1. Which of the following is a scalar quantity?
   A. Force B. Displacement
   C. Speed
   D. Acceleration (C)

Explanation : Scalars have only magnitude. Speed, unlike velocity or displacement, doesn't require direction.

2. Which of the following is a vector quantity?
   A. Electric current B. Force
   C. Work
   D. Mass (B)

Explanation : Vectors possess both magnitude and direction. Force has both, while the others are scalars.

3. A polar vector is one that...
   A. represents rotational effects
   B. has a defined starting point
   C. always has magnitude 1
   D. has no specified direction (B)

Explanation : Polar vectors originate from a specific point in space—examples include displacement and force.

4. Which of these is an example of an axial vector?
   A. Torque B. Speed
   C. Work
   D. Mass density (A)

Explanation : Axial vectors represent rotational effects, such as angular velocity, angular momentum, and torque.

5. The magnitude of a unit vector is always...
   A. 0
   B. 1
   C. infinite
   D. depends on the original vector (B)

Explanation : A unit vector only indicates direction. Its magnitude is defined as unity.

6. Two vectors are called collinear if...
   A. they lie in the same plane
   B. they act along the same line or parallel lines
   C. their magnitudes are equal
   D. their sum is zero (B)

Explanation : Collinear vectors share a line of action or are parallel to each other.

7. What is the defining feature of a zero vector?
   A. It has unit magnitude
   B. It has no direction
   C. Its magnitude is zero
   D. It is always positive (C)

Explanation : A zero (null) vector has zero magnitude and no definite direction.

8. The position vector of point P(x,y,z) with respect to the origin is expressed as...
   A. $x+y+z$ B. $\sqrt{(x^2+y^2+z^2)}$
   C. $x\hat{i}+y\hat{j}+z\hat{k}$
   D. $(x2-x1)\hat{i}+(y2-y1)\hat{j}+(z2-z1)\hat{k}$ (C)

Explanation : A position vector is written in terms of unit vectors along the coordinate axes.

9. If $A=12\hat{i}+5\hat{j}$, what is $|A|$?
   A. 12 B. 13
   C. 5 D. 17 (B)

Explanation : Magnitude is found as $\sqrt{(12^2+5^2)}=13$.

10. When a vector is multiplied by a negative real number, what happens?
    A. Magnitude decreases but direction remains the same
    B. Magnitude stays the same but direction reverses
    C. Magnitude changes to $|\lambda||A|$ and direction becomes opposite
    D. It becomes a scalar (C)

Explanation : Multiplication by a negative real number reverses the direction while scaling the magnitude by $|\lambda|$.

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