Past Year JEE Questions

Questions

Quetion: 01

The distance of the point (1, 1, 9) from the point of intersection of the line $\frac{x-3}{1} = \frac{y-4}{2} = \frac{z-5}{2}$ and the plane x + y + z = 17 is :

A. $19\sqrt{2}$

B. $2\sqrt{19}$

C. 38

D. $\sqrt{38}$

Solutions

Solution: 01

Explanation

Given, P(1, 1, 9).

Equation of plane x + y + z = 17

Equation of line $\Rightarrow \frac{x-3}{1} = \frac{y-4}{2} = \frac{z-5}{2}$

$\Rightarrow \frac{x-3}{1} = \frac{y-4}{2} = \frac{z-5}{2} = \lambda$ (let)

$\Rightarrow$ x = λ + 3; y = 2λ + 4; z = 2λ + 5

∴ The point we have is (λ + 3, 2λ + 4, 2λ + 5).

∵ This point lies on the plane x + y + z = 17.

∴ λ + 3 + 2λ + 4 + 2λ + 5 = 17

$\Rightarrow \lambda$ = 1

∴ The coordinate of point is (4, 6, 7)

∴ Required distance between (1, 1, 9) and (4, 6, 7) is

$= \sqrt{(4-1)^2 + (6-1)^2 + (7-9)^2}$

$= \sqrt{9 + 25 + 4} = \sqrt{38}$