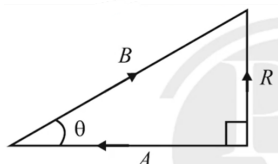# Parishram (2025)

Physics

Basic Mathematics

Q1 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) $-4\hat{i} - 6\hat{j}$

Q2 Consider a vector $\vec{F} = 4\hat{i} - 3\hat{j}$. Another vector that is perpendicular to $\vec{F}$ is
(A) $4\hat{i} + 3\hat{j}$
(B) $6\hat{i}$
(C) $7\hat{k}$
(D) $3\hat{i} - 4\hat{j}$

Q3 In vector diagram shown in figure where $(\vec{R})$ is the resultant of vectors $(\vec{A})$ and $(\vec{B})$.

If $R = \frac{B}{\sqrt{2}}$, then value of angle θ is :
(A) $30°$

(B) $45°$
(C) $60°$
(D) $75°$

Q4 The vector sum of the forces of 10 newton and 6 newton can be
(A) 2 N
(B) 8 N
(C) 18 N
(D) 20 N

Q5 What happens, when we multiply a vector by (-2) ?
(A) Direction reverses and unit changes
(B) Direction reverses and magnitude is doubled
(C) Direction remains unchanged and unit changes
(D) None of these

Q6 The unit vector along $\hat{i} + \hat{j}$ is:
(A) $\hat{k}$
(B) $\hat{i} + \hat{j}$
(C) $\frac{\hat{i}+\hat{j}}{\sqrt{2}}$
(D) $\frac{\hat{i}+\hat{j}}{2}$

Answer Key

Q1	(D)		Q4	(B)
Q2	(C)		Q5	(B)
Q3	(B)		Q6	(C)

Hints & Solutions

Note: scan the QR code to watch video solution

Q1 Text Solution:

Let third force is $\overrightarrow{F_3}$

Now we can write that the reslultant of their sum is zero,

Because body is on rest condition,

Hence,

$$\mathrm{F_1} + \mathrm{F_2} + \mathrm{F_3} = 0 \Rightarrow 4\hat{i} + 6\hat{j} + \mathrm{F_3} = 0$$

$$\therefore \overrightarrow{\mathrm{F}}_3 = -4\hat{i} - 6\hat{j}$$

Video Solution:

Q2 Video Solution:

Q3 Video Solution:

Q4 Video Solution:

Q5 Video Solution:

Q6 Video Solution:

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