# St. Lawrence High School

A Jesuit Christian Minority Institution

Term : 1st

Solution of Work Sheet – 8

Class – XI | Subject – Physics | Date – 23.06.20

Chapter – Vector | Topic –Vector Subtraction & Position vector

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Choose the correct option for the following questions. $1 \times 15 = 15$

1. Any two non zero vectors are –
   a. Always parallel
   b. Always co-linear
   c. Always co-planer
   d. All of these

   Ans: c. Always co-planer
2. The magnitude of resultant of two vectors of equal magnitudes is equal to one of them. Then the angle between two vectors is –
   a. $0°$
   b. $60°$
   c. $120°$
   d. $90°$

   Ans: c. $120°$
3. Two forces of equal magnitude F are acting on the same point at right angle to each other. The magnitude of resultant force will be –
   a. F
   b. 2F
   c. More than F but less than 2F
   d. Greater than 2F

   Ans: c. More than F but less than 2F
4. If two vectors of magnitude $a \; and \; b$ are at an angle $60^0$ with each other, then –
   a. $|a + b| > 1$
   b. $|a + b| < 1$
   c. $|a - b| > 1$
   d. $|a - b| < 1$

   Ans: $|a + b| > 1$
5. If $\vec{P} + \vec{Q} = \vec{R}$, $|\vec{P}| = |\vec{Q}| = \sqrt{3} \; and \; |\vec{R}| = 3$, then the angle between $\vec{P} \; and \vec{Q}$ is –
   a. $\frac{\pi}{4}$
   b. $\frac{\pi}{6}$
   c. $\frac{\pi}{3}$
   d. $\frac{\pi}{2}$

   Ans: c. $\frac{\pi}{3}$

6. The coordinate of the point whose position vector is $-2\hat{\imath} + \hat{\jmath} - \hat{k}$ is –
   a. (-2, -1,-1)
   b. (-2,1,-2)
   c. (2,-1,-1)
   d. (-2,1,-1)
   Ans: d. (-2,1,-1)
7. A parallel vector of the vector $-2\hat{\imath}$ is –
   a. $-2\hat{\jmath}$
   b. $-5\hat{\imath}$
   c. $12\hat{\imath}$
   d. Both b. and c. are orrect
   Ans: d. Both b. and c. are orrect
8. A vector perpendicular to the vector $20\hat{\jmath}$ is –
   a. $\hat{\jmath}$
   b. $\hat{\imath}$
   c. $-2\hat{\imath}$
   d. Both option b. and c. are correct
   Ans: d. Both option b. and c. are correct
9. The opposite vector of the vector $2\hat{\imath} - 3\hat{\jmath}$ is –
   a. $2\hat{\imath} + 3\hat{\jmath}$
   b. $-2\hat{\imath} - 3\hat{\jmath}$
   c. $-2\hat{\imath} + 3\hat{\jmath}$
   d. $3\hat{\imath} - 2\hat{\jmath}$
   Ans: c $-2\hat{\imath} + 3\hat{\jmath}$
10. For which value of $a$ , the vector $2a\hat{\imath} - 6\hat{\jmath}$ will be a parallel vector of the vector $-5\hat{\imath} + 3\hat{\jmath}$
   a. 5
   b. $\frac{5}{2}$
   c. $-\frac{5}{2}$
   d. $-10$
   Ans: a. 5
11. The vector perpendicular to the position vector of the point (5,3) is –
   a. $5\hat{\imath} + 3\hat{\jmath}$
   b. $-5\hat{\imath} + 3\hat{\jmath}$
   c. $5\hat{\imath} - 3\hat{\jmath}$
   d. $-3\hat{\imath} + 5\hat{\jmath}$
   Ans: $-3\hat{\imath} + 5\hat{\jmath}$
12. For which values of $a\ and\ b$ two vectors $2\hat{\imath} - 3\hat{\jmath} - \hat{k}$ and $a\hat{\imath} + b\hat{\jmath} - 2\hat{k}$ will be parallel to each other?
   a. $4, 6$
   b. $4, -6$
   c. $-4, 6$
   d. $-4, -6$
   *Ans*: b. $4, -6$
13. If the angle between $\vec{P}\ and\ \vec{Q}$ is $\theta$ then the angle between $\vec{P}$ and $-\vec{Q}$ will be –
   a. $\theta$ always
   b. $90° - \theta$ always
   c. $90° + \theta$ always
   d. $180° - \theta$ always
   Ans: d. $180° - \theta$ always

14. The angle between two vectors $5\hat{\imath}$ and $3\hat{\jmath}$ is –
    a. 0°
    b. 30°
    c. 45°
    d. 90°

    Ans: d. 90°

15. If the angle between $\vec{P}\ and\ \vec{Q}$ is 60° and $|\vec{P}| = |\vec{Q}|$, then the ratio of $|\vec{P} + \vec{Q}|$ and $|\vec{P} - \vec{Q}|$ will be –
    a. 3:1
    b. 1:3
    c. $\sqrt{3}:1$
    d. 1:1

    Ans: c. $\sqrt{3}:1$

Name of the teacher – Soumitra Maity