Name: _____

Kinematics Practice Test

Section A. Multiple Choice Questions (10 marks)

Directions: Place the letter of the answer that is <u>most correct</u> on the line provided.

1. Which of the following statements about displacement is false? _k_
   (a) The arrow drawn from the initial position to the final position of an object represents its displacement vector.
   (b) The straight-line distance between the initial position and the final position gives the magnitude of the displacement.
   (c) The distance travelled by the object when going from the initial position to the final position gives the magnitude of its displacement.
   (d) Displacement is a vector quantity, and its SI unit is the metre.   Answer:_____

2. Which of the following quantities is defined as the displacement per unit time? _k_
   (a) distance covered
   (b) average velocity
   (c) instantaneous velocity
   (d) average speed   Answer:_____

3. If a tangent is drawn at a point on a velocity-time graph, the slope of the tangent gives _k_
   (a) distance covered
   (b) average velocity
   (c) instantaneous velocity
   (d) average speed   Answer:_____

4. An object will slow down only if _k_
   (a) its velocity and acceleration are both negative
   (b) its velocity is positive, and its acceleration is negative
   (c) its velocity is negative, and its acceleration is positive
   (d) either (b) or (c) is true   Answer:_____

5. A car travels at a speed of 50 km/h for 0.50 h and then travels 100 km/h for 2.0 h. What is this car's average speed? _t_
   (a) 90 km/h
   (b) 60 km/h
   (c) 75 km/h
   (d) 20 km/h   Answer:_____

continued ▶

6. A ball is thrown upward with a velocity of 4.5 m/s. Its speed and the magnitude of its acceleration at the highest point (k)
   (a) are both equal to zero
   (b) are given by 9.81 m/s and 0 m/s^2, respectively
   (c) are given by 0 m/s and 9.81 m/s^2, respectively
   (d) cannot be predicted unless the height is known   Answer:_____

7. Which of the following statements about a projectile is not true? Assume that the air resistance is negligible. (k)
   (a) Its motion is in two dimensions.
   (b) The only acceleration is in the vertical direction.
   (c) Its velocity in the horizontal direction remains the same throughout the flight.
   (d) The velocity at the highest point of its trajectory is zero.   Answer:_____

8. A golfer hits a golf ball and it flies with an initial speed of 60 m/s at an angle of 30°. The horizontal and vertical components of the velocity are

	Horizontal	**Vertical**
(a)	52 m/s	30 m/s
(b)	30 m/s	52 m/s
(c)	52 m/s	−30 m/s
(d)	−30 m/s	52 m/s

   Answer:_____

9. The initial velocity of projectiles A and B have the same direction, but the magnitude of the velocity of A is 3 times that of B. The range of projectile A will be (t)
   (a) three times the range of projectile B
   (b) one-third of the range of projectile B
   (c) nine times the range of projectile B
   (d) one-ninth of the range of projectile B   Answer:_____

10. If the launch angle of a projectile is decreased, (k)
    (a) the maximum height decreases
    (b) the time of flight decreases
    (c) the time of flight increases
    (d) both (a) and (b) are always true   Answer:_____

continued ▶

Section B. Matching Questions (10 marks)

Directions: Place the letter of the choice in Column 2 next to the vocabulary term in Column 1.   *k*

Column 1 Vocabulary Terms		Column 2 Choices
11. position		**A.** object falling only under the influence of gravity
12. speed		**B.** quantity that has only magnitude and unit
13. dropped		**C.** an object moving with two-dimensional motion
14. free fall		**D.** motion with constant velocity
15. scalar		**E.** distance per unit time
16. vector		**F.** displacement per unit time
17. projectile		**G.** free fall with initial velocity equal to zero
18. uniform motion		**H.** co-ordinates of where an object is at a certain time
19. average velocity		**I.** magnitude of velocity is increasing
20. speeding up		**J.** quantity that has magnitude, direction, and unit

Section C. Short Answer Questions (30 marks)

Directions: Answer the following questions in complete sentences.

21. What is the difference between speed and velocity?   *k*

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continued ▶

22. When are the distance and the magnitude of displacement equal, and when are they different? t

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23. Find the average acceleration, in m/s^2, of an object that starts from rest and reaches a speed of 50 km/h in 5.0 s. a

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24. A person standing at the top of a tall building drops a ball. After 1.00 s, he drops another ball. What is the difference between the velocities of the two balls? t

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25. Will it take more time for an object to fall a given distance on the Moon or on Earth? Explain. *c*

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26. Find the vector whose components are 6.5 m/s vertical and 4.5 m/s horizontal. *t*

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27. Compare the ranges of projectiles launched with the same initial velocity on Earth and on the Moon. The acceleration due to gravity on the Moon is about one-sixth that on Earth. Assume negligible air resistance. *a*

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28. What is the ratio of the displacements of two objects, A and B, if both start from rest with the same constant acceleration, but A travels for double the time that B does? *t*

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29. Compare the directions of the velocity vector and acceleration vector of a projectile at its maximum height. *k*

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30. Find the acceleration of an object that takes 10 s to change from travelling at a speed of 45 m/s in the positive direction to travelling with the same speed in the opposite direction. *t*

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