Related Questions with Solutions

Questions

Quetion: 01

The equation of the plane containing the straight line $\frac{x-1}{2}=\frac{y+2}{-3}=\frac{z}{5}$ and perpendicular to the plane x – y + z + 2 = 0.

A. 2x – 3y + z = 0

B. 2x + 3y + z = 0

C. 2x + 3y + z = 1

D. 2x + 3y + z + 4 = 0

Solutions

Solution: 01

Point on plane $\Rightarrow \mathrm{P}(1,-2,0)$

Vectors on plane are

$\overrightarrow{\mathrm{a}}=2\hat{\imath}-3\hat{\mathrm{j}}+5\hat{\mathrm{k}}$

$\vec{b}=\hat{\imath}-\hat{j}+\hat{k}$

$$\vec{n}=\vec{a}\times\vec{b}=\begin{vmatrix}\hat{\imath} & \hat{j} & \hat{k}\\ 2 & -3 & 5\\ 1 & -1 & 1\end{vmatrix}$$

$=2\hat{\imath}+3\hat{j}+\hat{k}$

Equation of plane

$\vec{n}\cdot(\vec{r}-\vec{r}_0)=0$

$(2\hat{\imath}+3\hat{j}+\hat{k})\cdot((x-1)\hat{\imath}+(y+2)\hat{j}+z\hat{k})=0$

2x + 3y +z + 4 = 0

Correct Options

Answer:01

Correct Options: D