1. If the two lines

   $L_1 : x = 5, \frac{y}{3-\alpha} = \frac{z}{-2}$

   $L_2 : x = 2, \frac{y}{-1} - 1 = \frac{z}{2-\alpha}$

   are perpendicular,then the value of α is

   (A) $\frac{2}{3}$
   (B) 3
   (C) 4
   (D) $\frac{7}{3}$

2. (a) Find the shortest distance between the following lines and hence write whether the lines are intersecting or not.

   $\frac{x-1}{2} = \frac{y+1}{3} = z, \frac{x+1}{5} = \frac{y-2}{1}, z = 2$

   (b) Find the equation of the plane through the line of intersection of the planes $\vec{r}.\ (\hat{i} + 3\hat{j}) + 6 = 0$ and $\vec{r}\ .(3\hat{i} - \hat{j} - 4\hat{k}) = 0$, which is a unit distance from the origin.

3. If segment of the line intercepted between the coordinate-axes is bisected at the point M$(2, 3)$, then the equation of this line is

   (A) $2x + 3y = 13$
   (B) $x + y = 5$
   (C) $2x + y = 7$
   (D) $3x + 2y = 12$

4. The equation of a line through $(2, -4)$ and parallel to x-axis is_____

5. Find the equation of the median through vertex A of the triangle ABC, having vertices A$(2, 5), B(-4, 9) and C(-2, -1)$.

6. Solve the system of linear equations, using matrix method:

   $7x + 2y = 11$

   $4x - y = 2$