

**BCM SCHOOL LUDHIANA**  
**ASSIGNMENT THREE-DIMENSIONAL GEOMETRY**

1	The distance of a point P(a, b, c) from x-axis is (A) $\sqrt{a^2 + c^2}$ (B) $\sqrt{a^2 + b^2 + c^2}$ (C) $\sqrt{b^2 + c^2}$ (D) $\sqrt{a^2 + b^2}$
2	If a line makes angles $\alpha, \beta, \gamma$ with the positive directions of the coordinate axes, then the value of $\sin^2\alpha + \sin^2\beta + \sin^2\gamma$ is _____. (A)3      (B)2      (C)1      (D)4
3	A line makes angle $\alpha, \beta, \gamma$ with x-axis, y-axis and z-axis respectively then $\cos 2\alpha + \cos 2\beta + \cos 2\gamma$ is equal to (A) 2      (B) 1      (C) -2      (d) -1
4	The lines $\frac{x}{1} = \frac{y}{2} = \frac{z}{3}$ and $\frac{x-1}{-2} = \frac{y-2}{-4} = \frac{z-3}{-6}$ (A)coincident      (B)skew      (C)parallel      (D)interesting
5	the equation of a line parallel to x-axis and passing through the origin. (A) $\vec{r} = \lambda \hat{i}$ (B) $\vec{r} = 0$ (C) $\vec{r} = \lambda \hat{j}$ (D) $\vec{r} = \lambda \hat{k}$
6	The x-coordinate of a point on the line joining the points P(2, 2, 1) and Q(5, 1, -2) is 4 then z-coordinate is (A)-1      (B)-2      (C)1      (D)2
7	A line makes equal angles with co-ordinate axis. Direction cosines of this line are (A) $\pm \frac{1}{\sqrt{3}}, \pm \frac{1}{\sqrt{3}}, \pm \frac{1}{\sqrt{3}}$ (B) $-\frac{1}{\sqrt{3}}, -\frac{1}{\sqrt{3}}, -\frac{1}{\sqrt{3}}$ (C) $\frac{1}{3}, \frac{1}{3}, \frac{1}{3}$ (D) $\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}$
8	The coordinates of the foot of the perpendicular drawn from the point (2, 5, 7) on the x-axis are given by (A)(2,0,0)      (B)(0,0,7)      (C)(2,0,2)      (D)(2,3,3)
9	Show that the lines $\frac{x+1}{3} = \frac{y+3}{5} = \frac{z+5}{7}$ and $\frac{x-2}{1} = \frac{y-4}{3} = \frac{z-6}{5}$ intersect. Also find the point intersection.
10	Find the foot of perpendicular from the point (2,3,-8) to the line $\frac{4-x}{2} = \frac{y}{6} = \frac{1-z}{3}$ . Also, find the perpendicular distance from the given point to the line.
11	Find the distance of a point (2, 4, -1) from the line $\frac{x+5}{1} = \frac{y+3}{4} = \frac{z-6}{-9}$
12	Find the image of the point (1, 6, 3) in the line $\frac{x}{1} = \frac{y-1}{2} = \frac{z-2}{3}$
13	Prove that the lines $x = py + q, z = ry + s$ and $x = p'y + q', z = r'y + s'$ are perpendicular if $pp' + rr' + 1 = 0$
14	Check the coplanarity of the lines $\vec{r} = (-3\hat{i} + \hat{j} + 5\hat{k}) + \lambda(-3\hat{i} + \hat{j} + 5\hat{k})$ and $\vec{r} = (-\hat{i} + 2\hat{j} + 5\hat{k}) + \mu(-\hat{i} + 2\hat{j} + 5\hat{k})$