36. The plane 2x − 3y + 6z − 11 = 0 makes an angle $sin^1(\alpha)$ with x-axis. The value of α is equal to

(A) $\frac{\sqrt{3}}{2}$

(B) $\frac{\sqrt{2}}{3}$

(C) $\frac{2}{7}$

(D) $\frac{3}{7}$

Ans: The vector parallel to x-axis is $\underline{b} = \hat{i} + 0\hat{j} + 0\hat{k}$

The normal vector to the plane is $\underline{n} = 2\hat{i} - 3\hat{j} + 6k\hat{}$

Now the angle b/w the x-axis and the given plane is $sin\theta = \dfrac{\underline{n}.\underline{b}}{\left|\underline{n}\right|.\left|\underline{b}\right|}$

$sin\theta = \dfrac{\left(\hat{i}+0\hat{j}+0\hat{k}\right).\left(2\hat{i}-3\hat{j}+6k\hat{}\right)}{1\times\sqrt{4+9+36}} = \dfrac{2}{7}$

$\Rightarrow sin\left[sin^1(\alpha)\right] = \dfrac{\left(\hat{i}+0\hat{j}+0\hat{k}\right).\left(2\hat{i}-3\hat{j}+6k\hat{}\right)}{1\times\sqrt{4+9+36}} = \dfrac{2}{7}$

$\Rightarrow \alpha = \dfrac{2}{7}$

Thus option C is the correct answer.