EXERCISE - O

SINGLE CORRECT TYPE QUESTIONS

1. If from the point $P(f, g, h)$ perpendiculars PL, PM be drawn to yz and zx planes then the equation to the plane OLM is

(A) $\frac{x}{f}+\frac{y}{g}-\frac{z}{h}=0$ (B) $\frac{x}{f}+\frac{y}{g}+\frac{z}{h}=0$ (C) $\frac{x}{f}-\frac{y}{g}+\frac{z}{h}=0$ (D) $-\frac{x}{f}+\frac{y}{g}+\frac{z}{h}=0$

MTD084

2. A variable plane forms a tetrahedron of constant volume 64 K^3 with the coordinate planes and the origin, then locus of the centroid of the tetrahedron is

(A) $x^3+y^3+z^3=6K^3$ (B) $xyz=6K^3$

(C) $x^2+y^2+z^2=4K^2$ (D) $x^{-2}+y^{-2}+z^{-2}=4K^{-2}$

MTD085

3. A parallelopiped is formed by planes drawn through the points (1, 2, 3) and (9, 8, 5) parallel to the coordinate planes then which of the following is not the length of an edge of this rectangular parallelopiped

(A) 2 (B) 4 (C) 6 (D) 8

MTD086

4. The vector equations of the two lines L_1 and L_2 are given by

$L_1: \vec{r}=2\hat{i}+9\hat{j}+13\hat{k}+\lambda(\hat{i}+2\hat{j}+3\hat{k})$; $L_2: -3\hat{i}+7\hat{j}+p\hat{k}+\mu(-\hat{i}+2\hat{j}-3\hat{k})$

then the lines L_1 and L_2 are

(A) skew lines for all $p\in R$

(B) intersecting for all $p\in R$ and the point of intersection is (–1, 3, 4)

(C) intersecting lines for $p=-2$

(D) intersecting for all real $p\in R$

MTD087

5. Consider the plane $(x, y, z) = (0, 1, 1) + \lambda(1, -1, 1) + \mu(2, -1, 0)$. The distance of this plane from the origin is

(A) 1/3 (B) $\sqrt{3}/2$ (C) $\sqrt{3/2}$ (D) $2/\sqrt{3}$

MTD088

6. For the line $\frac{x-1}{1}=\frac{y-2}{2}=\frac{z-3}{3}$, which one of the following is incorrect?

(A) it lies in the plane x – 2y + z = 0 (B) it is same as line $\frac{x}{1}=\frac{y}{2}=\frac{z}{3}$

(C) it passes through (2, 3, 5) (D) it is parallel to the plane $x-2y+z-6=0$

MTD089

7. Given planes $P_1 : cy + bz = x$

$P_2 : az + cx = y$

$P_3 : bx + ay = z$

P_1, P_2 and P_3 pass through one line, if

(A) $a^2 + b^2 + c^2 = ab + bc + ca$
(B) $a^2 + b^2 + c^2 + 2abc = 1$
(C) $a^2 + b^2 + c^2 = 1$
(D) $a^2 + b^2 + c^2 + 2ab + 2bc + 2ca + 2abc = 1$

MTD090

8. Let L_1 be the line $\vec{r}_1 = 2\hat{i} + \hat{j} - \hat{k} + \lambda(\hat{i} + 2\hat{k})$ and let L_2 be the line $\vec{r}_2 = 3\hat{i} + \hat{j} + \mu(\hat{i} + \hat{j} - \hat{k})$. Let Π be the plane which contains the line L_1 and is parallel to L_2. The distance of the plane Π from the origin is

(A) 1/7
(B) $\sqrt{2/7}$
(C) $\sqrt{6}$
(D) none

MTD091

9. $P(\vec{p})$ and $Q(\vec{q})$ are the position vectors of two fixed points and $R(\vec{r})$ is the position vector of a variable point. If R moves such that $(\vec{r} - \vec{p}) \times (\vec{r} - \vec{q}) = \vec{0}$ then the locus of R is

(A) a plane containing the origin 'O' and parallel to two non collinear vectors $\overrightarrow{OP}$ and $\overrightarrow{OQ}$

(B) the surface of a sphere described on PQ as its diameter.

(C) a line passing through the points P and Q

(D) a set of lines parallel to the line PQ.

MTD092

10. Consider the lines $\frac{x}{2} = \frac{y}{3} = \frac{z}{5}$ and $\frac{x}{1} = \frac{y}{2} = \frac{z}{3}$, then the equation of the line which

(A) bisects the angle between the lines is $\frac{x}{3} = \frac{y}{3} = \frac{z}{8}$

(B) bisects the angle between the lines is $\frac{x}{1} = \frac{y}{2} = \frac{z}{3}$

(C) passes through origin and is perpendicular to the given lines is $x = y = -z$

(D) none of these

MTD093

11. A plane meets the coordinate axes in A, B, C and (α, β, γ) is the centroid of the triangle ABC, then the equation of the plane is

(A) $\frac{x}{\alpha} + \frac{y}{\beta} + \frac{z}{\gamma} = 3$
(B) $\frac{x}{\alpha} + \frac{y}{\beta} + \frac{z}{\gamma} = 1$
(C) $\frac{3x}{\alpha} + \frac{3y}{\beta} + \frac{3z}{\gamma} = 1$
(D) $\alpha x + \beta y + \gamma z = 1$

MTD094

12. A line having direction ratios 3, 4, 5 cuts 2 planes $2x - 3y + 6z - 12 = 0$ and $2x - 3y + 6z + 2 = 0$ at point P & Q, then find length of PQ

(A) $\frac{35\sqrt{2}}{12}$
(B) $\frac{35\sqrt{2}}{24}$
(C) $\frac{35\sqrt{2}}{6}$
(D) $\frac{35\sqrt{2}}{8}$

MTD095

13. A line L_1 having direction ratios 1, 0, 1 lies on xz plane. Now this xz plane is rotated about z-axis by an angle of 90°. Now the new position of L_1 is L_2. The angle between L_1 & L_2 is :

(A) 30°
(B) 60°
(C) 90°
(D) 45°

MTD096

14. Equation of plane which passes through the point of intersection of lines $\frac{x-1}{3}=\frac{y-2}{1}=\frac{z-3}{2}$ and $\frac{x-3}{1}=\frac{y-1}{2}=\frac{z-2}{3}$ at greatest distance from the point (0, 0, 0) is:

(A) $4x+3y+5z=25$ (B) $4x+3y+5z=50$

(C) $3x+4y+5z=49$ (D) $x+7y-5z=2$

MTD097

MULTIPLE CORRECT TYPE QUESTIONS

15. The volume of a right triangular prism $ABCA_1B_1C_1$ is equal to 3. If the position vectors of the vertices of the base ABC are $A(1, 0, 1)$; $B(2,0, 0)$ and $C(0, 1, 0)$ then the position vectors of the vertex A_1 can be:

(A) (2, 2, 2) (B) (0, 2, 0) (C) (0, –2, 2) (D) (0, - 2, 0)

MTD098

16. Consider Lines $L_1:\frac{x-\alpha}{1}=\frac{y}{-2}=\frac{z+\beta}{2}$, $L_2:x=\alpha,\frac{y}{-\alpha}=\frac{z+\alpha}{2-\beta}$, plane $P:2x+2y+z+7=0$. Let line L_2 lies in plane P, then

(A) $\alpha=-7$

(B) $\alpha=7$

(C) minimum distance between line L_1 and plane P is 11.

(D) minimum distance between line L_1 and plane P is $\frac{23}{3}$

MTD099

17. The point $\vec{A}(3,4,7)$, $\vec{B}(4,5,9)$ and $\vec{C}(1,2,-1)$ are three vertices of a parallelogram $ABCD$, then -

(A) vector equation of line AB is $\vec{r}=4\hat{i}+5\hat{j}+9\hat{k}+\lambda\left(\hat{i}+\hat{j}+2\hat{k}\right)$

(B) cartesian equation of line BC is $\frac{x-4}{3}=\frac{y-5}{3}=\frac{z-9}{10}$

(C) coordinates of D are (0, 1, –3)

(D) $ABCD$ is rectangle

MTD100

18. A variable point $P(4\cos t, 4\sin t, 4\sin t)$ moves in space, now which of the following holds good?

(A) Point P moves on a plane (B) Point 'P' traces a circle.

(C) Area enclosed by P is $16\sqrt{2}\pi$ (D) Point P cannot lie on a fixed plane.

MTD101

19. Consider the family of planes $x+y+z=c$ where c is a parameter intersecting the coordinate axes at P, Q, R and α,β,γ are the angles made by each member of this family with positive x, y and z axis. Which of the following interpretations hold good for this family -

(A) each member of this family is equally inclined with the coordinate axes.

(B) $\sin^2\alpha+\sin^2\beta+\sin^2\gamma=1$

(C) $\cos^2\alpha+\cos^2\beta+\cos^2\gamma=2$

(D) for $c=3$ area of the triangle PQR is $3\sqrt{3}$ sq. units.

MTD102

20. Consider a plane P passing through $A(\lambda, 3, \mu)$, $B(-1, 3, 2)$ and $C(7, 5, 10)$ and a straight-line L with positive direction cosines passing through A, bisecting BC and makes equal angles with the coordinate axes. Let L_1 be a line parallel to L and passing through origin. Which of the following is(are) correct?

(A) The value of $(\lambda + \mu)$ is equal to 5.

(B) Equation of straight line L_1 is $\frac{x-1}{1}=\frac{y-1}{1}=\frac{z-1}{1}$.

(C) Equation of the plane perpendicular to the plane P and containing line L_1 is $x-2y+z=0$

(D) Area of triangle ABC is equal to $3\sqrt{2}$.

MTD103

21. Acute angle between the lines $\frac{x-1}{\ell}=\frac{y+1}{m}=\frac{z}{n}$ and $\frac{x+1}{m}=\frac{y-3}{n}=\frac{z-1}{\ell}$ where $\ell > m > n$, and ℓ, m, n are the roots of the cubic equation $x^3+x^2-4x=4$ is equal to :

(A) $\cos^{-1}\frac{3}{\sqrt{13}}$ (B) $\sin^{-1}\frac{\sqrt{65}}{9}$ (C) $2\cos^{-1}\sqrt{\frac{13}{18}}$ (D) $\tan^{-1}\frac{2}{3}$

MTD104

22. The line $\frac{x+6}{5}=\frac{y+10}{3}=\frac{z+14}{8}$ is the hypotenuse of an isosceles right-angle triangle whose opposite vertex is (7, 2, 4) Then the equation of remaining sides is/are -

(A) $\frac{x-7}{3}=\frac{y-2}{6}=\frac{z-4}{2}$

(B) $\frac{x-7}{2}=\frac{y-2}{-3}=\frac{z-4}{6}$

(C) $\frac{x+7}{3}=\frac{y+2}{6}=\frac{z+4}{2}$

(D) $\frac{x+7}{2}=\frac{y+2}{-3}=\frac{z+4}{6}$

MTD105

COMPREHENSION TYPE QUESTIONS

Paragraph for Question No. 23 to 24

23. Equation of L_2 is -

(A) $\vec{r}=(2+6\lambda)\hat{i}-2\hat{j}+\lambda\hat{k}$

(B) $\vec{r}=2\hat{i}-(2+6\lambda)\hat{j}+\hat{k}$

(C) $\vec{r}=(4\lambda+6)\hat{i}+2\lambda\hat{j}-\lambda\hat{k}$

(D) $\vec{r}=(2+6\lambda)\hat{i}+(\lambda-3)\hat{j}+(2+\lambda)\hat{k}$

MTD106

24. Line L_1 intersects plane Π at Q and xy-plane at R, then volume of tetrahedron $OAQR$ is (where O is origin)

(A) 1 cubic units (B) $\frac{1}{2}$ cubic units (C) 6 cubic units (D) 4 cubic units

MTD107

Paragraph for Question No. 25 to 26

A conic section is obtained by the intersection of two inverted cones (having same vertex) with a plane. If a plane passes through the vertex, then its intersection with the cones either represents a pair of straight lines or a point depending upon whether it intersects the cones or not. If plane does not pass through vertex, then section may be hyperbola or circle depending upon whether plane is parallel to axis of the cone or perpendicular to it. If it has any other inclination, then intersection of plane and cone gives an ellipse or a parabola.

25. If a variable point P moves such that the line passing through P and $Q(0,0,2)$ makes an angle θ with z-axis, then the locus of P is :

(A) z-axis if $\theta = 0°$

(B) Plane $z = 2$ if $\theta = 90°$

(C) A cone $x^2 + y^2 - 3(z-2)^2 = 0$ if $\theta = 60°$

(D) A cone $x^2 + y^2 + 3(z-2)^2 = 0$ if $\theta = 60°$

MTD108

26. In the above question if $\theta = 60°$ then the locus of intersection of locus of P and $ax + y + z = b$ will be

(A) a hyperbola if $a = b = 1$

(B) a pair of straight line if $a = 1$ and $b = 2$

(C) a pair of straight lines if $a = b = 2$

(D) none of these

MTD109

Paragraph for Question No. 27 to 28

In 3D geometry, a tetrahedron is a four-faced polyhedron with four vertices. It is one of the simplest and most important shapes in 3D geometry, and it has many practical applications in fields such as engineering, physics, chemistry and computer graphics. To solve problems related to a tetrahedron, we need to use concepts such as shortest distance formula, cross product, and the formula for the volume of a tetrahedron. By applying these concepts, we can gain a better understanding of 3D geometry and solve problems related to the tetrahedron.

27. Find the shortest distance between any two opposite edges of a tetrahedron formed by the planes $y + z = 0, x + z = 0, x + y = 0, x + y + z = \sqrt{3}$.

MTD110

28. If the volume of tetrahedron formed by planes whose equations are $y + z = 0, z + x = 0, x + y = 0$ and $x + y + z = 1$ is t cubic unit, then the value of t is

MTD111

MATRIX MATCH TYPE QUESTION

29. Consider the following four pairs of lines in **List-I** and match them with one or more entries in **List-II**.

	List-I	**List-II**
(I)	$L_1: x = 1+t, y = t, z = 2-5t$ $L_2: \vec{r} = (2,1,-3) + \lambda(2,2,-10)$	(P) non coplanar lines
(II)	$L_1: \frac{x-1}{2}=\frac{y-3}{2}=\frac{z-2}{-1}$ $L_2: \frac{x-2}{1}=\frac{y-6}{-1}=\frac{z+2}{3}$	(Q) lines lie in a unique plane
(III)	$L_1: x = -6t, y = 1+9t, z = -3t$ $L_2: x = 1+2s, y = 4-3s, z = s$	(R) infinite planes containing both the lines
(IV)	$L_1: \frac{x}{1}=\frac{y-1}{2}=\frac{z-2}{3}$ $L_2: \frac{x-3}{-4}=\frac{y-2}{-3}=\frac{z-1}{2}$	(S) lines are not intersecting at a unique point

(A) I $\to$ Q,S; II $\to$ P,S; III $\to$ R,S; IV $\to$ Q
(B) I $\to$ Q; II $\to$ Q,S; III $\to$ P,S; IV $\to$ R,S
(C) I $\to$ P,S; II $\to$ Q,S; III $\to$ Q; IV $\to$ R,S
(D) I $\to$ R,S; II $\to$ Q; III $\to$ Q,S; IV $\to$ P,S

MTD112

30. $P(0, 3, -2)$; $Q(3, 7, -1)$ and $R(1, -3, -1)$ are 3 given points. Let L_1 be the line passing through P and Q and L_2 be the line through R and parallel to the vector $\vec{V} = \hat{i} + \hat{k}$.

	Column-I		**Column-II**
(A)	perpendicular distance of P from L_2	(P)	$7\sqrt{3}$
(B)	shortest distance between L_1 and L_2	(Q)	2
(C)	area of the triangle PQR	(R)	6
(D)	distance from (0, 0, 0) to the plane PQR	(S)	$\frac{19}{\sqrt{147}}$

MTD113

EXERCISE - S

1. For what value of p the lines $\frac{x+1}{-3}=\frac{y-p}{2}=\frac{z+2}{1}$ and $\frac{x}{1}=\frac{y-7}{-3}=\frac{z+7}{2}$ are in the same plane.

MTD114

2. The equation of the plane which has the property that the point $Q(5,4,5)$ is the reflection of point $P(1,2,3)$ through that plane, is $ax+by+cz=d$ where $a,b,c,d \in N$. Find the least value of $(a+b+c+d)$.

MTD115

3. A line from origin meets the lines $\frac{x-1}{1}=\frac{y}{2}=\frac{z+1}{2}$ and $\frac{x}{2}=\frac{y-1}{3}=\frac{z}{1}$ at A and B, then length of AB is equal to

MTD116

4. Let the equation of locus of a point which moves such that its distance from (1,1,1) is double its distance from x axis is $x^2-\lambda_1 y^2-\lambda_1 z^2-2x-2y-2z+\lambda_3=0$, then $|\lambda_1|+|\lambda_2|+|\lambda_3|$ is equal to

MTD117

5. If the distance between the plane $Ax-2y+z=d$ and the plane containing the lines $\frac{x-1}{2}=\frac{y-2}{3}=\frac{z-3}{4}$ and $\frac{x-2}{3}=\frac{y-3}{4}=\frac{z-4}{5}$ is $\sqrt{6}$, then $|d|$ is

MTD118

6. If the distance between the plane, $23x-10y-2z+48=0$ and the plane containing the lines $\frac{x+1}{2}=\frac{y-3}{4}=\frac{z+1}{3}$ and $\frac{x+3}{2}=\frac{y+2}{6}=\frac{z-1}{\lambda}(\lambda \in R)$ is equal to $\frac{k}{\sqrt{633}}$, then k is equal to ______.

MTD119

7. If the lines $\frac{x-1}{2}=\frac{y+1}{3}=\frac{z-1}{4}$ and $\frac{x-3}{1}=\frac{y-k}{2}=\frac{z}{1}$ intersect, then k is equal to:

MTD120

8. Distance between two parallel planes $2x+y+2z=8$ and $4x+2y+4z+5=0$ is :-

MTD121

9. If the foot of the perpendicular drawn from the point (1, 0, 3) on a line passing through $(\alpha, 7, 1)$ is $\left(\frac{5}{3},\frac{7}{3},\frac{17}{3}\right)$, then α is equal to_____

MTD122

10. A line from the origin meets the lines $\frac{x-2}{1}=\frac{y-1}{-2}=\frac{z+1}{1}$ and $\frac{x-\frac{8}{3}}{2}=\frac{y+3}{-1}=\frac{z-1}{1}$ at P and Q respectively. If length $PQ=d$, then d is

MTD123

EXERCISE - JEE (Main) PYQ

1. If the lines $x = ay + b, z = cy + d$ and $x = a'z + b', y = c'z + d'$ are perpendicular, then:

[JEE (Main) 2019]

(1) $cc' + a + a' = 0$ (2) $aa' + c + c' = 0$ (3) $ab' + bc' + 1 = 0$ (4) $bb' + cc' + 1 = 0$

MTD026

2. A plane which bisects the angle between the two given planes $2x - y + 2z - 4 = 0$ and $x + 2y + 2z - 2 = 0$, passes through the point: **[JEE (Main) 2019]**

(1) (2,4,1) (2) (2, – 4, 1) (3) (1, 4, – 1) (4) (1, – 4, 1)

MTD027

3. If the foot of the perpendicular drawn from the point (1, 0, 3) on a line passing through (α, 7, 1) is $\left(\frac{5}{3}, \frac{7}{3}, \frac{17}{3}\right)$, then α is equal to____ **[JEE (Main) 2020]**

MTD028

4. The shortest distance between the lines $\frac{x-3}{3} = \frac{y-8}{-1} = \frac{z-3}{1}$ and $\frac{x+3}{-3} = \frac{y+7}{2} = \frac{z-6}{4}$ is

[JEE (Main) 2020]

(1) $\frac{7}{2}\sqrt{30}$ (2) $3\sqrt{30}$ (3) 3 (4) $2\sqrt{30}$

MTD029

5. If for some α and β in R, the intersection of the following three Planes

$x + 4y - 2z = 1$

$x + 7y - 5z = \beta$

$x + 5y + \alpha z = 5$

is a line in R^3, then $\alpha + \beta$ is equal to : **[JEE (Main) 2020]**

(1) 10 (2) –10 (3) 2 (4) 0

MTD030

6. Let P be a plane $lx + my + nz = 0$ containing the line, $\frac{1-x}{1} = \frac{y+4}{2} = \frac{z+2}{3}$. If plane P divides the line segment AB joining points $A(-3, -6, 1)$ and $B(2, 4, -3)$ in ratio $k : 1$ then the value of k is equal to :

[JEE (Main) 2021]

(1) 1.5 (2) 3 (3) 2 (4) 4

MTD031

7. Let the plane $ax + by + cz + d = 0$ bisect the line joining the points $(4, -3, 1)$ and $(2, 3, -5)$ at the right angles. If a, b, c, d are integers, then the minimum value of $(a^2 + b^2 + c^2 + d^2)$ is

[JEE (Main) 2021]

MTD032

8. Consider the three planes
$P_1: 3x + 15y + 21z = 9,$
$P_2: x - 3y - z = 5,$ and
$P_3: 2x + 10y + 14z = 5$
Then, which one of the following is true ? **[JEE (Main) 2021]**
(1) P_1 and P_2 are parallel
(2) P_1 and P_3 are parallel
(3) P_2 and P_3 are parallel
(4) P_1, P_2 and P_3 all are parallel

MTD033

9. The distance of the point (1, –2, 3) from the plane x – y + z = 5 measured parallel to a line, whose direction ratios are 2, 3, –6 is : **[JEE (Main) 2021]**
(1) 3
(2) 5
(3) 2
(4) 1

MTD034

10. Equation of a plane at a distance $\sqrt{\frac{2}{21}}$ from the origin, which contains the line of intersection of the planes $x - y - z - 1 = 0$ and $2x + y - 3z + 4 = 0$, is : **[JEE (Main) 2021]**
(1) $3x - y - 5z + 2 = 0$
(2) $3x - 4z + 3 = 0$
(3) $-x + 2y + 2z - 3 = 0$
(4) $4x - y - 5z + 2 = 0$

MTD035

11. Let a line having direction ratios $1, -4, 2$ intersect the lines $\frac{x-7}{3} = \frac{y-1}{-1} = \frac{z+2}{1}$ and $\frac{x}{2} = \frac{y-7}{3} = \frac{z}{1}$ at the point A and B. Then $(AB)^2$ is equal to ____ . **[JEE (Main) 2022]**

MTD036

12. Let the plane $2x + 3y + z + 20 = 0$ be rotated through a right angle about its line of intersection with the plane $x - 3y + 5z = 8$. If the mirror image of the point $\left(2, -\frac{1}{2}, 2\right)$ in the rotated plane is $B(a, b, c)$, then : **[JEE (Main) 2022]**
(1) $\frac{a}{8} = \frac{b}{5} = \frac{c}{-4}$
(2) $\frac{a}{4} = \frac{b}{5} = \frac{c}{-2}$
(3) $\frac{a}{8} = \frac{b}{-5} = \frac{c}{4}$
(4) $\frac{a}{4} = \frac{b}{5} = \frac{c}{2}$

MTD037

13. If two straight lines whose direction cosines are given by the relations
$l + m - n = 0, 3l^2 + m^2 + cnl = 0$ are parallel, then the positive value of c is : **[JEE (Main) 2022]**
(1) 6
(2) 4
(3) 3
(4) 2

MTD038

14. The acute angle between the planes P_1 and P_2, when P_1 and P_2 are the planes passing through the intersection of the planes $5x + 8y + 13z - 29 = 0$ and $8x - 7y + z - 20 = 0$ and the points (2, 1, 3) and (0, 1, 2), respectively, is **[JEE (Main) 2022]**
(1) $\frac{\pi}{3}$
(2) $\frac{\pi}{4}$
(3) $\frac{\pi}{6}$
(4) $\frac{\pi}{12}$

MTD039

15. If the line of intersection of the planes $ax + by = 3$ and $ax + by + cz = 0$, $a > 0$ makes an angle 30° with the plane $y - z + 2 = 0$, then the direction cosines of the line are : **[JEE (Main) 2022]**
(1) $\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}, 0$
(2) $\frac{1}{\sqrt{2}}, \frac{-1}{\sqrt{2}}, 0$
(3) $\frac{1}{\sqrt{5}}, -\frac{2}{\sqrt{5}}, 0$
(4) $\frac{1}{2}, -\frac{\sqrt{3}}{2}, 0$

MTD040

16. Let the lines $\frac{x-1}{\lambda}=\frac{y-2}{1}=\frac{z-3}{2}$ and $\frac{x+26}{-2}=\frac{y+18}{3}=\frac{z+28}{\lambda}$ be coplanar and P be the plane containing these two lines. Then which of the following points does **NOT** lies on P?

[JEE (Main) 2022]

(1) (0, – 2, –2) (2) (– 5, 0, –1) (3) (3, –1, 0) (4) (0, 4, 5)

MTD041

17. The foot of the perpendicular from a point on the circle $x^2+y^2=1, z=0$ to the plane $2x+3y+z=6$ lies on which one of the following curves? **[JEE (Main) 2022]**

(1) $(6x+5y-12)^2+4(3x+7y-8)^2=1, z=6-2x-3y$

(2) $(5x+6y-12)^2+4(3x+5y-9)^2=1, z=6-2x-3y$

(3) $(6x+5y-14)^2+9(3x+5y-7)^2=1, z=6-2x-3y$

(4) $(5x+6y-14)^2+9(3x+7y-8)^2=1, z=6-2x-3y$

MTD042

18. If (2, 3, 9), (5, 2, 1), (1, λ, 8) and (λ, 2, 3) are coplanar, then the product of all possible values of λ is:

[JEE (Main) 2022]

(1) $\frac{21}{2}$ (2) $\frac{59}{8}$ (3) $\frac{57}{8}$ (4) $\frac{95}{8}$

MTD043

19. Let $P_1 : \vec{r}.(2\hat{i}+\hat{j}-3\hat{k})=4$ be a plane. Let P_2 be another plane which passes through the points $(2,-3,2)$ $(2,-2,-3)$ and $(1,-4,2)$. If the direction ratios of the line of intersection of P_1 and P_2 be 16, α, β, then the value of α + β is equal to _____.

[JEE (Main) 2022]

MTD044

20. If the two lines $l_1 : \frac{x-2}{3}=\frac{y+1}{-2}$, z = 2 and $l_2 : \frac{x-1}{1}=\frac{2y+3}{\alpha}=\frac{z+5}{2}$ perpendicular, then an angle between the lines l_2 and $l_3 : \frac{1-x}{3}=\frac{2y-1}{-4}=\frac{z}{4}$ is : **[JEE (Main) 2022]**

(1) $\cos^{-1}\left(\frac{29}{4}\right)$ (2) $\sec^{-1}\left(\frac{29}{4}\right)$ (3) $\cos^{-1}\left(\frac{2}{29}\right)$ (4) $\cos^{-1}\left(\frac{2}{\sqrt{29}}\right)$

MTD045

21. Let N be the foot of perpendicular from the point $P(1, -2, 3)$ on the line passing through the points (4, 5, 8) and (1, –7, 5). Then the distance of N from the plane $2x-2y+z+5=0$ is

[JEE (Main) 2023]

(1) 6 (2) 9 (3) 7 (4) 8

MTD124

22. If the foot of the perpendicular drawn from (1, 9, 7) to the line passing through the point (3, 2, 1) and parallel to the planes $x+2y+z=0$ and $3y-z=3$ is (α, β, γ), then α + β + γ is equal to

[JEE (Main) 2023]

(1) –1 (2) 3 (3) 1 (4) 5

MTD125

23. One vertex of a rectangular parallelopiped is at the origin O and the lengths of its edges along x, y and z axes are 3, 4 and 5 units respectively. Let P be the vertex (3, 4, 5). Then the shortest distance between the diagonal OP and an edge parallel to z axis, not passing through O or P is: **[JEE (Main) 2023]**

(1) $\frac{12}{\sqrt{5}}$ (2) $\frac{12}{5\sqrt{5}}$ (3) $12\sqrt{5}$ (4) $\frac{12}{5}$

MTD126

24. The line l_1 passes through the point (2,6,2) and is perpendicular to the plane $2x + y - 2z = 10$. Then the shortest distance between the line l_1 and the line $\frac{x+1}{2}=\frac{y+4}{-3}=\frac{z}{2}$ is : **[JEE (Main) 2023]**

(1) 7 (2) $\frac{19}{3}$ (3) $\frac{19}{3}$ (4) 9

MTD127

25. Let the plane $x + 3y - 2z + 6 = 0$ meet the co-ordinate axes at the points A, B, C. If the orthocentre of the triangle ABC is $\left(\alpha,\beta,\frac{6}{7}\right)$, then $98(\alpha+\beta)^2$ is equal to_____. **[JEE (Main) 2023]**

MTD128

26. If $\lambda_1<\lambda_2$ are two values of λ such that the angle between the planes $P_1 : \vec{r}\left(3\hat{i}-5j+k\right)=7$ and $P_2 : \vec{r}\cdot\left(\lambda\hat{i}+j-3k\right)=9$ is $\sin^{-1}\left(\frac{2\sqrt{6}}{5}\right)$, then the square of the length of perpendicular from the point $\left(38\lambda_1,10\lambda_2,2\right)$ to the plane P_1 is ____. **[JEE (Main) 2023]**

MTD129

27. Let θ be the angle between the planes $P_1=\vec{r}.\left(\hat{i}+\hat{j}+2\hat{k}\right)=9$ and $P_2=\vec{r}.\left(2\hat{i}-\hat{j}+\hat{k}\right)=15$. Let L be the line that meets P_2 at the point (4, –2, 5) and makes an angle θ with the normal of P_2. If α is the angle between L and P_2 then $(\tan^2\theta)(\cot^2\alpha)$ is equal to _______. **[JEE (Main) 2023]**

MTD130

28. Let a line L pass through the point $P(2, 3, 1)$ and be parallel to the line $x+3y-2z-2=0=x-y+2z$. If the distance of L from the point (5, 3, 8) is α, then $3\alpha^2$ is equal to ____. **[JEE (Main) 2023]**

MTD131

29. Let the plane $P:8x+\alpha_1y+\alpha_2z+12=0$ be parallel to the line $L:\frac{x+2}{2}=\frac{y-3}{3}=\frac{z+4}{5}$. If the intercept of P on the y-axis is 1, then the distance between P and L is : **[JEE (Main) 2023]**

(1) $\sqrt{14}$ (2) $\frac{6}{\sqrt{14}}$ (3) $\sqrt{\frac{2}{7}}$ (4) $\sqrt{\frac{7}{2}}$

MTD132

30. Let the plane P pass through the intersection of the planes $2x + 3y - z = 2$ and $x + 2y + 3z = 6$, and be perpendicular to the plane $2x + y - z + 1 = 0$. If d is the distance of P from the point (–7,1,1), then d^2 is equal to : **[JEE (Main) 2023]**

(1) $\frac{250}{83}$ (2) $\frac{15}{53}$ (3) $\frac{25}{83}$ (4) $\frac{250}{82}$

MTD133

EXERCISE - JEE (Advanced) PYQ

1. Perpendiculars are drawn from points on the line $\frac{x+2}{2}=\frac{y+1}{-1}=\frac{z}{3}$ to the plane $x+y+z=3$. The feet of perpendiculars lie on the line **[JEE (Advanced) 2013]**

(A) $\frac{x}{5}=\frac{y-1}{8}=\frac{z-2}{-13}$ (B) $\frac{x}{2}=\frac{y-1}{3}=\frac{z-2}{-5}$ (C) $\frac{x}{4}=\frac{y-1}{3}=\frac{z-2}{-7}$ (D) $\frac{x}{2}=\frac{y-1}{-7}=\frac{z-2}{5}$

MTD064

2. A line ℓ passing through the origin is perpendicular to the lines

$\ell_1 : (3+t)\hat{i}+(-1+2t)\hat{j}+(4+2t)\hat{k}, -\infty<t<\infty$

$\ell_2 : (3+2s)\hat{i}+(3+2s)\hat{j}+(2+s)\hat{k}, -\infty<s<\infty$

Then, the coordinate(s) of the point(s) on ℓ_2 at a distance of $\sqrt{17}$ from the point of intersection of ℓ and ℓ_1 is(are) - **[JEE (Advanced) 2013]**

(A) $\left(\frac{7}{3},\frac{7}{3},\frac{5}{3}\right)$ (B) $(-1,-1,0)$ (C) $(1,1,1)$ (D) $\left(\frac{7}{9},\frac{7}{9},\frac{8}{9}\right)$

MTD065

3. Two lines $L_1 : x=5, \frac{y}{3-\alpha}=\frac{z}{-2}$ and $L_2 : x=\alpha, \frac{y}{-1}=\frac{z}{2-\alpha}$ are coplanar. Then α can take value(s)

[JEE (Advanced) 2013]

(A) 1 (B) 2 (C) 3 (D) 4

MTD066

4. Consider the lines $L_1 : \frac{x-1}{2}=\frac{y}{-1}=\frac{z+3}{1}, L_2 : \frac{x-4}{1}=\frac{y+3}{1}=\frac{z+3}{2}$ and the planes $P_1 : 7x+y+2z=3$, $P_2 : 3x+5y-6z=4$. Let $ax+by+cz=d$ be the equation of the plane passing through the point of intersection of lines L_1 and L_2 and perpendicular to planes P_1 and P_2.

Match **List-I** with **List-II** and select the correct answer using the code given below the lists.

List-I	**List-II**
(P) a =	1. 13
(Q) b =	2. −3
(R) c =	3. 1
(S) d =	4. −2

[JEE (Advanced) 2013]

Codes :

	P	**Q**	**R**	**S**
(A)	3	2	4	1
(B)	1	3	4	2
(C)	3	2	1	4
(D)	2	4	1	3

MTD067

5. From a point $P(\lambda,\lambda,\lambda)$, perpendiculars PQ and PR are drawn respectively on the lines $y = x, z = 1$ and $y = -x, z = -1$. If P is such that $\angle QPR$ is a right angle, then the possible value(s) of λ is(are) **[JEE (Advanced) 2014]**

(A) $\sqrt{2}$ (B) 1 (C) –1 (D) $-\sqrt{2}$

MTD068

6. In $\mathbb{R}^3$, consider the planes $P_1: y = 0$ and $P_2: x + z = 1$. Let P_3 be a plane, different from P_1 and P_2, which passes through the intersection of P_1 and P_2. If the distance of the point (0,1,0) from P_3 is 1 and the distance of a point (α,β,γ) from P_3 is 2, then which of the following relations is (are) true ? **[JEE (Advanced) 2015]**

(A) $2\alpha + \beta + 2\gamma + 2 = 0$ (B) $2\alpha - \beta + 2\gamma + 4 = 0$
(C) $2\alpha + \beta - 2\gamma - 10 = 0$ (D) $2\alpha - \beta + 2\gamma - 8 = 0$

MTD069

7. In $\mathbb{R}^3$, let L be a straight line passing through the origin. Suppose that all the points on L are at a constant distance from the two planes $P_1: x + 2y - z + 1 = 0$ and $P_2: 2x - y + z - 1 = 0$. Let M be the locus of the feet of the perpendiculars drawn from the points on L to the plane P_1. Which of the following points lie(s) on M ? **[JEE (Advanced) 2015]**

(A) $\left(0,-\frac{5}{6},-\frac{2}{3}\right)$ (B) $\left(-\frac{1}{6},-\frac{1}{3},\frac{1}{6}\right)$ (C) $\left(-\frac{5}{6},0,\frac{1}{6}\right)$ (D) $\left(-\frac{1}{3},0,\frac{2}{3}\right)$

MTD070

8. Consider a pyramid $OPQRS$ located in the first octant $(x \geq 0, y \geq 0, z \geq 0)$ with O as origin, and OP and OR along the x –axis and the y –axis, respectively. The base $OPQR$ of the pyramid is a square with $OP = 3$. The point S is directly above the mid-point T of diagonal OQ such that $TS = 3$. Then- **[JEE (Advanced) 2016]**

(A) the acute angle between OQ and OS is $\frac{\pi}{3}$.

(B) the equation of the plane containing the triangle OQS is $x - y = 0$

(C) the length of the perpendicular from P to the plane containing the triangle OQS is $\frac{3}{\sqrt{2}}$

(D) the perpendicular distance from O to the straight line containing RS is $\sqrt{\frac{15}{2}}$

MTD071

9. Let P be the image of the point (3, 1, 7) with respect to the plane $x - y + z = 3$. Then the equation of the plane passing through P and containing the straight line $\frac{x}{1}=\frac{y}{2}=\frac{z}{1}$ is **[JEE (Advanced) 2016]**

(A) $x + y - 3z = 0$ (B) $3x + z = 0$ (C) $x - 4y + 7z = 0$ (D) $2x - y = 0$

MTD072

10. 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- **[JEE (Advanced) 2017]**

(A) $14x + 2y + 15z = 31$ (B) $14x + 2y - 15z = 1$
(C) $-14x + 2y + 15z = 3$ (D) $14x - 2y + 15z = 27$

MTD073

11. Let $P_1: 2x + y - z = 3$ and $P_2: x + 2y + z = 2$ be two planes. Then, which of the following statement(s) is (are) TRUE ? **[JEE (Advanced) 2018]**

(A) The line of intersection of P_1 and P_2 has direction ratios $1, 2, -1$

(B) The line $\frac{3x-4}{9}=\frac{1-3y}{9}=\frac{z}{3}$ is perpendicular to the line of intersection of P_1 and P_2

(C) The acute angle between P_1 and P_2 is $60°$

(D) If P_3 is the plane passing through the point (4, 2, –2) and perpendicular to the line of intersection of P_1 and P_2, then the distance of the point (2, 1, 1) from the plane P_3 is $\frac{2}{\sqrt{3}}$

MTD074

12. Let P be a point in the first octant, whose image Q in the plane $x + y = 3$ (that is, the line segment PQ is perpendicular to the plane $x + y = 3$ and the mid-point of PQ lies in the plane $x + y = 3$) lies on the z –axis. Let the distance of P from the x –axis be 5. If R is the image of P in the xy –plane, then the length of PR is ____ . **[JEE (Advanced) 2018]**

MTD075

13. Consider the cube in the first octant with sides OP, OQ and OR of length 1, along the x –axis, y –axis and z –axis, respectively, where $O(0,0,0)$ is the origin. Let $S\left(\frac{1}{2},\frac{1}{2},\frac{1}{2}\right)$ be the centre of the cube and T be the vertex of the cube opposite to the origin O such that S lies on the diagonal OT. If $\vec{p}=\overrightarrow{SP}$, $\vec{q}=\overrightarrow{SQ}$, $\vec{r}=\overrightarrow{SR}$ and $\vec{t}=\overrightarrow{ST}$, then the value of $\left|(\vec{p}\times\vec{q})\times(\vec{r}\times\vec{t})\right|$ is ____ . **[JEE (Advanced) 2018]**

MTD076

14. Let L_1 and L_2 denotes the lines $\vec{r}=\hat{i}+\lambda(-\hat{i}+2\hat{j}+2\hat{k}), \lambda\in\mathbb{R}$ and $\vec{r}=\mu(2\hat{i}-\hat{j}+2\hat{k}), \mu\in\mathbb{R}$ respectively. If L_3 is a line which is perpendicular to both L_1 and L_2 and cuts both, then which of the following options describe(s) L_3 ? **[JEE (Advanced) 2019]**

(A) $\vec{r}=\frac{1}{3}(2\hat{i}+\hat{k})+t(2\hat{i}+2\hat{j}-\hat{k}), t\in\mathbb{R}$

(B) $\vec{r}=\frac{2}{9}(2\hat{i}-\hat{j}+2\hat{k})+t(2\hat{i}+2\hat{j}-\hat{k}), t\in\mathbb{R}$

(C) $\vec{r}=t(2\hat{i}+2\hat{j}-\hat{k}), t\in\mathbb{R}$

(D) $\vec{r}=\frac{2}{9}(4\hat{i}+\hat{j}+\hat{k})+t(2\hat{i}+2\hat{j}-\hat{k}), t\in\mathbb{R}$

MTD077

15. Three lines are given by

$\vec{r}=\lambda\hat{i}, \lambda\in\mathbb{R}$

$\vec{r}=\mu(\hat{i}+\hat{j}), \mu\in\mathbb{R}$ and

$\vec{r}=\nu(\hat{i}+\hat{j}+\hat{k}), \nu\in\mathbb{R}$.

Let the lines cut the plane $x + y + z = 1$ at the points A, B and C respectively. If the area of the triangle ABC is Δ then the value of $(6\Delta)^2$ equals ___ **[JEE (Advanced) 2019]**

MTD078

16. Let L_1 and L_2 be the following straight lines.

$$L_1 : \frac{x-1}{1} = \frac{y}{-1} = \frac{z-1}{3} \text{ and } L_2 : \frac{x-1}{-3} = \frac{y}{-1} = \frac{z-1}{1}$$

Suppose the straight line

$$L : \frac{x-\alpha}{l} = \frac{y-1}{m} = \frac{z-\gamma}{-2}$$

lies in the plane containing L_1 and L_2, and passes through the point of intersection of L_1 and L_2. If the line L bisects the acute angle between the lines L_1 and L_2, then which of the following statements is/are TRUE? **[JEE (Advanced) 2020]**

(A) $\alpha - \gamma = 3$ (B) $\ell + m = 2$ (C) $\alpha - \gamma = 1$ (D) $\ell + m = 0$

MTD079

17. Let α, β, γ, δ be real numbers such that $\alpha^2 + \beta^2 + \gamma^2 \neq 0$ and $\alpha + \gamma = 1$. Suppose the point $(3,2,-1)$ is the mirror image of the point $(1,0,-1)$ with respect to the plane $\alpha x + \beta y + \gamma z = \delta$. Then which of the following statements is/are TRUE ? **[JEE (Advanced) 2020]**

(A) $\alpha + \beta = 2$ (B) $\delta - \gamma = 3$ (C) $\delta + \beta = 4$ (D) $\alpha + \beta + \gamma = \delta$

MTD080

Paragraph for Question No. 18 to 19

Let α, β and γ be real numbers such that the system of linear equations

$x + 2y + 3z = \alpha$

$4x + 5y + 6z = \beta$

$7x + 8y + 9z = \gamma - 1$

is consistent. Let $|M|$ represent the determinant of the matrix $M = \begin{bmatrix} \alpha & 2 & \gamma \\ \beta & 1 & 0 \\ -1 & 0 & 1 \end{bmatrix}$

Let P be the plane containing all those (α, β, γ) for which the above system of linear equations is consistent, and D be the square of the distance of the point $(0, 1, 0)$ from the plane P.

18. The value of $|M|$ is ________. **[JEE (Advanced) 2021]**

MTD081

19. The value of D is ________. **[JEE (Advanced) 2021]**

MTD082

20. Let P_1 and P_2 be two planes given by

P_1: $10x + 15y + 12z - 60 = 0$,

P_2 : $-2x + 5y + 4z - 20 = 0$.

Which of the following straight lines can be an edge of some tetrahedron whose two faces lie on P_1 and P_2 ? **[JEE (Advanced) 2022]**

(A) $\frac{x-1}{0} = \frac{y-1}{0} = \frac{z-1}{5}$ (B) $\frac{x-6}{-5} = \frac{y}{2} = \frac{z}{3}$

(C) $\frac{x}{-2} = \frac{y-4}{5} = \frac{z}{4}$ (D) $\frac{x}{1} = \frac{y-4}{-2} = \frac{z}{3}$

MTD083

21. Let Q be the cube with the set of vertices $\{(x_1, x_2, x_3) \in \mathbb{R}^3 : x_1, x_2, x_3 \{0,1\}\}$. Let F be the set of all twelve lines containing the diagonals of the six faces of the cube Q. Let S be the set of all four lines containing the main diagonals of the cube Q; for instance, the line passing through the vertices (0, 0, 0) and (1, 1, 1) is in S. For lines ℓ_1 and ℓ_2, let d(ℓ_1, ℓ_2) denote the shortest distance between them. Then the maximum value of d(ℓ_1, ℓ_2), as ℓ_1 varies over F and ℓ_2 varies over S, is

[JEE (Advanced) 2023]

(A) $\frac{1}{\sqrt{6}}$ (B) $\frac{1}{\sqrt{8}}$ (C) $\frac{1}{\sqrt{3}}$ (D) $\frac{1}{\sqrt{12}}$

MTD134

22. Let P be the plane $\sqrt{3}x + 2y + 3z = 16$ and let

$$S = \left\{\alpha\hat{i} + \beta\hat{j} + \gamma\hat{k} : \alpha^2 + \beta^2 + \gamma^2 = 1 \text{ and the distance of } (\alpha, \beta, \gamma) \text{ from the plane } P \text{ is } \frac{7}{2}\right\}.$$

Let $\vec{u}, \vec{v}$ and $\vec{w}$ be three distinct vectors in S such that $|\vec{u} - \vec{v}| = |\vec{v} - \vec{w}| = |\vec{w} - \vec{u}|$. Let V be the volume of the parallelepiped determined by vectors $\vec{u}, \vec{v}$ and $\vec{w}$. Then the value of $\frac{80}{\sqrt{3}}V$ is

[JEE (Advanced) 2023]

MTD135

23. Let ℓ_1 and ℓ_2 be the lines $\vec{r}_1 = \lambda(\hat{i} + \hat{j} + \hat{k})$ and $\vec{r}_2 = (\hat{j} - \hat{k}) + \mu(\hat{i} + \hat{k})$, respectively. Let X be the set of all the planes H that contain the line ℓ_1. For a plane H, let $d(H)$ denote the smallest possible distance between the points of ℓ_2 and H. Let H_0 be plane in X for which $d(H_0)$ is the maximum value of $d(H)$ as H varies over all planes in X.

Match each entry in **List-I** to the correct entries in **List-II.**

List-I	**List-II**
(P) The value of $d(H_0)$ is	(1) $\sqrt{3}$
(Q) The distance of the point (0,1,2) from H_0 is	(2) $\frac{1}{\sqrt{3}}$
(R) The distance of origin from H_0 is	(3) 0
(S) The distance of origin from the point of intersection of planes $y = z, x = 1$ and H_0 is	(4) $\sqrt{2}$
	(5) $\frac{1}{\sqrt{2}}$

The correct option is :

[JEE (Advanced) 2023]

(A) (P) $\rightarrow$ (2) (Q) $\rightarrow$ (4) (R) $\rightarrow$ (5) (S) $\rightarrow$ (1)
(B) (P) $\rightarrow$ (5) (Q) $\rightarrow$ (4) (R) $\rightarrow$ (3) (S) $\rightarrow$ (1)
(C) (P) $\rightarrow$ (2) (Q) $\rightarrow$ (1) (R) $\rightarrow$ (3) (S) $\rightarrow$ (2)
(D) (P) $\rightarrow$ (5) (Q) $\rightarrow$ (1) (R) $\rightarrow$ (4) (S) $\rightarrow$ (2)

MTD136

JEE (Main) Practice Paper

This paper is for yourself practice and assessment the discussion of this paper is optional though you can see PDF solutions or video solutions or solutions in hardcopy whichever is provided.

SECTION–A

- This section contains **TWENTY** questions.
- Each question has **FOUR** options (1), (2), (3) and (4). **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories:

  Full Marks : +4, if only the bubble corresponding to the correct option is darkened.

  Zero Marks : 0, if none of the bubbles is darkened.

  Negative Marks : –1 in all other cases.

1. Find the direction cosines ℓ, m, n of line which are connected by the relations $\ell + m + n = 0$, $2mn + 2m\ell - n\ell = 0$.

(1) $-\frac{1}{\sqrt{6}}, -\frac{1}{\sqrt{6}}, \frac{2}{\sqrt{6}}$ (2) $-\frac{1}{\sqrt{6}}, -\frac{2}{\sqrt{6}}, \frac{2}{\sqrt{6}}$ (3) $\frac{2}{\sqrt{6}}, \frac{1}{\sqrt{6}}, \frac{-1}{\sqrt{6}}$ (4) $\frac{2}{\sqrt{6}}, \frac{1}{\sqrt{6}}, \frac{1}{\sqrt{6}}$

MTD001

2. Find the coordinates of the point when the line through $(3, 2, 5)$ and $(-2, 3, -5)$ crosses the xy plane.

(1) $\left(\frac{1}{2},\frac{5}{3},0\right)$ (2) $\left(\frac{1}{2},\frac{5}{2},0\right)$ (3) $\left(\frac{3}{2},\frac{5}{2},0\right)$ (4) $\left(\frac{3}{2},0,0\right)$

MTD002

3. Find the cartesian form of the equation of a line whose vector form is given by

$\vec{r} = 2\hat{i} - \hat{j} + 4\hat{k} + \lambda(\hat{i} + \hat{j} - 2\hat{k})$

(1) $\frac{x-2}{4} = \frac{y+1}{2} = \frac{z-4}{-2}$ (2) $\frac{x-2}{1} = \frac{y+1}{5} = \frac{z-4}{-2}$

(3) $\frac{x-2}{1} = \frac{y+1}{1} = \frac{z-4}{1}$ (4) $\frac{x-2}{1} = \frac{y+1}{1} = \frac{z-4}{-2}$

MTD003

4. Find the distance between points of intersection of

Lines $\frac{x-1}{2} = \frac{y-2}{3} = \frac{z-3}{4}$ & $\frac{x-4}{5} = \frac{y-1}{2} = z$ and

Lines $\vec{r} = \left(\hat{i} + \hat{j} - \hat{k}\right) + \lambda\left(3\hat{i} - \hat{j}\right)$ & $\vec{r} = \left(4\hat{i} - \hat{k}\right) + \mu\left(2\hat{i} + 3\hat{k}\right)$

(1) $\sqrt{26}$ (2) 5 (3) 6 (4) $\sqrt{27}$

MTD004

5. The foot of the perpendicular from the origin to the join of $A(-9,4,5)$ and $B(11,0,-1)$ is the mid point of AB. Also find distance of point $(2, 4, 4)$ from the line AB.

(1) 3 (2) 5 (3) 6 (4) $\sqrt{27}$

MTD005

6. Find the equation of the two lines through the origin which intersect the line $\frac{x-3}{2}=\frac{y-3}{1}=\frac{z}{1}$ at an angle of $\pi/3$.

(1) $\frac{x}{1}=\frac{y}{-3}=\frac{z}{-1}, \frac{x}{-1}=\frac{y}{1}=\frac{z}{-2}$
(2) $\frac{x}{1}=\frac{y}{2}=\frac{z}{-1}, \frac{x}{1}=\frac{y}{1}=\frac{z}{-2}$
(3) $\frac{x}{1}=\frac{y}{2}=\frac{z}{-1}, \frac{x}{-1}=\frac{y}{1}=\frac{z}{-2}$
(4) $\frac{x}{1}=\frac{y}{2}=\frac{z}{-1}, \frac{x}{-1}=\frac{y}{1}=\frac{z}{2}$

MTD006

7. The foot of the perpendicular from (a, b, c) on the line $x = y = z$ is the point (r, r, r), then find the value of r.

(1) $r=\frac{a+b+c}{1}$ (2) $r=\frac{a+b+c}{3}$ (3) $r=\frac{a+b+c}{4}$ (4) $r=\frac{a+b+c}{5}$

MTD007

8. Find the shortest distance between the lines:
$\vec{r}=(4\hat{i}-\hat{j})+\lambda\ (\hat{i}+2\hat{j}-3\hat{k})$ and $\vec{r}=(\hat{i}-\hat{j}+2\hat{k})+\mu\ (2\hat{i}+4\hat{j}-5\hat{k})$

(1) $\frac{7}{\sqrt{5}}$ (2) $\frac{\sqrt{6}}{\sqrt{5}}$ (3) $\frac{6}{\sqrt{5}}$ (4) $\frac{3}{\sqrt{5}}$

MTD008

9. Let L_1 and L_2 be the lines whose equation are $\frac{x-3}{3}=\frac{y-8}{-1}=\frac{z-3}{1}$ and $\frac{x+3}{-3}=\frac{y+7}{2}=\frac{z-6}{4}$ respectively. A and B are two points on L_1 and L_2 respectively such that AB is perpendicular to both the lines L_1 and L_2. Find the distance between the points A & B.

(1) $3\sqrt{30}$ (2) $5\sqrt{30}$ (3) $2\sqrt{30}$ (4) $\sqrt{30}$

MTD009

10. Find equation of plane which passes through (0,1,0), (0,0,1), (1,2,3)

(1) $4x-y-z+2=0$ (2) $3x-y-z+1=0$ (3) $4x+y-z+1=0$ (4) $4x-y-z+1=0$

MTD010

11. Find the locus of the point whose sum of the square of distances from the planes $x + y + z = 0, x - z = 0$ and $x - 2y + z = 0$ is 9

(1) $x^2 + y^2 + z^2 = 9$
(2) $x^2 + y^2 + 3z^2 = 9$
(3) $6x^2 + y^2 + z^2 = 9$
(4) $x^2 + 3y^2 + z^2 = 9$

MTD011

12. The foot of the perpendicular drawn from the origin to the plane is $(4, -2, -5)$, then find the vector equation of plane.

(1) $\vec{r}.(4\hat{i}-2\hat{j}-5\hat{k})=42$
(2) $\vec{r}.(4\hat{i}-2\hat{j}-5\hat{k})=47$
(3) $\vec{r}.(4\hat{i}-2\hat{j}-5\hat{k})=40$
(4) $\vec{r}.(4\hat{i}-2\hat{j}-5\hat{k})=45$

MTD012

13. The reflection of line $\frac{x-1}{3}=\frac{y-2}{4}=\frac{z-3}{5}$ about the plane $x - 2y + z - 6 = 0$ is

(1) $\frac{x-3}{3}=\frac{y+2}{4}=\frac{z-5}{3}$
(2) $\frac{x-3}{3}=\frac{y+2}{4}=\frac{z-5}{5}$
(3) $\frac{x-3}{3}=\frac{y+2}{5}=\frac{z-5}{5}$
(4) $\frac{x-3}{1}=\frac{y+2}{1}=\frac{z-5}{5}$

MTD013

14. Consider the lines $\frac{x}{2}=\frac{y}{3}=\frac{z}{5}$ and $\frac{x}{1}=\frac{y}{2}=\frac{z}{3}$, then the equation of the line which

(1) bisects the angle between the lines is $\frac{x}{3}=\frac{y}{3}=\frac{z}{8}$

(2) bisects the angle between the lines is $\frac{x}{1}=\frac{y}{2}=\frac{z}{3}$

(3) passes through origin and is perpendicular to the given lines is $x=y=-z$

(4) passes through origin and is perpendicular to the given lines is $x=y=z$

MTD014

15. Find the shortest distance between any two opposite edges of a tetrahedron formed by the planes $y+z=0, x+z=0, x+y=0, x+y+z=\sqrt{3}a$.

(1) a (2) $2a$ (3) $a/\sqrt{2}$ (4) $\sqrt{2}a$

MTD015

16. A plane meets the coordinate axes in A, B, C and (α, β, γ) is the centroid of the triangle ABC, then the equation of the plane is

(1) $\frac{x}{\alpha}+\frac{y}{\beta}+\frac{z}{\gamma}=3$ (2) $\frac{x}{\alpha}+\frac{y}{\beta}+\frac{z}{\gamma}=1$ (3) $\frac{3x}{\alpha}+\frac{3y}{\beta}+\frac{3z}{\gamma}=1$ (4) $\alpha x+\beta y+\gamma z=1$

MTD016

17. Equation of plane which passes through the point of intersection of lines

$\frac{x-1}{3}=\frac{y-2}{1}=\frac{z-3}{2}$ and $\frac{x-3}{1}=\frac{y-1}{2}=\frac{z-2}{3}$ and at greatest distance from the point (0,0,0) is

(1) $4x+3y+5z=25$ (2) $4x+3y+5z=50$

(3) $3x+4y+5z=49$ (4) $x+7y-5z=2$

MTD017

18. The non-zero value of 'a' for which the lines $2x-y+3z+4=0=ax+y-z+2$ and $x-3y+z=0=x+2y+z+1$ are co-planar is :

(1) –2 (2) 4 (3) 6 (4) 0

MTD018

19. A line having direction ratios 3,4,5 cuts 2 planes $2x-3y+6z-12=0$ and $2x-3y+6z+2=0$ at point P & Q, then find length of PQ

(1) $\frac{35\sqrt{2}}{12}$ (2) $\frac{35\sqrt{2}}{24}$ (3) $\frac{35\sqrt{2}}{6}$ (4) $\frac{35\sqrt{2}}{8}$

MTD019

20. A line L_1 having direction ratios 1, 0, 1 lies on xz plane. Now this xz plane is rotated about z –axis by an angle of 90°. Now the new position of L_1 is L_2. The angle between L_1 & L_2 is:

(1) 60° (2) 90° (3) 30° (4) 45°

MTD020

SECTION–B

- This section contains **TEN** Questions. Attempt any five Questions. First five Questions Attempt will be considered for marking.
- The answer to each question is a **NUMERICAL VALUE**.
- For each question, enter the correct numerical value (If the numerical value has more than two decimal places, **truncate/round-off** the value to **TWO** decimal places; e.g. 6.25, 7.00, –0.33, –.30, 30.27, –127.30, if answer is 11.36777..... then both 11.36 and 11.37 will be correct).
- Answer to each question will be evaluated according to the following marking scheme:
  Full Marks : +4, if ONLY the correct numerical value is entered as answer.
  Zero Marks : 0 in all other cases.

1. The equation of image of the line $\frac{x-1}{9}=\frac{y-2}{-1}=\frac{z+3}{-3}$ in the plane $3x-3y+10z=26$ is $\frac{x-4}{\alpha}=\frac{y+1}{-1}=\frac{z-7}{-3}$ then find α

MTD021

2. The equation of the plane containing parallel lines $(x-4)=\frac{3-y}{4}=\frac{z-2}{5}$ and $(x-3)=\lambda(y+2)=\mu z$ is $11x-y-3z=7b$ then find b

MTD022

3. The equation of the plane passing through the points (3,4,1) and (0,1,0) and parallel to the line $\frac{x+3}{2}=\frac{y-3}{7}=\frac{z-2}{5}$ is $8x-13y+5\lambda z+13=0$ then find λ

MTD023

4. If the plane $2x-3y+6z-11=0$ makes an angle $\sin^{-1}(k)$ with x –axis, then find $\frac{7k}{2}$.

MTD024

5. A variable plane forms a tetrahedron of constant volume 64 K^3 with the coordinate planes and the origin, then locus of the centroid of the tetrahedron is $xyz=\lambda k^3$ then find the value of λ

MTD025

6. If the distance between the planes $8x+12y-14z=2$ and $4x+6y-7z=2$ can be expressed in the form $\frac{1}{\sqrt{N}}$ where N is natural then the value of $\frac{N(N+1)}{2}$ is

MTD137

7. Let $ABCD$ be a tetrahedron such that the edges AB, AC and AD are mutually perpendicular. Let the area of triangles ABC, ACD and ADB be 3, 4 and 5 sq. units respectively. Then the area of the triangle BCD, is

MTD138

8. The line which contains all points (x,y,z) which are of the form $(x,y,z)=(2,-2,5)+\lambda(1,-3,2)$ intersects the plane $2x-3y+4z=163$ at P and intersects the YZ plane at Q. If the distance PQ is $a\sqrt{b}$ where $a,b\in N$ and $a>3$ then $(a+b)$ equals

MTD139

9. The distance of the point $(-1,-5,-10)$ from the point of intersection of the line $\frac{x-2}{2}=\frac{y+1}{4}=\frac{z-2}{12}$ and the plane $x-y+z=5$ is

MTD140

10. Let the distance between the plane $3x+4y+5z+c_1=0$ and $3x+4y+5z-c_2=0$ is $2\sqrt{2}$, where $c_1,c_2\in W$, then number of possible ordered pair(s) of (c_1,c_2) is –

MTD141

JEE (Advanced) Practice Paper

This paper is for yourself practice and assessment the discussion of this paper is optional though you can see PDF solutions or video solutions or solutions in hardcopy whichever is provided.

SECTION–I

- This section contains **SIX** questions.
- Each question has **FOUR** options (A), (B), (C) and (D). **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in <u>one of the following categories</u>:

Full Marks	:	+3	If only the bubble corresponding to the correct option is darkened.
Zero Marks	:	0	If none of the bubbles is darkened.
Negative Marks	:	–1	In all other cases.

1. The direction cosines of the lines bisecting the angle between the lines whose direction cosines are ℓ_1, m_1, n_1 and ℓ_2, m_2, n_2 and the angle between these lines is θ is

(A) $\dfrac{\ell_1-\ell_2}{\cos\frac{\theta}{2}}, \dfrac{m_1-m_2}{\cos\frac{\theta}{2}}, \dfrac{n_1-n_2}{\cos\frac{\theta}{2}}$

(B) $\dfrac{\ell_1+\ell_2}{2\cos\frac{\theta}{2}}, \dfrac{m_1+m_2}{2\cos\frac{\theta}{2}}, \dfrac{n_1+n_2}{2\cos\frac{\theta}{2}}$

(C) $\dfrac{\ell_1+\ell_2}{2\sin\frac{\theta}{3}}, \dfrac{m_1+m_2}{2\sin\frac{\theta}{3}}, \dfrac{n_1+n_2}{2\sin\frac{\theta}{3}}$

(D) $\dfrac{\ell_1-\ell_2}{\sin\frac{\theta}{2}}, \dfrac{m_1-m_2}{\sin\frac{\theta}{2}}, \dfrac{n_1-n_2}{\sin\frac{\theta}{2}}$

MTD046

2. Acute angle between the lines $\dfrac{x-1}{\ell} = \dfrac{y+1}{m} = \dfrac{z}{n}$ and $\dfrac{x+1}{m} = \dfrac{y-3}{n} = \dfrac{z-1}{\ell}$ where $\ell > m > n$, and ℓ, m, n are the roots of the cubic equation $x^3 + x^2 - 4x = 4$ is equal to :

(A) $\cos^{-1}\dfrac{3}{\sqrt{13}}$ (B) $\sin^{-1}\dfrac{\sqrt{65}}{3}$ (C) $2\cos^{-1}\sqrt{\dfrac{13}{18}}$ (D) $\tan^{-1}\dfrac{2}{3}$

MTD047

3. The line $\dfrac{x-2}{3} = \dfrac{y+1}{2} = \dfrac{z-1}{-1}$ intersects the curve $xy = c^2, z = 0$ if c is equal to :

(A) –1 (B) $-\sqrt{5}$ (C) 5 (D) 1

MTD048

4. If three distinct lines $\dfrac{x-1}{3} = \dfrac{y-2}{2} = \dfrac{z-3}{1}, \dfrac{x-1}{5} = \dfrac{2y-4}{3} = \dfrac{3z-9}{1}, \dfrac{x-\lambda^2}{3} = \dfrac{y-2}{2} = \dfrac{z-3}{\lambda}$ are concurrent, then the value of λ may be :

(A) 1 (B) –1 (C) 2 (D) –2

MTD049

5. The line $\dfrac{x+6}{5} = \dfrac{y+10}{3} = \dfrac{z+14}{8}$ is the hypotenuse of an isosceles right angle triangle whose opposite vertex is (7, 2, 4). Then the equation of remaining sides is/are -

(A) $\dfrac{x-7}{3} = \dfrac{y-2}{6} = \dfrac{z-4}{2}$

(B) $\dfrac{x-7}{2} = \dfrac{y-2}{3} = \dfrac{z-4}{6}$

(C) $\dfrac{x+7}{3} = \dfrac{y+2}{6} = \dfrac{z+4}{2}$

(D) $\dfrac{x+7}{2} = \dfrac{y+2}{-3} = \dfrac{z+4}{6}$

MTD050

6. If the distance between points $(\alpha, 5\alpha, 10\alpha)$ from the point of intersection of the line. $\vec{r} = \left(2\hat{i} - \hat{j} + 2\hat{k}\right) + \lambda\left(2\hat{i} + 4\hat{j} + 12\hat{k}\right)$ and plane $\vec{r} \cdot \left(\hat{i} - \hat{j} + \hat{k}\right) = 5$ is 13 units, then value of α may be

(A) 1 (B) 3 (C) 4 (D) $\frac{80}{63}$

MTD051

SECTION-II

- This section contains **SIX** questions.
- Each question has **FOUR** options for correct answer(s). **ONE OR MORE THAN ONE** of these four option(s) is (are) correct option(s).
- For each question, choose the correct option(s) to answer the question.
- Answer to each question will be evaluated according to the following marking scheme:

Full Marks : +4 if only (all) the correct option(s) is (are) chosen.
Partial Marks : +3 if all the four options are correct but ONLY three options are chosen.
Partial Marks : +2 if three or more options are correct but ONLY two options are chosen, both of which are correct options.
Partial Marks : +1 if two or more options are correct but ONLY one option is chosen and it is a correct option.
Zero Marks : 0 if none of the options is chosen (i.e. the question is unanswered).
Negative Marks : –2 in all other cases.

For Example : If first, third and fourth are the **ONLY** three correct options for a question with second option being an incorrect option; selecting only all the three correct options will result in +4 marks. Selecting only two of the three correct options (e.g. the first and fourth options), without selecting any incorrect option (second option in this case), will result in +2 marks. Selecting only one of the three correct options (either first or third or fourth option), without selecting any incorrect option (second option in this case), will result in +1 marks. Selecting any incorrect option(s) (second option in this case), with or without selection of any correct option(s) will result in –2 marks.

7. Consider the following linear equations

$$ax + by + cz = 0$$
$$bx + cy + az = 0$$
$$cx + ay + bz = 0$$

then which of the following statement(s) is/are true –

(A) If $a + b + c \neq 0$ and $a^2 + b^2 + c^2 = ab + bc + ca$, then the equations represent identical planes.

(B) If $a + b + c = 0$ and $a^2 + b^2 + c^2 \neq ab + bc + ca$, then the equations represent the line $x = y = z$.

(C) If $a + b + c \neq 0$ and $a^2 + b^2 + c^2 \neq ab + bc + ca$, then the equations represent planes meeting only at a single point.

(D) If $a + b + c = 0$ and $a^2 + b^2 + c^2 = ab + bc + ca$, then the equations represent whole of the three-dimensional space.

MTD052

8. The coplanar points A, B, C, D are $(2-x, 2, 2)$, $(2, 2-y, 2)$, $(2, 2, 2-z)$ and $(1,1,1)$ respectively, then

(A) $\frac{1}{x}+\frac{1}{y}+\frac{1}{z}=1$ (B) $\frac{x-1}{x}+\frac{y-1}{y}+\frac{z-1}{z}=2$

(C) $\frac{1}{1-x}+\frac{1}{1-y}+\frac{1}{1-z}=1$ (D) $\frac{x}{1-x}+\frac{y}{1-y}+\frac{z}{1-z}+2=0$

MTD053

9. The line $\frac{x-4}{k}=\frac{y-2}{1}=\frac{z-k^2}{2}$ lies in the plane $2x-4y+z=1$. Then the value of k cannot be:

(A) 1 (B) –1 (C) 2 (D) –2

MTD054

10. Equation of the plane passing through $A(x_1, y_1, z_1)$ and containing the line $\frac{x-x_2}{d_1}=\frac{y-y_2}{d_2}=\frac{z-z_2}{d_3}$ is

(A) $\begin{vmatrix} x-x_1 & y-y_1 & z-z_1 \\ x_2-x_1 & y_2-y_1 & z_2-z_1 \\ d_1 & d_2 & d_3 \end{vmatrix}=0$ (B) $\begin{vmatrix} x-x_2 & y-y_2 & z-z_2 \\ x_1-x_2 & y_1-y_2 & z_1-z_2 \\ d_1 & d_2 & d_3 \end{vmatrix}=0$

(C) $\begin{vmatrix} x-d_1 & y-d_2 & z-d_3 \\ x_1 & y_1 & z_1 \\ x_2 & y_2 & z_2 \end{vmatrix}=0$ (D) $\begin{vmatrix} x & y & z \\ x_1-x_2 & y_1-y_2 & z_1-z_2 \\ d_1 & d_2 & d_3 \end{vmatrix}=0$

MTD055

11. A line $\frac{x-1}{2}=\frac{y-2}{3}=\frac{z-3}{4}$ intersects the plane $x-y+2z+2=0$ at point A. The equation of the straight line passing through A lying in the given plane and at minimum inclination with the given line is/are

(A) $\frac{x+1}{1}=\frac{y+1}{5}=\frac{z+1}{2}$ (B) $5x-y+4=0=2y-5z-3$

(C) $5x+y-5z+1=0=2y-5z-3$ (D) $\frac{x+2}{1}=\frac{y+6}{5}=\frac{z+3}{2}$

MTD056

12. If the π –plane $7x+(\alpha+4)y+4z-r=0$ passing through the points of intersection of the planes $2x+3y-z+1=0$ & $x+y-2z+3=0$ and is perpendicular to the plane $3x-y-2z=4$ and $\left(\frac{12}{\beta}, \frac{-78}{\beta}, \frac{57}{\beta}\right)$ is image of point $(1,1,1)$ in π–plane, then

(A) $\alpha=9$ (B) $\beta=-117$ (C) $\alpha=-9$ (D) $\beta=117$

MTD057

SECTION–III

- This section contains **TWO** paragraphs.
- Based on each paragraph, there are **THREE** questions.
- Each question has **FOUR** options (A), (B), (C) and (D) **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories :

Full Marks : +3 if only the bubble corresponding to the correct answer is darkened.

Zero Marks : 0 in all other cases.

Comprehension # 1 (Q. No. 13 - 15)

Let $a_1x + b_1y + c_1z + d_1 = 0$ and $a_2x + b_2y + c_2z + d_2 = 0$ be two planes, where $d_1, d_2 > 0$. Then origin lies in acute angle if $a_1a_2 + b_1b_2 + c_1c_2 < 0$ and origin lies in obtuse angle if $a_1a_2 + b_1b_2 + c_1c_2 > 0$.Further point (x_1, y_1, z_1) and origin both lie either in acute angle or in obtuse angle , if $(a_1x_1 + b_1y_1 + c_1z_1 + d_1)(a_2x_1 + b_2y_1 + c_2z_1 + d_2) > 0$, one of (x_1, y_1, z_1) and origin lie in acute angle and the other in obtuse angle, if

$(a_1x_1 + b_1y_1 + c_1z_1 + d_1)(a_2x_1 + b_2y_1 + c_2z_1 + d_2) < 0$

13. Given the planes $2x + 3y - 4z + 7 = 0$ and $x - 2y + 3z - 5 = 0$, if a point P is $(1, -2, 3)$ and O is origin, then

(A) O and P both lie in acute angle between the planes

(B) O and P both lie in obtuse angle between the planes

(C) O lies in acute angle, P lies in obtuse angle.

(D) O lies in obtuse angle, P lies in acute angle.

MTD058

14. Given the planes $x + 2y - 3z + 5 = 0$ and $2x + y + 3z + 1 = 0$. If a point P is $(2, -1, 2)$ and O is origin, then

(A) O and P both lie in acute angle between the planes

(B) O and P both lie in obtuse angle between the planes

(C) O lies in acute angle, P lies in obtuse angle.

(D) O lies in obtuse angle, P lies in acute angle.

MTD059

15. Given the planes $x + 2y - 3z + 2 = 0$ and $x - 2y + 3z + 7 = 0$, if the point P is $(1, 2, 2)$ and O is origin, then

(A) O and P both lie in acute angle between the planes

(B) O and P both lie in obtuse angle between the planes

(C) O lies in acute angle, P lies in obtuse angle.

(D) O lies in obtuse angle, P lies in acute angle.

MTD060

Comprehension # 2 (Q. No. 16 - 18)

The vertices of square pyramid are $A(0,0,0), B(4,0,0), C(4,0,4), D(0,0,4)$ and $E(2,6,6)$

16. Volume of the pyramid is:

(A) 32 (B) 16 (C) 8 (D) 4

MTD061

17. Centroids of triangular faces of square pyramid are

(A) Non-coplanar

(B) Coplanar but the plane is not parallel to base plane

(C) Coplanar & plane is parallel to base plane

(D) Co-linear

MTD062

18. The distance of the plane EBC from ortho-centre of ΔABD is :

(A) 2 (B) 5 (C) $\frac{12}{\sqrt{10}}$ (D) $\sqrt{10}$

MTD063

ANSWER KEY

EXERCISE - O

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	A	B	B	C	C	C	B	B	C	C
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	A	A	B	B	A,D	A,D	A,B,C	A,C	A,B,C	B,C,D
Que.	21	22	23	24	25	26	27	28	29	
Ans.	B,C	A,B	C	A	A,B,C	A,B,C	1.41 or 1.42	0.66 or 0.67	D	
Que.	30									
Ans.	(A) R; (B) Q; (C) P; (D) S									

EXERCISE - S

1. 3 **2.** 17 **3.** 6 **4.** 9 **5.** 6

6. 3 **7.** 4.50 **8.** 3.50 **9.** 4.00 **10.** 2.44 or 2.45

EXERCISE - JEE (Main) PYQ

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	2	4.00	2	1	3	28	2	4	4
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	84	1	1	1	2	4	2	4	28	2
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	3	4	4	4	288	315	9	158	1	1

EXERCISE - JEE (Advanced) PYQ

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	D	B,D	A,D	A	C	B,D	A,B	B,C,D	C	A
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	C,D	8	0.5	A,B,D	0.75	A,B	A,B,C	1.00	1.50	A,B,D
Que.	21	22	23							
Ans.	A	45	B							

JEE (Main) Practice Paper

Section-A	Q.	1	2	3	4	5	6	7	8	9	10
	A.	1	2	4	1	1	3	2	3	1	4
	Q.	11	12	13	14	15	16	17	18	19	20
	A.	1	4	2	3	4	1	2	1	1	1
Section-B	Q.	1	2	3	4	5	6	7	8	9	10
	A.	9	5	3	1	6	5151	7.07	23	13	21

JEE (Advanced) Practice Paper

Section-I	**Q.**	**1**	**2**	**3**	**4**	**5**	**6**
	A.	B	C	B	B	A	D
Section-II	**Q.**	**7**	**8**	**9**	**10**	**11**	**12**
	A.	A,B,C,D	A,B	B,C,D	A,B	A,B,C,D	A,D
Section-III	**Q.**	**13**	**14**	**15**	**16**	**17**	**18**
	A.	B	C	A	A	C	C

Important Notes

Important Notes