Physics Grade -10 Unit-2 new curriculum online exam Time 1hr

Prepared by: Teacher Negasi (https://t.me/tsinseta)

1. If two objects are dropped simultaneously from the same height, one being a feather and the other a rock, which one will hit the ground first? (1 point)

- **Both will hit at the same time (without air resistance)**
- **It depends on the height**
- **The feather**
- **The rock**

Explanation: In a vacuum, where there is no air resistance, all objects fall at the same rate regardless of their mass. Therefore, both the feather and the rock would hit the ground simultaneously if dropped from the same height.

2. If an object is accelerating, what does this imply about its velocity? (1 point)

- **It is constant**
- **It is zero**
- **It is increasing or decreasing**
- **It is always positive**

Explanation: Acceleration is the rate of change of velocity over time. It can occur in two ways:

Increasing Velocity: **When the acceleration is in the same direction as the velocity, the object speeds up.**

Decreasing Velocity: **When the acceleration is in the opposite direction, the object slows down.**

Constant Velocity: If the velocity of an object is constant, the acceleration is zero. Therefore, option A (constant velocity) cannot be true if the object is accelerating.

Velocity Value: An object can have a velocity of zero at a specific moment (e.g., at rest), but if it is accelerating, it will change from that state. Thus, option C (velocity is zero) is not a correct implication.

Positive and Negative Velocity:

Velocity can be positive or negative depending on the direction of motion. Acceleration can also be positive or negative (deceleration) based on whether the object is speeding up or slowing down.

3. How long will a bus take to travel 500 km at an average speed of 50 km/h? (1 point)

- **4hr**
- **10hr**
- **2hr**
- **5hr**

4. For a body thrown up ward its velocity at maximum height is_____. (1 point)

- **Negative**
- **Constant**
- **Zero**
- **Non-zero**

Explanation: At maximum height, the body momentarily comes to a stop before it starts to descend, resulting in a velocity of zero.

5. A boy runs at 10m/s for 5 sec, then walks at 10m/s for 5 sec and rides a bicycle at 20m/s for 10 sec. What is the average speed of the boy for the entire trip? (1 point)

- **300 m/s**
- **17 m/s**
- **15 m/s**
- **20 m/s**

Explanation: Average velocity = Total distance/Total time

Distance = Speed x time

Total distance= 50m+50m+200m=300m

Total time= 5s + 5s + 10 s = 20 s

Average velocity = 300m/20s = 15 m/s

6. A student throws a ball vertically upward with a speed of 20m/s. The maximum height reached by the ball and its velocity 3.0 s after it was thrown are, respectively (1 point)

- **15 m and 10 m/s downward**
- **20 m and 30 m/s upward**
- **20 m and 10 m/s downward**
- **105 m and 50 m/s upward**

7. In a velocity-time graph, what does the slope represent? (1 point)

- **Speed**
- **Acceleration**
- **Distance**
- **Displacement**

Explanation:
Understanding Velocity-Time Graphs:

A velocity-time graph plots velocity on the vertical axis (y-axis) and time on the horizontal axis (x-axis).
8. The graph visually represents how the velocity of an object changes ove m/s in 4 seconds. What is the displacement of the vehicle during this time interval? (1 point)

- **40m**
- **50m**
- **25m**
- **20m**

9. For an object moving in straight line, which one of the following is correct?(1 point)

- **If the displacement changes by equal amount in equal time interval, the displacement - time graph is horizontal**

• If the velocity increases by equal amount in equal time interval, the velocity - time graph is straight line with positive slope and the acceleration time graph is horizontal

◦ The area of the region under the displacement – time graph and the slope of the velocity – time graph are, respectively, the acceleration and displacement of the object

◦ The slope of displacement – time graph and the area of the region under acceleration – time graph are, respectively, the acceleration and velocity of the object.

Explanation: When the velocity of an object increases by equal amounts in equal time intervals, this indicates a constant acceleration.

In a velocity-time graph, this results in a straight line with a positive slope, representing the constant acceleration.

The acceleration-time graph would be a horizontal line at a constant value, indicating that the acceleration does not change over time.

10. Which of the following is NOT TRUE? (1 point)

◦ Total displacement equals the product of average velocity and time taken is true for a motion

◦ The velocity is constant if and only if its magnitude and direction is not changed.

• If the speed of a moving body is constant, then the velocity is always constant.

◦ If the acceleration of the body is zero, then the body moves with constant velocity.

Explanation Speed being constant does not guarantee that velocity is constant unless the direction is also unchanged. Velocity includes both speed and direction.

SET BY *T.NEGASI*

https://t.me/tsinseta