# Yakeen NEET 2.0 2026

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DPP: 3

## Vectors

**Q1** What is the length of projection of $\overrightarrow{\mathrm{A}} = 3\hat{\mathrm{i}} + 4\hat{\mathrm{j}} + 5\hat{\mathrm{k}}$ on xy plane?
(A) 5
(B) 3
(C) $5\sqrt{2}$
(D) 4

**Q2** Two vectors $\mathbf{A}$ and $\mathbf{B}$ have equal magnitudes. The magnitude of $(\mathbf{A}+\mathbf{B})$ is '$n$' times the magnitude of $(\mathbf{A}-\mathbf{B})$. The angle between $\mathbf{A}$ and $\mathbf{B}$ is
(A) $\sin^{-1}\left(\frac{n^2-1}{n^2+1}\right)$
(B) $\sin^{-1}\left(\frac{n-1}{n+1}\right)$
(C) $\cos^{-1}\left(\frac{n^2-1}{n^2+1}\right)$
(D) $\cos^{-1}\left(\frac{n-1}{n+1}\right)$

**Q3** At what angle the two vectors of magnitudes $(A+B)$ and $(A-$ B) must act, so that resultant is $\sqrt{A^2+B^2}$ ?
(A) $\cos^{-1}\frac{(\mathrm{A}+\mathrm{B})}{\mathrm{A}-\mathrm{B}}$
(B) $\cos^{-1}\left(\frac{(A^2+B^2)}{2(B^2-A^2)}\right)$
(C) $\cos^{-1}\left(\frac{A^2+B^2}{A^2-B^2}\right)$
(D) None of these

**Q4** If a vector $\overrightarrow{A}$ makes an angles $\alpha$, $\beta$ and $\gamma$ respectively with the x, y and z axis respectively. Then $\sin^2\alpha + \sin^2\beta + \sin^2\gamma$ is equal to:
(A) 0 (B) 1
(C) 2 (D) 3

**Q5** If three forces $\overrightarrow{F} = 3\hat{i} - 4\hat{j} + 5\hat{k}$, $\vec{F}_2 = -3\hat{i} + 4\hat{j}$ and $\vec{F}_3 = 5\hat{k}$ are acted on a body, then the direction of resultant force on the body is:
(A) Along $x$-axis
(B) Along $y$-axis
(C) Along $z$-axis
(D) In indeterminate form

**Q6** If a unit vector is represented by $0.5\hat{i} - 0.8\hat{j} + C\hat{k}$, then the value of $C$ is
(A) $\sqrt{0.01}$
(B) $\sqrt{0.11}$
(C) 1
(D) $\sqrt{0.39}$

**Q7** A boy walks uniformly along the sides of a rectangular park of size $400\ \mathrm{m} \times 300\ \mathrm{m}$, starting from one corner to the other corner diagonally opposite. Which of the following statement is incorrect?
(A) He has travelled a distance of $700\ \mathrm{m}$
(B) His displacement is $700\ \mathrm{m}$
(C) His displacement is $500\ \mathrm{m}$
(D) His velocity is not uniform throughout the walk

**Q8** $\frac{d}{dx}\left(\sin 30^\circ\right)$ is equal to
(A) $\cos 30^\circ$ (B) $\mathrm{cosec}30^\circ$
(C) 0 (D) $\sin 30^\circ$

**Q9** Force $F_1$ and $F_2$ act on a point mass in two mutually perpendicular directions. The resultant

force on the point mass will be

(A) $F_1 + F_2$

(B) $F_1 - F_2$

(C) $\sqrt{F_1^2 + F_2^2}$

(D) $F_1^2 + F_2^2$

**Q10** The sum of two forces acting at a point is $16\ \text{N}$. If the resultant force is $8\ \text{N}$ and its direction is perpendicular to minimum force then the forces are

(A) $6\ \text{N}$ and $10\ \text{N}$

(B) $8\ \text{N}$ and $8\ \text{N}$

(C) $4\ \text{N}$ and $12\ \text{N}$

(D) $2\ \text{N}$ and $14\ \text{N}$

**Q11** If vectors $\vec{P}, \vec{Q}$ and $\vec{R}$ have magnitudes 5,12 and 13 units respectively and $\vec{P} + \vec{Q} = \vec{R}$, then angle between $\vec{Q}$ and $\vec{R}$ is

(A) $\cos^{-1}\frac{5}{12}$

(B) $\cos^{-1}\frac{5}{13}$

(C) $\cos^{-1}\frac{12}{13}$

(D) $\cos^{-1}\frac{7}{13}$

**Q12** Two force $F_1 = 1\ \text{N}$ and $F_2 = 2\ \text{N}$ act along the lines $x = 0$ and $y = 0$ respectively. Then the resultant of forces would be

(A) $\hat{i} + 2\hat{j}$

(B) $\hat{i} + \hat{j}$

(C) $3\hat{i} + 3\hat{j}$

(D) $2\hat{i} + \hat{j}$

**Q13** A body is at rest under the action of three forces, two of which are $\vec{F}_1 = 4\hat{i}, \vec{F}_2 = 6\hat{j}$, the third force is

(A) $4\hat{i} + 6\hat{j}$

(B) $4\hat{i} - 6\hat{j}$

(C) $-4\hat{i} + 6\hat{j}$

(D) $-4\hat{i} - 6\hat{j}$

# Answer Key

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|---|---|
| Q1 | (A) |
| Q2 | (C) |
| Q3 | (B) |
| Q4 | (C) |
| Q5 | (C) |
| Q6 | (B) |
| Q7 | (B) |
| Q8 | (C) |
| Q9 | (C) |
| Q10 | (A) |
| Q11 | (C) |
| Q12 | (D) |
| Q13 | (D) |