VECTOR ALGEBRA

PROJECTION OF A VECTOR ON A LINE

EXERCISE

Q.1 Find the projection of vector of 12 units, on another vector, and the angle between the tw vectors is 60 degrees (A) 4 (B) 8 (C) 6 (D) 12 What is the projection of vector 4l + 2j + k on another vector 3i - 2i + 5k? Q.2 $(B)\frac{17}{\sqrt{38}}$ $(C)\frac{13}{\sqrt{38}}$ (A) $\frac{13}{\sqrt{35}}$ (D) $\frac{12}{\sqrt{38}}$ Find the projection of the vector 4i + 2j + k on the vector 5i - 3j + 3k, using the Q.3 projection vector formula. Find the projection of the vector 5i + 4j + k in the direction of the vector Q.4 3i + 5i - 2k by using the projection vector formula Find the projection of the vector 2i - j + 5k and 4i - j + k. Q.5 Find the projection of the vector 2i - 6j + k and 8i - 2j + 4kQ.6 Find the vector projection of vector $\vec{a} = (2,3,1)$ in the direction of vector Q.7 $\vec{b} = (5, -2, 2)$ If $\vec{a} = (1, -2, 2)$ and $\vec{b} = (5, -2, 2)$ find: Q.8 (a) The scalar projection of \vec{a} in the direction of b. (b) The vector projection of \vec{a} in the direction of b.

ANSWER KRY

- 1. (C) 6 2. (C) $\frac{13}{\sqrt{38}}$ 3. $=\frac{17}{\sqrt{43}}$
- **4.** $\sqrt{43}$
- 5. $=\frac{14}{\sqrt{18}}$ 6. $=\frac{32}{\sqrt{84}}$
- 7. $=\frac{2}{11}(5\hat{i}-2\hat{j}+2\hat{k}).$
- **8.** (a) The scalar projection is $13/\sqrt{33}$.
 - (b) The vector projection is $\frac{13}{33}(5, -2, 2)$ or $\frac{13}{33}(5i 2j + 2k)$