Unit 7: Vectors in Plane

SSC-II Mathematics (Federal Board, National Book Foundation) | 35 MCQs

Choose the correct answer. The correct option is shown in **bold**. Each question carries one mark.

Here i and j are the unit vectors along the x-axis and y-axis. A vector with components a and b is written <a, b> = ai + bj.

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1. A quantity that has both magnitude and direction is called a

A. scalar
B. vector
C. variable
D. constant

2. Which of the following is a vector quantity?

A. time
B. temperature
C. mass
D. velocity

3. Which of the following is a scalar quantity?

A. displacement
B. acceleration
C. speed
D. force

4. A vector is represented geometrically by a

A. directed line segment
B. point only
C. curve
D. circle

5. The position vector of the point P(3, 4) is

A. 3i − 4j
B. 3i + 4j
C. 7
D. 4i + 3j

6. The magnitude of the vector <3, 4> is

A. 5
B. 7
C. 25
D. 1

7. The magnitude of the vector 5i − 12j is

A. 169
B. 17
C. 7
D. 13

8. The magnitude of the vector <−6, 8> is

A. 2
B. −10
C. 10
D. 14

9. The magnitude of the vector 2i is

A. −2
B. 0
C. 4
D. 2

10. If A(1, 2) and B(4, 6), then the vector AB is

A. <3, 4>
B. <4, 3>
C. <−3, −4>
D. <5, 8>

11. If A(1, 2) and B(4, 6), then the magnitude of AB is

A. 7 B. √7

C. 5 D. 25

12. If A(2, 3) and B(5, 7), then the vector BA is

A. <7, 10> **B. <−3, −4>**

C. <−4, −3> D. <3, 4>

13. If u = <1, 2> and v = <3, 4>, then u + v is

A. <−2, −2> B. <3, 8>

C. <2, 2> **D. <4, 6>**

14. If u = <1, 2> and v = <3, 4>, then v − u is

A. <2, 2> B. <3, 8>

C. <−2, −2> D. <4, 6>

15. If u = <2, −1>, then 3u is

A. <2, −3> B. <5, 2>

C. <6, −3> D. <6, −1>

16. If u = <2, −1>, then −u is

A. <−2, −1> **B. <−2, 1>**

C. <1, −2> D. <2, 1>

17. If u = 2i + 3j and v = i − j, then u + v is

A. 3i + 2j B. i + 2j

C. 3i + 4j D. i + 4j

18. If u = 2i + 3j and v = i − j, then u − v is

A. 3i + 2j **B. i + 4j**

C. 3i + 4j D. i + 2j

19. If u = 3i + 4j, then 2u is

A. 6i + 4j B. 3i + 8j

C. 6i + 8j D. 5i + 6j

20. The zero vector has magnitude

A. −1 B. 1

C. 2 **D. 0**

21. A vector whose magnitude is 1 is called a

A. zero vector B. position vector

C. unit vector D. free vector

22. The unit vector in the direction of <3, 4> is

A. <3, 4> **B. <3/5, 4/5>**

C. <1/3, 1/4> D. <4/5, 3/5>

23. Two vectors are equal if they have the same

A. initial point
B. direction only
C. magnitude only
D. magnitude and direction

24. Two non-zero vectors are parallel if one is a

A. scalar multiple of the other
B. zero vector
C. unit vector
D. sum of the other and a unit vector

25. The vectors <2, 4> and <1, 2> are

A. equal
B. unit vectors
C. perpendicular
D. parallel

26. The vectors i = <1, 0> and j = <0, 1> are

A. zero vectors
B. equal
C. unit vectors along the axes
D. parallel to each other

27. The negative of a vector has

A. the same magnitude and opposite direction
B. the same magnitude and the same direction
C. the same direction and half the magnitude
D. zero magnitude

28. In the triangle law of vector addition, AB + BC equals

A. BC − AB
B. AC
C. CA
D. AB − BC

29. For any points A and B, AB + BA equals

A. AB
B. 2AB
C. BA
D. the zero vector

30. If P is the midpoint of AB, then the position vector of P is

A. (a − b)/2
B. (b − a)/2
C. (a + b)/2
D. a + b

31. The midpoint of the points with position vectors <2, 4> and <6, 8> is

A. <4, 6>
B. <8, 12>
C. <4, 4>
D. <2, 2>

32. The vector from the origin O to a point P is called the

A. scalar of P
B. position vector of P
C. unit vector of P
D. zero vector

33. If the vector <k, 6> has magnitude 10 and k > 0, then k equals

A. 8
B. 6
C. 4
D. 10

34. A translation by the vector <2, 3> moves the point (1, 1) to

A. (3, 2)
B. (3, 4)
C. (2, 3)
D. (−1, −2)

35. If u = <a, b>, then the magnitude of u is

A. $\sqrt{(a^2 - b^2)}$

B. $a^2 + b^2$

C. a + b

D. $\sqrt{(a^2 + b^2)}$