DPP
DAILY PRACTICE PROBLEMS

CLASS : XIIth | **SUBJECT : MATHS**
DATE : | **DPP NO. : 1**

Topic :- THREE DIMENSIONAL GEOMETRY

1. If the lines
$\frac{x-1}{2}=\frac{y+1}{3}=\frac{z-1}{4}$
and $\frac{x-3}{1}=\frac{y-k}{2}=\frac{z}{1}$
interested, then the value of k is
a) $\frac{3}{2}$ b) $\frac{9}{2}$ c) $-\frac{2}{9}$ d) $-\frac{3}{2}$

2. A point on x-axis which is equidistance from both the points $(1, 2, 3)$ and $(3, 5, -2)$ is
a) $(-6, 0, 0)$ b) $(5, 0, 0)$ c) $(-5, 0, 0)$ d) $(6, 0, 0)$

3. The angle between the line
$\frac{x+4}{1}=\frac{y-3}{2}=\frac{z+2}{3}$ and $\frac{x}{3}=\frac{y-1}{-2}=\frac{z}{1}$ is
a) $\sin^{-1}\left(\frac{1}{7}\right)$ b) $\cos^{-1}\left(\frac{2}{7}\right)$ c) $\cos^{-1}\left(\frac{1}{7}\right)$ d) None of these

4. The points $(5, 2, 4)$, $(6, -1, 2)$ and $(8, -7, k)$ are collinear, if k is equal to
a) -2 b) 2 c) 3 d) -1

5. The equation of the plane through the point $(2, 5, -3)$ perpendicular to the planes $x+2y+2z=1$ and $x-2y+3z=4$ is
a) $3x-4y+2z-20=0$ b) $7x-y+5z=30$
c) $x-2y+z=11$ d) $10x-y-4z=27$

6. The direction cosines of the line $4x-4=1-3y=2z-1$ are
a) $\frac{3}{\sqrt{56}},\frac{-4}{\sqrt{56}},\frac{6}{\sqrt{56}}$ b) $\frac{3}{\sqrt{29}},\frac{-4}{\sqrt{29}},\frac{6}{\sqrt{29}}$ c) $\frac{3}{\sqrt{61}},\frac{-4}{\sqrt{61}},\frac{6}{\sqrt{61}}$ d) $4,-3,2$

7. Equation of the plane passing through the intersection of the planes $x+y+z=6$ and $2x+3y+4z+5=0$ and the point $(1, 1, 1)$ is
a) $20x+23y+26z-69=0$ b) $31x+45y+49z+52=0$
c) $8x+5y+2z-69=0$ d) $4x+5y+6z-7=0$

8. The equation of the plane through the point $(0, -4, -6)$ and $(-2, 9, 3)$ and perpendicular to the plane $x-4y-2z=8$ is
a) $3x+3y-2z=0$ b) $x-2y+z=2$ c) $2x+y-z=2$ d) $5x-3y+2z=0$

9. If a line makes angle $\frac{\pi}{3}$ and $\frac{\pi}{4}$ with the x and y-axes respectively, then the angle made by the line and z-axis is
a) $\frac{\pi}{2}$ b) $\frac{\pi}{3}$ c) $\frac{\pi}{4}$ d) $\frac{5\pi}{12}$

10. Let $(3, 4, -1)$and $(-1, 2, 3)$ are the end points of a diameter of sphere. Then the radius of the sphere is equal to
    a) 1 b) 2 c) 3 d) 9

11. The points $(5, -4, 2), (4, -3, 1), (7, -6, 4)$ and $(8, -7, 5)$ are the vertices of
    a) A rectangle b) A square c) A parallelogram d) None of these

12. The equation of the plane containing the lines $\vec{r} = \vec{a_1} + \lambda\,\vec{b}$ and $\vec{r} = \vec{a_2} + \mu\,\vec{b}$, is
    a) $\vec{r} \cdot (\vec{a_1} - \vec{a_2}) \times \vec{b} = [\vec{a_1}\,\vec{a_2}\,\vec{b}]$
    b) $\vec{r} \cdot (\vec{a_2} - \vec{a_1}) \times \vec{b} = [\vec{a_1}\,\vec{a_2}\,\vec{b}]$
    c) $\vec{r} \cdot (\vec{a_1} + \vec{a_2}) \times \vec{b} = [\vec{a_2}\,\vec{a_1}\,\vec{b}]$
    d) None of these

13. If $\left(\frac{1}{2}, \frac{1}{3}, n\right)$ are the direction cosines of a line, then the value of n is
    a) $\frac{\sqrt{23}}{6}$ b) $\frac{23}{6}$ c) $\frac{2}{3}$ d) $\frac{3}{2}$

14. The vector equation of the plane passing through the origin and the line of intersection of the plane $\vec{r} \cdot \vec{a} = \lambda$ and $\vec{r} \cdot \vec{b} = \mu$ is
    a) $\vec{r} \cdot (\lambda\,\vec{a} - \mu\,\vec{b}) = 0$ b) $\vec{r} \cdot (\lambda\,\vec{b} - \mu\,\vec{a}) = 0$ c) $\vec{r} \cdot (\lambda\,\vec{a} + \mu\,\vec{b}) = 0$ d) $\vec{r} \cdot (\lambda\,\vec{b} + \mu\,\vec{a}) = 0$

15. If l_1, m_1, n_1 and l_2, m_2, n_2 are direction cosines of the two lines inclined to each other at an angle , then the direction cosines of the external bisector of the angle between the lines are
    a) $\frac{l_1+l_2}{2\sin\theta/2}, \frac{m_1+m_2}{2\sin\theta/2}, \frac{n_1+n_2}{2\sin\theta/2}$
    b) $\frac{l_1+l_2}{2\cos\theta/2}, \frac{m_1+m_2}{2\cos\theta/2}, \frac{n_1+n_2}{2\cos\theta/2}$
    c) $\frac{l_1-l_2}{2\sin\theta/2}, \frac{m_1-m_2}{2\sin\theta/2}, \frac{n_1-n_2}{2\sin\theta/2}$
    d) $\frac{l_1-l_2}{2\cos\theta/2}, \frac{m_1-m_2}{2\cos\theta/2}, \frac{n_1-n_2}{2\cos\theta/2}$

16. The direction ratios of the normal to the plane passing through the points $(1, -2, 3), (-1, 2, -1)$ and parallel to the line $\frac{x-2}{2} = \frac{y+1}{3} = \frac{z}{4}$ are proportional to
    a) 2, 3, 4 b) 4, 0, 7 c) $-2, 0, -1$ d) $2, 0, -1$

17. The position vector of a point at a distance of $3\sqrt{11}$ units from $\hat{\imath} - \hat{\jmath} + 2\hat{k}$ on a line passing through the points $\hat{\imath} - \hat{\jmath} + 2\hat{k}$ and $3\hat{\imath} + \hat{\jmath} + \hat{k}$ is
    a) $10\hat{\imath} + 2\hat{\jmath} - 5\hat{k}$ b) $-8\hat{\imath} - 4\hat{\jmath} - \hat{k}$ c) $8\hat{\imath} + 4\hat{\jmath} + \hat{k}$ d) $-10\hat{\imath} - 2\hat{\jmath} - 5\hat{k}$

18. The centre and radius of the sphere $x^2 + y^2 + z^2 + 3x - 4z + 1 = 0$ are
    a) $\left(-\frac{3}{2}, 0, -2\right), \frac{\sqrt{21}}{2}$ b) $\left(\frac{3}{2}, 0, 2\right), \sqrt{21}$ c) $\left(-\frac{3}{2}, 0, 2\right) \cdot \frac{\sqrt{21}}{2}$ d) $\left(-\frac{3}{2}, 2, 0\right), \frac{21}{2}$

19. The direction cosines of the line $6\,x - 2 = 3\,y + 1 = 2\,z - 2$ are
    a) $\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}$ b) $\frac{1}{\sqrt{14}}, \frac{2}{\sqrt{14}}, \frac{3}{\sqrt{14}}$ c) 1, 2, 3 d) None of these

20. The cartesian equation of the plane perpendicular to the line $\frac{x-1}{2} = \frac{y-3}{-1} = \frac{z-4}{2}$ and passing through the origin is

a) $2x - y + 2z - 7 = 0$ b) $2x + y + 2z = 0$ c) $2x - y + 2z = 0$ d) $2x - y - z = 0$