}{v_1 + v_2}$   
 D)  $\frac{2v_1v_2}{v_1 + v_2}$

(EPC03-0013E)

- The displacement-time graphs for two particles A and B are straight lines inclined at  $60^\circ$  and  $30^\circ$  to the time axis. Find the ratio of their speeds.



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

(EPC03-0015E)

- A ball is projected vertically upwards from the ground with a velocity of 20 m/s. How long will it take to reach the highest point? (Take  $g = 10 \text{ m/s}^2$ )

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

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(EPC03-0016M)

- Two masses, each equal to  $m$ , are attached to one another by a massless string passing over a smooth pulley. The tension in the string is
  - A)  $mg$
  - B)  $2mg$
  - C)  $mg/2$
  - D) zero

(EPC03-0017E)

- A ball of mass  $0.1 \text{ kg}$  strikes a wall normally with a speed of  $30 \text{ m/s}$  and rebounds with a speed of  $20 \text{ m/s}$ . The impulse of the force exerted by the wall on the ball is
  - A)  $1 \text{ NS}$
  - B)  $5 \text{ NS}$
  - C)  $2 \text{ NS}$
  - D)  $3 \text{ NS}$

(EPC03-0021M)

- A  $6 \text{ kg}$  box sled is travelling on ice at a speed of  $9 \text{ m/s}$  when a  $12 \text{ kg}$  packet is dropped into it vertically. The velocity of the sled will now be
  - A)  $3 \text{ m/s}$
  - B)  $4 \text{ m/s}$
  - C)  $6 \text{ m/s}$
  - D)  $8 \text{ m/s}$

Answer key	
1	D
2	A
3	B
4	A
5	B
6	B
7	B
8	A
9	D
10	A
11	B
12	B
13	C
14	B
15	A