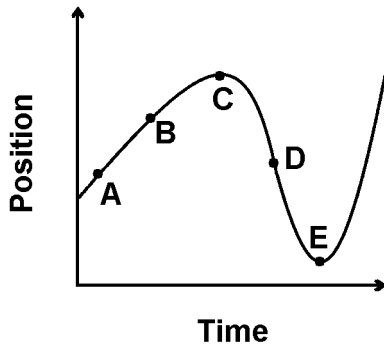


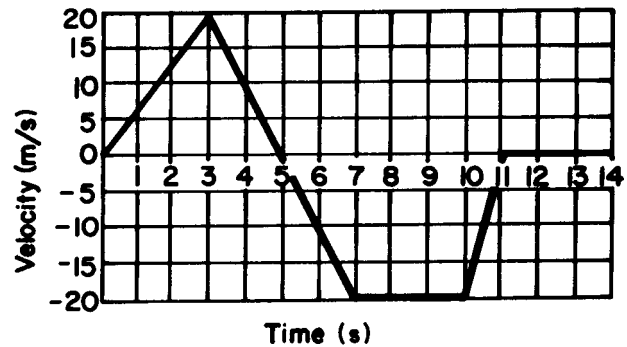
Base your answers to questions 1 through 3 on the position versus time graph below which shows the motion of a particle on a straight line.



- At which of the labeled points is the magnitude of the velocity greatest?
 (A) A
 (B) B
 (C) C
 (D) D
 (E) E
- At which of the labeled points is the velocity zero?
 (A) B only
 (B) E only
 (C) D only
 (D) C and D
 (E) C and E

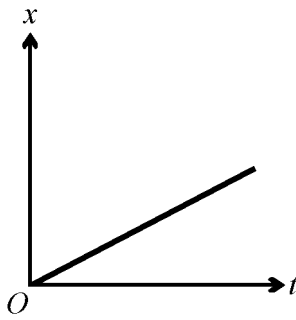
- At which of the labeled points is the magnitude of the acceleration greatest?
 (A) A
 (B) B
 (C) C
 (D) D
 (E) E

Base your answers to questions 4 and 5 on the graph below which shows the velocity *versus* time for an object moving in a straight line.



- At what time after $t = 0$ does the object again pass through its initial position?
 (A) 3 s
 (B) 5 s
 (C) 7 s
 (D) 9 s
 (E) 10 s
- During which interval does the particle have the same average acceleration as $12 \text{ s} < t < 14 \text{ s}$?
 (A) $9 \text{ s} < t < 11 \text{ s}$
 (B) $2 \text{ s} < t < 5 \text{ s}$
 (C) $0 \text{ s} < t < 3 \text{ s}$
 (D) $3 \text{ s} < t < 7 \text{ s}$
 (E) $5 \text{ s} < t < 11 \text{ s}$

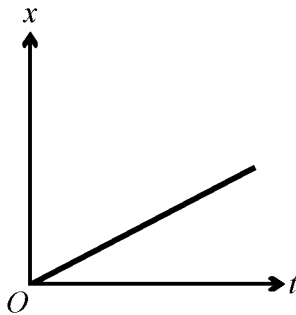
6.



The displacement x of an object moving in one dimension is shown above as a function of time t . The acceleration of this object must be

- (A) zero
- (B) constant and positive
- (C) constant and negative
- (D) increasing
- (E) decreasing

7.



The displacement x of an object moving in one dimension is shown above as a function of time t . The velocity of this object must be

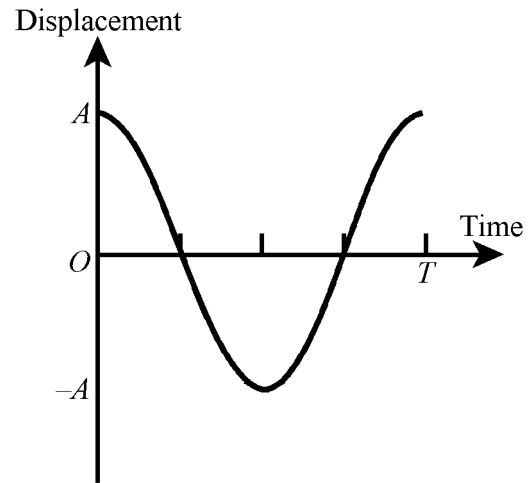
- (A) zero
- (B) constant and positive
- (C) constant and negative
- (D) increasing
- (E) decreasing

8. An object undergoes constant acceleration.

Initially at rest, the object travels 5 m in the first second. What additional distance will be covered in the next second?

- (A) 5 m
- (B) 10 m
- (C) 15 m
- (D) 20 m
- (E) 25 m

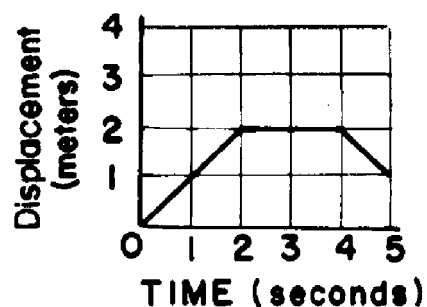
9.



A simple pendulum oscillates with amplitude A and period T , as represented on the graph above. The nature of the velocity v and acceleration a of the object at time $\frac{T}{2}$ is best represented by which of the following?

- (A) $v < 0$, $a < 0$
- (B) $v < 0$, $a = 0$
- (C) $v < 0$, $a > 0$
- (D) $v = 0$, $a > 0$
- (E) $v = 0$, $a = 0$

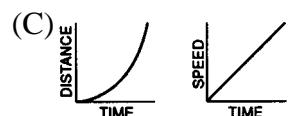
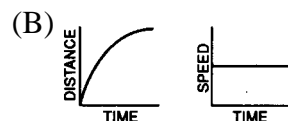
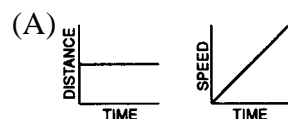
10.



The graph above represents the motion of an object traveling in a straight line as a function of time. What is the average speed of the object during the first four seconds?

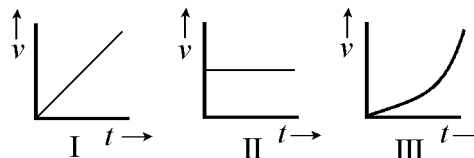
- (A) 0 m/s
- (B) 0.2 m/s
- (C) 0.5 m/s
- (D) 1 m/s
- (E) 2 m/s

11. Which pair of graphs represents the same 1-dimensional motion?



(E) none of the above

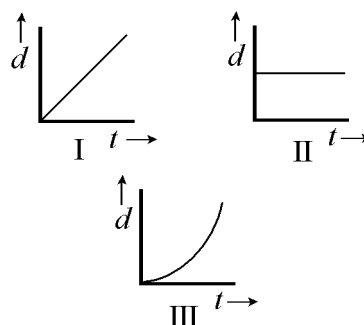
12. Base your answer to the following question on the graphs below, which plot the velocity of a particle with respect to time.



In which of these cases is the rate of change of the particle's displacement constant?

- (A) I only
- (B) II only
- (C) III only
- (D) I and II only
- (E) None of these

Base your answers to questions 13 and 14 on the graphs below, which plot the displacement of a particle with respect to time.



13. In which of the following is the rate of change of the particle's momentum zero?

- (A) I only
- (B) II only
- (C) I and II only
- (D) I, II, and III
- (E) None of these

14. In which of the following is the particle's acceleration constant?

- (A) I only
- (B) II only
- (C) I and II only
- (D) I, II, and III
- (E) None of these

Answer Key
[New Exam]

1. D

2. E

3. E

4. D

5. E

6. A

7. B

8. C

9. D

10. C

11. C

12. B

13. C

14. D

Name _____

Class _____

Date _____

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____