THREE DIMENSIONAL GEOMETRY

DISTANCE OF A POINT FROM A PLANE

EXERCISE (FOR COMPETITIVE EXAM)

Q.1 Distance between the point (x, y, z) and xy-plane is:

(A) 0 (B) Y (C) Z (D) X

Q.2 The distance between point $P(X_0, Y, Z_0)$ and plane $Ax + By + Cz + D = 0$

$d = |Ax_0 + By_0 + Cz_0 + D|/\sqrt{(A^2 + B^2 + C^2)}$

(A) True (B) False

Q.3 To find a distance between plane $2x + 4y - 4z - 6 = 0$ and point M (0, 3, 6).

Q.4 Determine the distance from the point $P = (4, -4, 3)$ to the plane $2x-2y+5z+8=0$

Q.5 Determine the distance of the point $(1, 2, -1)$ from the plane $x-2y+4z-10=0$.

Q.6 Calculate the shortest distance between point and plane when the point is A (-1, 3, 4) and the plane is $x + 4y - 6z + 8 = 0$

Q.7 Evaluate the distance from the point (1, 1, 1) to the plane $2x + 2y + z = 0$

Q.8 Consider a point $P (1, -2, 3)$ and a plane given by the equation $2x-y+3z=5$. We want to find the distance between the point P and the plane.

Q.9 Let's consider a point $Q (-3, 2, -1)$ and a plane given by the equation $x + 2y - z = 4$ We want to find the distance between the point Q and the plane.

ANSWER KEY

1. (C) Z

2. (A) True

3. Distance from point to plane is equal to 3.

4. ≈ 6.8

5. $= \frac{17}{\sqrt{21}}$

6. The required distance from the given point to the plane is $\frac{13}{\sqrt{53}}$ units

7. The required distance between the point and plane is $\frac{5}{3}$ units.

8. Therefore, the distance between the point P $(1, -2, 3)$ and the plane $2x - y + 3z = 5$ is $\frac{18}{\sqrt{14}}$.

9. Therefore, the distance between the point Q $(-3, 2, -1)$ and the plane $x + 2y - z = 4$ is $\frac{6}{\sqrt{6}}$.