**Question 4: The equation of the plane passing through the point (1, 1, 1) and perpendicular to the planes 2x + y − 2z = 5 and 3x − 6y − 2z = 7 is**

(a) 14x+2y+15z = 31

(b) 14x+2y-15z = 1

(c) -14x+2y+15z = 3

(d) 14x-2y+15z = 27

**Solution:**

Let plane $P_1$ => 2x + y − 2z = 5

$P_2$ => 3x − 6y − 2z = 7

Let P be the plane perpendicular to $P_1$ and $P_2$

Also P passes through (1, 1, 1).

Hence required equation =

$$\begin{vmatrix} x-1 & y-1 & z-1 \\ 2 & 1 & -2 \\ 3 & -6 & -2 \end{vmatrix} = 0$$

=> (x-1)(-2-12) − (y-1)(-4+6) + (z-1)(-12-3) = 0

=> 14x-14+2y-2+15z-15 = 0

=> 14x + 2y +15z = 31

Hence option a is the answer.