1. The rate at which an object’s velocity changes is called its _____.
   a. acceleration
   b. average velocity
   c. displacement
   d. scalar magnitude

2. Which of the following is NOT an example of accelerated motion?
   a. a boulder falling off of a cliff in a straight path
   b. an airplane taking off down a straight runway
   c. a bicyclist moving in a straight line at constant speed
   d. a ball being thrown straight up

3. “Free fall” is the condition in which
   a. the motion of a body is due to gravity alone, when air resistance is applicable.
   b. the motion of a body is due to velocity alone, when air resistance is negligible.
   c. the motion of a body is due to gravity alone, when air resistance is maximized.
   d. the motion of a body is due to gravity alone, when air resistance is negligible.

4. Which line shows both positive velocity and positive acceleration?
   a. Line A
   b. Line B
   c. Line C
   d. Line D
   e. Line E

5. Which formula represents final velocity of an object with average acceleration?
   a. \( v_f = v_i + a\delta t \)
   b. \( v_f = v_i \times a\delta t \)
   c. \( v_f = v_i - a\delta t \)
   d. \( v_f = v_i + a\delta t \)
Falling Body Quiz C

6. The instantaneous acceleration of an object is
   a. the rate of change in velocity at an instant of time.
   b. the rate of change of position at an instant of time.
   c. the rate of change of speed at an instant of time.
   d. the rate of change of time at an instantaneous position.

7. A man starts his car from rest and accelerates at 1 m/s² for 2 seconds. He then continues at a constant velocity for 10 seconds until he sees a tree blocking the road and applies brakes. The car slows down at 1 m/s², finally comes to rest. Which of the following graphs represents the motion correctly?

8. The change in velocity during a measurable time interval, divided by the time interval, is the _____.
   a. instantaneous velocity
   b. average velocity
   c. instantaneous acceleration
   d. average acceleration

9. Based on the given figure which shows the paths of two objects, A and B, assuming that object A was thrown at the same time that object B was dropped, which statement is NOT true?
   a. Assuming that air resistance is negligible, both objects are in free fall.
   b. Object A will have a higher velocity when it hits the ground.
   c. Object A will hit the ground first.
   d. Both objects experience acceleration with a magnitude of 9.8 m/s².
10. Average acceleration vectors on a motion diagram indicate
   a. the size and direction of the average speed during a time interval.
   b. the size and direction of the average displacement during a time interval.
   c. the size and direction of the average velocity during a time interval.
   d. the size and direction of the average acceleration during a time interval.

11. The acceleration due to Earth’s gravity is:
   a. 9.8 m/s²
   b. 98 m/s²
   c. 9.8 ft/s²
   d. 9.8 mi/s²

12. Which line represents an object that is in motion where the acceleration is zero and the velocity is to the north?
   a. Line A  
   b. Line B  
   c. Line C  
   d. Line D  
   e. Line E

13. An object that has negative acceleration is definitely doing what?
   a. speeding up  
   b. maintaining a constant speed  
   c. slowing down  
   d. accelerating in a direction that is opposite to a stated positive direction.

14. Given a graph of velocity v. time, what does a horizontal line represent?
   a. The object’s acceleration is positive.  
   b. The object is moving at constant velocity.  
   c. The object’s acceleration is negative.  
   d. The object is standing still.
Line D represents movement that starts out toward the south, slows down, and stops. Why is the slope of the line positive?

a. The velocity is positive.
b. The velocity is negative.
c. The acceleration is negative.
d. The acceleration is positive.