CBSE

MOTION IN A PLANE WS 1

Class 11 - Physics

Section A

1. Consider the quantities, pressure, power, energy, impulse, gravitational potential, electrical charge, temperature, area. Out of these, the only vector quantities are **[1]**

   a) Area and gravitational potential
   b) Impulse and pressure
   c) Impulse and area
   d) Impulse, pressure and area

2. Which of the following physical quantities a vector? **[1]**

   a) Density
   b) Number of moles
   c) Angular frequency
   d) Acceleration

3. A physical quantity which has a direction: **[1]**

   a) maybe a vector
   b) must be a vector
   c) must be a scalar
   d) may be both scalar and vector

4. The basic difference between a scalar and vector is one of **[1]**

   a) magnitude
   b) direction
   c) origin
   d) polar angle

5. Which one of the following statements is true? **[1]**

   a) A scalar quantity is the one that is conserved in a process.
   b) A scalar quantity is the one that can never take negative values.
   c) A scalar quantity is one that does not vary from one point to another in space.
   d) A scalar quantity has the same value for observers with different orientations of the axes.

6. Acceleration due to gravity: **[1]**

   a) a scalar
   b) polar vector
   c) a vector
   d) a non scalar

7. Which of the following is a vector quantity? **[1]**

   a) Force
   b) Calorie
   c) Surface tension
   d) Temperature

8. Which of the following physical quantities is a scalar? **[1]**

   a) average velocity
   b) linear momentum
   c) current
   d) relative velocity

9. Consider the quantities: pressure, power, energy, impulse, gravitational potential, electrical charge, temperature, **[1]**

and area. Out of these, the only vector quantities are:

a) Impulse, pressure and area
b) Impulse and area
c) Impulse and pressure
d) Area and gravitational potential

10. Which of the following is vector quantity? **[1]**

a) Charge
b) Temperature
c) Impulse
d) Coefficient of friction

11. **Assertion (A):** A physical quantity cannot be called as a vector if its magnitude is zero. **[1]**
Reason (R): A vector has both magnitude and direction.

a) Both A and R are true and R is the correct explanation of A.
b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false.
d) A is false but R is true.

12. **Assertion (A):** A scalar quantity is one that must be dimensionless. **[1]**
Reason (R): A scalar has magnitude only.

a) Both A and R are true and R is the correct explanation of A.
b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false.
d) A is false but R is true.

13. **Assertion (A):** Current density is a scalar quantity. **[1]**
Reason (R): Current density is the electric current passing through a unit area.

a) Both A and R are true and R is the correct explanation of A.
b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false.
d) A is false but R is true.

14. **Assertion (A):** If a physical quantity is a vector, it must have direction. **[1]**
Reason (R): Current has a direction therefore it is a vector quantity.

a) Both A and R are true and R is the correct explanation of A.
b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false.
d) A is false but R is true.

15. **Assertion (A):** Adding a scalar to a vector of the same dimensions is a meaningful algebraic operation. **[1]**
Reason (R): The displacement cannot be distance.

a) Both A and R are true and R is the correct explanation of A.
b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false.
d) A is false but R is true.

16. **Assertion (A):** A physical quantity cannot be called as a vector if its magnitude is zero. **[1]**
Reason (R): A vector has both magnitude and direction.

a) Both A and R are true and R is the correct explanation of A.
b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false.
d) A is false but R is true.

17. **Assertion (A):** Force and area are vectors. **[1]**

Reason (R): Pressure is a vector.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

18. Does a vector quantity depends upon frame of reference chosen? **[1]**

19. Is finite rotation a vector? **[1]**

20. Give two conditions necessary for a given quantity to be a vector. **[1]**

21. Does a scalar quantity depend on the frame of reference chosen? **[1]**

22. Can the sum of two vectors be a scalar? **[1]**

23. Is pressure a vector? Give reason. **[1]**

24. Give an example of a physical quantity that can be represented as a vector product of two vectors. **[1]**

25. Pick out the two scalar quantities in the following list: **[1]**

force, angular momentum, work, current, linear momentum, electric field, average velocity, magnetic moment, relative velocity.

26. A given quantity has both magnitude and direction. Is it necessarily a vector? **[1]**

Section B

27. What are vector quantities? Give examples too. **[2]**

28. We can order events in time and there is no sense of time, distinguishing past, present and future. Is time a vector? **[2]**

Section C

29. **State True or False:** **[6]**

(a) A scalar quantity is one that does not vary from one point to another in space. **[1]**

(b) A given quantity has both magnitude and direction. It is necessarily a vector. **[1]**

(c) A scalar quantity is one that has the same value for observers with different orientations of axes. **[1]**

(d) A scalar quantity is one that is conserved in a process. **[1]**

(e) A scalar quantity is one that must be dimensionless. **[1]**

(f) A scalar quantity is one that can never take negative values. **[1]**