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EdLoop EAPCET

MATHEMATICS · EAPCET (EAMCET)

Three Dimensional Geometry

Previous Year Questions with answers

577 questions · **149** papers · **2010–2026** · newest paper first

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What is in this PDF: every Three Dimensional Geometry question we hold from past AP and TS EAPCET (called EAMCET until 2020 in Andhra Pradesh and 2023 in Telangana) papers, with its options and answer. Where an answer comes from a source other than the official final key, it says so next to the answer.

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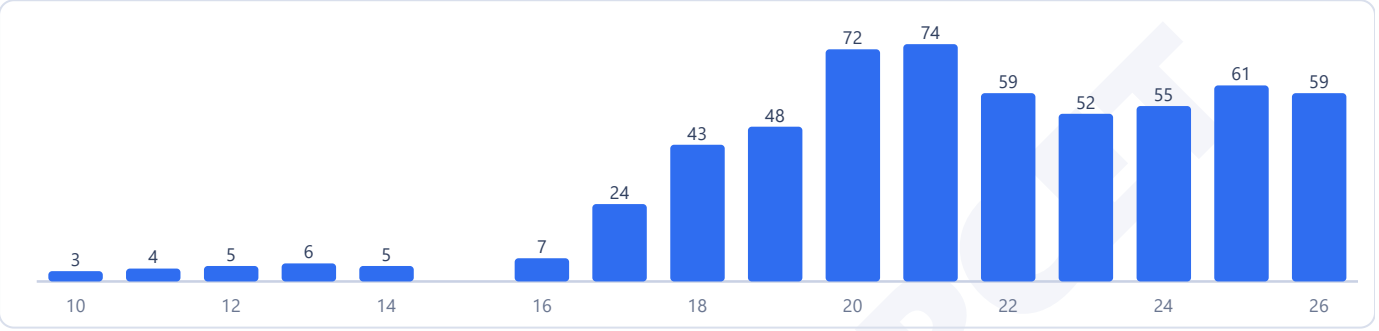
Chapter at a glance

4.6%	577	77 of 77	577 / 0
of Mathematics questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Steady: 3.8 questions per paper in 2024–2026 against 3.6 in 2022–2023.

Questions per year



Counts are the questions we hold: 577 in 149 papers. 18 questions in this chapter came back in more than one paper.

Most-asked topics in this chapter (2010–2026)

Points & Direction Cosines	279
Planes	232
Lines	61
Sphere (legacy)	5

How often it comes up

Three Dimensional Geometry commands a massive, indispensable presence across every sitting of the EAPCET examination. Over the complete testing record from 2010 through 2026, the chapter delivered 577 questions across 149 evaluated exam papers, appearing in all 149 papers to maintain an average of 3.9 questions per paper and a 4.8 percent subject share. In contemporary testing from 2022 to 2026, Three Dimensional Geometry preserved this unbroken appearance across all 77 sittings, supplying 286 questions (averaging 3.7 questions per paper and a 4.6 percent subject share). This consistent volume places the chapter at rank 9 of 29 mathematics chapters.

Every paper in recent history presents candidates with three to four solid geometry problems. Over the three most recent testing years from 2024 to 2026, question setters included 175 questions across 46 sittings (present in all 46 papers, averaging 3.8 questions per test and a 4.8 percent share). During the older examination timeframe from 2010 to 2021, the chapter provided 291 questions across 72 sittings (appearing in all 72 papers, 4.0 per test, 5.1 percent share). When tracking long-term trends, comparing early testing with the last three years shows the share is about the same, while comparing recent testing with the last three years also reveals the share is about the same. In state-wise distributions from 2022 to 2026, Andhra Pradesh boards accounted for 171 questions across 48 papers (all 48 papers, 3.6 per test, 4.5 percent share), whereas Telangana contributed 115 questions across 29 papers (all 29 papers, 4.0 per test, 5.0 percent share).

Most-asked topics

Questions in this chapter organize into four primary spatial geometry areas:

- **Points & Direction Cosines**: Delivering 279 total questions, with 135 appearing in modern testing (tested through 2026). Concepts cover 3D distance and section formulas, direction cosines (l squared plus m squared plus n squared equals one), direction ratios, angle between lines, projection, and angle bisectors.

- **Planes**: Supplying 232 total questions, with 122 set in recent examinations (tested through 2026). Coverage includes general plane equations, normal form, three-point forms, intercept forms, angle between planes, perpendicular distances, family of planes, and perpendicular feet or reflection images.
- **Lines**: Accounting for 61 total questions, with 27 emerging in recent cycles (tested up to 2026). Topics center on symmetric line equations, point-direction forms, perpendicular distance of a point, line coplanarity, and shortest distance between skew lines.
- **Sphere (legacy)**: Contributing 5 historical questions, with 2 in recent papers (last tested in 2026). Problems address standard sphere equations, center and radius, and loci of moving points maintaining constant distance ratios.

What the questions look like

Examiners test direction cosine relations, reflections in planes, and shortest distance formulas.

A very frequent problem type provides two direction cosines or angle relations and asks for the third direction cosine, exploiting the fundamental relation l squared plus m squared plus n squared equals one. Another standard format requires finding the foot of the perpendicular or the reflection image of a given point in a plane. Skew line questions regularly feature two lines written in symmetric form with an unknown parameter k, asking for the parameter value that ensures the shortest distance between the lines is at most a specified threshold.

How to practise it

Master direction cosines and direction ratios thoroughly. If a, b, c are direction ratios, the normalized direction cosines are a, b, c divided by square root of a squared plus b squared plus c squared. The angle theta between two lines with direction ratios a one, b one, c one and a two, b two, c two satisfies cos theta equals the dot product divided by the product of magnitudes; lines are perpendicular if a one a two plus b one b two plus c one c two equals zero.

For planes, learn the formula for the foot of the perpendicular from point (x one, y one, z one) to plane a x plus b y plus c z plus d equals zero: each coordinate shift ratio equals negative (a x one plus b y one plus c z one plus d) divided by a squared plus b squared plus c squared. For the image point, multiply the ratio by two. For skew lines, remember the shortest distance formula: absolute scalar triple product of b one, b two, and a two minus a one, divided by the cross product magnitude.

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

If the equation of the plane containing the line $\overline{r} = \overline{i} + 2\overline{j} + \overline{k} + t(\overline{i} - \overline{j} + 2\overline{k})$ and parallel to the line $\overline{r} = -\overline{i} + 2\overline{j} + s(-\overline{i} + 2\overline{j} + \overline{k})$ in Cartesian coordinates is $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$, then $a + 3b + c =$

(A) 2
(B) 10
(C) -5
(D) 12

Answer: (A) 2 · The council's preliminary key

Q2 AP EAPCET 2026 · 18 May · Shift 1 MCQ

$A = (-2, 2, 3), B = (13, -3, 13)$ are two points and P is a variable point such that $PA : PB = 2 : 3$. If P lies on the curve $x^2 + y^2 + z^2 + ux + vy + wz - 247 = 0$, then $u + v + w =$

(A) 24
(B) 25
(C) 26
(D) 27

Answer: (C) 26 · The council's preliminary key

Q3 AP EAPCET 2026 · 18 May · Shift 1 MCQ

The direction ratios of a line L are (ab, b, b) $(b > 0)$ and the line L passes through $P(b, b, b)$. If $Q(x, y, z)$ is a point on the line at a distance of b units from P, then $x + y + z =$

(A) $b\left(3 \pm \frac{a+2}{\sqrt{a^2+2}}\right)$
(B) $b\left(3 \pm \frac{a^2-2}{\sqrt{a^2+2}}\right)$
(C) $b\left(a \pm \frac{a+2}{\sqrt{a^2+2}}\right)$
(D) $b\left(a \pm \frac{a^2-2}{\sqrt{a^2+2}}\right)$

Answer: (A) $b\left(3 \pm \frac{a+2}{\sqrt{a^2+2}}\right)$ · The council's preliminary key

Q4 AP EAPCET 2026 · 18 May · Shift 1 MCQ

An angle between the plane $x + y + z = 5$ and the line $\frac{x-16}{0} = \frac{y-0}{-1} = \frac{z+47}{4}$ is

(A) $\text{Sin}^{-1}\left(\frac{3}{\sqrt{17}}\right)$
(B) $\text{Sin}^{-1}\left(\sqrt{\frac{3}{17}}\right)$
(C) $\text{Cos}^{-1}\left(\sqrt{\frac{3}{17}}\right)$
(D) $\text{Sin}^{-1}\left(\frac{5}{\sqrt{17}}\right)$

Answer: (B) $\text{Sin}^{-1}\left(\sqrt{\frac{3}{17}}\right)$ · The council's preliminary key

Q5 AP EAPCET 2026 · 18 May · Shift 2 MCQ

If M is the foot of the perpendicular drawn from $P(1,2,-1)$ to the plane passing through the point $A(3,-2,1)$ and perpendicular to the vector $4\bar{i}+7\bar{j}-4\bar{k}$, then the length of PM is

(A) $\frac{32}{9}$
(B) $\frac{28}{9}$
(C) $\frac{26}{5}$
(D) $\frac{22}{5}$

Answer: (B) $\frac{28}{9}$ · The council's preliminary key

Q6 AP EAPCET 2026 · 18 May · Shift 2 MCQ

$A(1,2,3)$, $B(3,4,k)$, $C(2,1,4)$ form an isosceles triangle. If $AB=BC$, then the area of ΔABC is

(A) $\frac{\sqrt{165}}{4}$
(B) $\frac{15}{4}$
(C) $\frac{7}{2}$
(D) $\frac{\sqrt{114}}{4}$

Answer: (D) $\frac{\sqrt{114}}{4}$ · The council's preliminary key

Q7 AP EAPCET 2026 · 18 May · Shift 2 MCQ

If the angle between the planes $\lambda x-2y+3z+1=0$ and $2x+3y-\lambda z+\lambda=0$ is $\text{Cos}^{-1}\left(\frac{12}{49}\right)$ and $\lambda \in Z$ then the sum of the perpendicular distances from the origin to these planes is

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

Answer: (A) 1 · The council's preliminary key

Q8 AP EAPCET 2026 · 15 May · Shift 1 MCQ

$A(-4,9,k), B(-1,k,k), C(0,7,10)$ form an isosceles right-angled triangle. If $AB=BC$ and AC is an integer then the perimeter of ΔABC is

(A) $4(1+\sqrt{2})$
(B) $\sqrt{14}(2+\sqrt{2})$
(C) $\sqrt{10}(2+\sqrt{2})$
(D) $6(1+\sqrt{2})$

Answer: (D) $6(1+\sqrt{2})$ · The council's preliminary key

Q9 AP EAPCET 2026 · 15 May · Shift 1 MCQ

If N is the foot of the perpendicular drawn from the point $P(5,-1,3)$ to the line passing through the points $A(1,3,-5)$ and $B(3,-1,5)$, then the ratio in which N divides AB is

(A) $-26:21$
(B) $13:2$
(C) $11:19$
(D) $-11:19$

Answer: (B) $13:2$ · The council's preliminary key

Q10 AP EAPCET 2026 · 15 May · Shift 1 MCQ

If l,m,n are the direction cosines of a normal drawn to the plane $2x-3y+6z-7=0$ and d is the length of the perpendicular drawn from origin to this plane then $7d\,|l+m+n| =$

(A) 3
(B) 2
(C) 5
(D) 4

Answer: (C) 5 · The council's preliminary key

Q11 AP EAPCET 2026 · 15 May · Shift 2 MCQ

The shortest distance between the lines $\overline{r}=\overline{a}+t\overline{b}$ and $\overline{r}=\overline{c}+s\overline{d}$ when $\overline{a}=\overline{i}-2\overline{j}+2\overline{k}$, $\overline{b}=3\overline{i}-2\overline{j}-2\overline{k}$, $\overline{c}=6\overline{i}+2\overline{j}+2\overline{k}$ and $\overline{d}=-4\overline{i}-\overline{k}$ is

(A) 9
(B) $\frac{6\sqrt{3}}{\sqrt{7}}$
(C) $\frac{\sqrt{7}}{2\sqrt{3}}$
(D) $\frac{5}{\sqrt{3}}$

Answer: (B) $\frac{6\sqrt{3}}{\sqrt{7}}$ · The council's preliminary key

Q12 AP EAPCET 2026 · 15 May · Shift 2 MCQ

$O(0,0,0)$ and $A(2,1,-3)$ are vertices of a triangle OAB. If $(-1,2,1)$ is the mid point of the side AB, and the perimeter of the triangle is $\sqrt{2}\left(k+l\sqrt{7}+m\sqrt{13}\right)$ then $k+l+m=$

(A) 7
(B) 8
(C) 5
(D) 6

Answer: (B) 8 · The council's preliminary key

Q13 AP EAPCET 2026 · 15 May · Shift 2 MCQ

If the feet of the perpendiculars drawn from the point $(3,4,5)$ to the X, Y, Z – coordinate axes are A, B, C respectively and the angle between AB and AC is $\text{Cos}^{-1}\left(\frac{9}{a}\right)$, then $a =$

(A) $5\sqrt{34}$
(B) $3\sqrt{34}$
(C) $2\sqrt{34}$
(D) $\sqrt{34}$

Answer: (A) $5\sqrt{34}$ · The council's preliminary key

Q14 AP EAPCET 2026 · 15 May · Shift 2 MCQ

Let θ be the angle between the line $\frac{x+1}{1} = \frac{y-1}{2} = \frac{z-2}{2}$ and the plane $2x - y + \sqrt{\lambda}z + 4 = 0$. If $\sin\theta = \frac{1}{3}$, then $\lambda =$

(A) $\frac{4}{3}$
(B) $\frac{5}{3}$
(C) $\frac{2}{3}$
(D) $\frac{7}{3}$

Answer: (B) $\frac{5}{3}$ · The council's preliminary key

Q15 AP EAPCET 2026 · 14 May · Shift 1 MCQ

If a vector $3\bar{i} - 6\bar{j} + 2\bar{k}$ makes angles α, β, γ with the positive $X, Y, Z-$ axes respectively, then $\cos\alpha + \cos^2\beta + 7\cos^3\gamma =$

(A) 1
(B) $\frac{65}{49}$
(C) 2
(D) $\frac{-7}{49}$

Answer: (B) $\frac{65}{49}$ · The council's preliminary key

Q16 AP EAPCET 2026 · 14 May · Shift 1 MCQ

If $A(1,1,1)$, $B(2,3,4)$ and $C(2,5,7)$ are the vertices of ΔABC, then the length of the altitude drawn through the vertex A is

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

Answer: (B) 1 · The council's preliminary key

Q17 AP EAPCET 2026 · 14 May · Shift 1 MCQ

If $(K, 3, 5)$, $(2, -1, 2)$ are direction ratios of two lines and the angle between them is 45°, then a value of K is

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

Answer: (B) 4 · The council's preliminary key

Q18 AP EAPCET 2026 · 14 May · Shift 1 MCQ

If the angle θ between the line $\frac{x+1}{1} = \frac{y-1}{2} = \frac{z-2}{2}$ and the plane $2x - y + \sqrt{\lambda}z + 4 = 0$ is such that $\sin\theta = \frac{1}{3}$, then the value of λ is

(A) $\frac{5}{3}$
(B) $-\frac{3}{5}$
(C) $\frac{3}{4}$
(D) $-\frac{4}{3}$

Answer: (A) $\frac{5}{3}$ · The council's preliminary key

Q19 AP EAPCET 2026 · 14 May · Shift 2 MCQ

Let $A(1, 2, 1)$, $B\left(\frac{9}{5}, \frac{8}{5}, \frac{9}{5}\right)$, $C(\alpha, \beta, \gamma)$ and $D(-3, 4, -3)$ be four collinear points. If B divides AC in the ratio of $m : n$, D divides AC in the ratio $m : -n$, then $\alpha + \beta + \gamma =$

(A) 7
(B) -2
(C) 4
(D) $\frac{26}{5}$

Answer: (A) 7 · The council's preliminary key

Q20 AP EAPCET 2026 · 14 May · Shift 2 MCQ

The acute angle between the lines whose direction cosines satisfy the relations $l^2 - 5m^2 + n^2 = 0$ and $l + m - n = 0$ is

(A) $\text{Cos}^{-1}\left(\frac{\sqrt{3}}{4}\right)$

(B) $\frac{\pi}{3}$

(C) $\text{Cos}^{-1}\left(\frac{2}{3}\right)$

(D) $\frac{\pi}{6}$

Answer: (B) $\frac{\pi}{3}$ · The council's preliminary key

Q21 AP EAPCET 2026 · 14 May · Shift 2 MCQ

$A(3,1,2)$, $B(-1,6,2)$ and $C(1,1,-2)$ are three points. A plane is passing through A and is perpendicular to the line joining B and C. If (α,β,γ) is the image of C with respect to the plane, then $3\alpha-\gamma+2\beta=$

(A) 0

(B) 6

(C) 7

(D) 5

Answer: (C) 7 · The council's preliminary key

Q22 AP EAPCET 2026 · 13 May · Shift 1 MCQ

The shortest distance between the two lines $\overline{r}=(\overline{i}-\overline{j})+s(\overline{j}+2\overline{k})$ and $\overline{r}=(2\overline{i}+\overline{k})+t(\overline{i}-\overline{j}+\overline{k})$ is

(A) 4

(B) 5

(C) $\sqrt{\frac{6}{5}}$

(D) $\sqrt{\frac{8}{7}}$

Answer: (D) $\sqrt{\frac{8}{7}}$ · The council's preliminary key

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Q23 AP EAPCET 2026 · 13 May · Shift 1 MCQ

The points $(0,\lambda,1)$, $(\mu,3,-1)$, $(\lambda,5,0)$, $(\mu,6,\mu)$ taken in that order, form a square. If λ,μ are positive real numbers, then the length of its side is

(A) 1

(B) 2

(C) 3

(D) 4

Answer: (C) 3 · The council's preliminary key

Q24 AP EAPCET 2026 · 13 May · Shift 1 MCQ

If θ is the acute angle between a line $\frac{x-1}{1}=\frac{y-1}{-1}=\frac{z-1}{1}$ and a normal to the plane $2x+3y+4z=0$, then $\tan^2\theta+\sec^2\theta=$

(A) 1
(B) $\frac{16}{13}$
(C) $\frac{55}{3}$
(D) $\frac{22}{7}$

Answer: (C) $\frac{55}{3}$ · The council's preliminary key

Q25 AP EAPCET 2026 · 13 May · Shift 1 MCQ

If the point P which divides the line segment joining $A(1,1,1)$ and $B(2,2,2)$ in the ratio $1:m$ lies on the plane $x+2y+3z-1=0$, then $m=$

(A) $-\frac{3}{2}$
(B) $\frac{4}{3}$
(C) $-\frac{11}{5}$
(D) $-\frac{1}{2}$

Answer: (C) $-\frac{11}{5}$ · The council's preliminary key

Q26 AP EAPCET 2026 · 13 May · Shift 2 MCQ

If the orthocentre and circumcentre of a triangle are $(-3,5,2)$, $(6,2,5)$ respectively, then its centroid is

(A) $(3,3,4)$
(B) $(3,4,3)$
(C) $(4,3,3)$
(D) $(0,0,3)$

Answer: (A) $(3,3,4)$ · The council's preliminary key

Q27 AP EAPCET 2026 · 13 May · Shift 2 MCQ

If the direction cosines of a line L are (ab,b,b) and the angle between L and X-axis is $\frac{\pi}{6}$, then a possible value of (a,b) is

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

Answer: (C) $\left(\sqrt{6},\frac{1}{\sqrt{8}}\right)$ · The council's preliminary key

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Q28 AP EAPCET 2026 · 13 May · Shift 2 MCQ

A variable plane which is at a distance of 4 units from the origin meets the X, Y, Z coordinate axes at P, Q, R respectively. Equation of the locus of the centroid of ΔPQR is

(A) $\frac{1}{x^2}+\frac{1}{y^2}+\frac{1}{z^2}=1$
(B) $x^2+y^2+z^2=9$
(C) $\frac{1}{x^2}+\frac{1}{y^2}+\frac{1}{z^2}=\frac{9}{16}$
(D) $\frac{1}{x^2}+\frac{1}{y^2}+\frac{1}{z^2}=2$

Answer: (C) $\frac{1}{x^2}+\frac{1}{y^2}+\frac{1}{z^2}=\frac{9}{16}$ · The council's preliminary key

Q29 AP EAPCET 2026 · 12 May · Shift 1 MCQ

The perpendicular distance from the origin to the plane which passes through the point $(2\bar{i}+3\bar{j}-\bar{k})$ and is perpendicular to the vector $3\bar{i}-4\bar{j}+7\bar{k}$, is

(A) $\frac{9}{\sqrt{74}}$
(B) $\frac{12}{\sqrt{65}}$
(C) $\frac{13}{\sqrt{74}}$
(D) $\frac{16}{\sqrt{35}}$

Answer: (C) $\frac{13}{\sqrt{74}}$ · The council's preliminary key

Q30 AP EAPCET 2026 · 12 May · Shift 1 MCQ

Let $A(1,2,0)$ and $B(0,-2,-1)$ be two points. If P is a variable point such that $PA=2\,PB$ and the locus of P is $a(x^2+y^2+z^2)+bx+cy+dz+15=0$, then $2a+3b+d=$

(A) $2c$
(B) $3c$
(C) c
(D) $4c$

Answer: (C) c · The council's preliminary key

Q31 AP EAPCET 2026 · 12 May · Shift 1 MCQ

The angle between the lines whose direction cosines are given by the equations $2l-m+n=0$ and $lm+2mn-10nl=0$ is θ , then $\cos\theta=$

(A) $\frac{20}{3\sqrt{70}}$
(B) $\frac{10}{\sqrt{70}}$
(C) $\frac{8}{\sqrt{70}}$
(D) $\frac{16}{3\sqrt{70}}$

Answer: (C) $\frac{8}{\sqrt{70}}$ · The council's preliminary key

Q32 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If the equation of the plane passing through the points $(1,-3,2)$, $(-2,3,1)$ and perpendicular to the plane $x+2y-3z=0$ is $ax+by+cz+d=0$, then $\frac{a+b}{c+d}=$

(A) $\frac{3}{11}$
(B) 13
(C) $\frac{13}{11}$
(D) 3

Answer: (B) 13 · The council's preliminary key

Q33 AP EAPCET 2026 · 12 May · Shift 2 MCQ

Let α,β,γ be the angles made by a vector $\bar{r}$ with the positive directions of X,Y,Z – axes respectively. If $\alpha=\mathrm{Tan}^{-1}\left(\frac{3}{2}\right)$ and $\beta=\mathrm{Tan}^{-1}\left(\frac{4}{3}\right)$, then $\cos\gamma=$

(A) $\frac{2}{3}$
(B) $\frac{3}{4}$
(C) $\frac{6\sqrt{3}}{5\sqrt{13}}$
(D) $\frac{3\sqrt{6}}{5\sqrt{13}}$

Answer: (C) $\frac{6\sqrt{3}}{5\sqrt{13}}$ · The council's preliminary key

Q34 AP EAPCET 2026 · 12 May · Shift 2 MCQ

Let $\overline{OA}=\bar{i}+4\bar{k}$ be the position vector of a point A. If the line passing through the point A and parallel to the vector $3\bar{i}+\bar{j}$ and the plane passing through the points $2\bar{i}+\bar{j}$, $\bar{j}-2\bar{k}$ and $2\bar{k}-\bar{i}$ intersect at the point P then $|\overline{AP}|=$

(A) 0
(B) $2\sqrt{17}$
(C) $\sqrt{17}$
(D) 1

Answer: (A) 0 · The council's preliminary key

Q35 AP EAPCET 2026 · 12 May · Shift 2 MCQ

The perpendicular distance from the point $(1, 1, -2)$ on to the line $\frac{x-1}{-1} = \frac{y}{2} = \frac{z}{1}$ is

(A) 1
(B) $2\sqrt{3}$
(C) $\sqrt{5}$
(D) $\frac{1}{\sqrt{2}}$

Answer: (C) $\sqrt{5}$ · The council's preliminary key

Q36 AP EAPCET 2026 · 12 May · Shift 2 MCQ

If the angle between the lines having direction ratios $(3, 1, 2)$ and $(1, -1, 2)$ is θ, then $\cos 2\theta =$

(A) $\frac{1}{7}$
(B) $\frac{-1}{7}$
(C) $\frac{\sqrt{3}}{\sqrt{7}}$
(D) $\frac{-3}{\sqrt{7}}$

Answer: (B) $\frac{-1}{7}$ · The council's preliminary key

Q37 AP EAPCET 2026 · 12 May · Shift 2 MCQ

If the equation of the plane making equal intercepts on the coordinate axes and which is at a distance of $5\sqrt{3}$ units from origin is $x + y + z = k (k > 0)$, then $k =$

(A) 15
(B) 5
(C) $\frac{5}{\sqrt{3}}$
(D) $15\sqrt{3}$

Answer: (A) 15 · The council's preliminary key

Q38 TS EAPCET 2026 · 11 May · Shift 1 MCQ

Let $A(4, 3, -2)$, $B(0, -4, 2)$, $C(-4, 7, 6)$ be the vertices of a triangle ABC. If $D(p, q, r)$ is the point of intersection of the bisector of angle A and the side BC, then $2p + q + r =$

(A) 1
(B) 2
(C) 3
(D) 0

Answer: (A) 1 · The council's preliminary key

Q39 TS EAPCET 2026 · 11 May · Shift 1 MCQ

Let $\overline{OA}$, $\overline{OB}$, $\overline{OC}$ lying along X, Y, Z-axes respectively represent the coterminous edges of a rectangular parallelopiped. If $OA = 1$, $OB = 2$, $OC = 3$ then the angle between a pair of diagonals of the parallelopiped drawn through the vertices O and A is

(A) $\frac{\pi}{3}$
(B) $\text{Cos}^{-1}\left(\frac{5}{7}\right)$
(C) $\text{Cos}^{-1}\left(\frac{6}{7}\right)$
(D) $\frac{\pi}{4}$

Answer: (C) $\text{Cos}^{-1}\left(\frac{6}{7}\right)$ · The council's preliminary key

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Q40 TS EAPCET 2026 · 11 May · Shift 1 MCQ

A line passing through the points $(9, 7, 5)$ and $(2, 10, 0)$ is perpendicular to a plane π passing through the point $(200, 30, 116)$. If the plane π cuts X, Y, Z-axes at the points A, B, C respectively, then the centroid of ΔABC is

(A) $(70, -220, 127)$
(B) $(80, -200, 125)$
(C) $(90, -210, 126)$
(D) $(75, -205, 128)$

Answer: (C) $(90, -210, 126)$ · The council's preliminary key

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Q41 TS EAPCET 2026 · 11 May · Shift 2 MCQ

If $P(x, y, z)$ is the intersection of the lines $\overline{r} = (2\overline{i} - 2\overline{j} + 3\overline{k}) + t(\overline{i} - 3\overline{j} + \overline{k})$ and $\overline{r} = (2\overline{j} - \overline{k}) + s(\overline{i} - \overline{j} + 3\overline{k})$, then $x + y + z =$

(A) 2
(B) 5
(C) 3
(D) 4

Answer: (D) 4 · The council's preliminary key

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Q42 TS EAPCET 2026 · 11 May · Shift 2 MCQ

$\bar{r} = \bar{a} + t\bar{b}$ and $\bar{r} = \bar{p} + l\bar{b}$ are two lines, where $\bar{a} = \bar{i} + 2\bar{j}$, $\bar{b} = \bar{i} + \bar{j} + \bar{k}$ and $\bar{p} = 2\bar{i} + \bar{k}$. The position vector of a point A is $5\bar{i} + \bar{j} - 3\bar{k}$. Let B, C be feet of the perpendiculars drawn from A to the given two lines respectively, then $\overline{BA} + \overline{AC} =$

(A) $\bar{i} - 2\bar{j} + 3\bar{k}$
(B) $2\bar{i} - \bar{j} + 3\bar{k}$
(C) $\bar{i} + \bar{j} + \bar{k}$
(D) $\bar{i} - 2\bar{j} + \bar{k}$

Answer: (D) $\bar{i} - 2\bar{j} + \bar{k}$ · The council's preliminary key

Q43 TS EAPCET 2026 · 11 May · Shift 2 MCQ

$A(3, 5, -4)$, $B(-5, -5, -2)$, $C(-1, 1, 2)$ are the vertices of a triangle. P is a point on AB and CP is an angular bisector of ΔABC. G is the centroid of the triangle ABC. If the point which divides GP in the ratio $1 : 3$ is (α, β, γ), then $\alpha + \beta - \gamma =$

(A) 0
(B) 1
(C) 5
(D) 3

Answer: (B) 1 · The council's preliminary key

Q44 TS EAPCET 2026 · 11 May · Shift 2 MCQ

If the directions cosines of two lines satisfy the relations $l + m - n = 0$, $3l^2 + m^2 + 6nl = 0$, then those lines are

(A) parallel lines
(B) perpendicular lines
(C) skew lines
(D) intersecting lines

Answer: (A) parallel lines · The council's preliminary key

Q45 TS EAPCET 2026 · 11 May · Shift 2 MCQ

If $\frac{x+3}{a} = \frac{y-1}{b} = \frac{z}{c}$ is the common line of the two perpendicular planes $2x + 3y + 4z + d = 0$ and $x + py + z + 5 = 0$, then $p + d =$

(A) -5
(B) 1
(C) -4
(D) 2

Answer: (B) 1 · The council's preliminary key

Q46 TS EAPCET 2026 · 10 May · Shift 1 MCQ

The straight line given by the equation $\overline{r} = (4\overline{i} + 5\overline{j} + \overline{k}) + s(4\overline{i} + 6\overline{j} + 2\overline{k})$ is coplanar with a straight line given below. Choose the correct option

(A) $\overline{r} = (\overline{i} - 2\overline{j} + 3\overline{k}) + p(2\overline{i} + 3\overline{j} - 4\overline{k})$
(B) $\overline{r} = (3\overline{i} - 4\overline{j} + 3\overline{k}) + q(-4\overline{i} + 5\overline{j} - 6\overline{k})$
(C) $\overline{r} = (2\overline{i} + 5\overline{j} - 4\overline{k}) + r(\overline{i} + 4\overline{j} - 3\overline{k})$
(D) $\overline{r} = (-4\overline{i} + 4\overline{j} + 4\overline{k}) + t(7\overline{i} + 5\overline{j})$

Answer: (D) $\overline{r} = (-4\overline{i} + 4\overline{j} + 4\overline{k}) + t(7\overline{i} + 5\overline{j})$ · The council's preliminary key

Q47 TS EAPCET 2026 · 10 May · Shift 1 MCQ

If the points $(\alpha, 4, 2)$, $(6, \beta, -1)$ and $(8, -\beta, -7)$ are collinear, then $\alpha + \beta =$

(A) 4
(B) 3
(C) 7
(D) 6

Answer: (C) 7 · The council's preliminary key

Q48 TS EAPCET 2026 · 10 May · Shift 1 MCQ

Let $A = (2, 0, 3)$, $B = (0, 1, 4)$ and $C = (5, 6, 0)$ be three points. If L_1 and L_2 are the lines bisecting the angles between AB and AC, then the direction ratios of a line perpendicular to both L_1 and L_2 are

(A) $(3, 1, 2)$
(B) $(1, 5, 2)$
(C) $(3, 1, 5)$
(D) $(1, 3, 5)$

Answer: (C) $(3, 1, 5)$ · The council's preliminary key

Q49 TS EAPCET 2026 · 10 May · Shift 1 MCQ

The straight line joining the points $(2, -2, 1)$ and $(-2, 1, -1)$ is perpendicular to the plane π_1 which passes through the point $(1, 1, 1)$ and the equation of π_1 is $ax + by + cz + d = 0$ (G.C.D of $a, b, c, d = 1$). If (b, c, d) are the direction ratios of a perpendicular drawn to the plane π_2 which passes through the point $(1, 2, 3)$, then the equation of π_2 is

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(A) $3x - 2y + 3z - 8 = 0$
(B) $3x - 2y + 3z + 8 = 0$
(C) $3x + 2y + 3z + 8 = 0$
(D) $3x + 2y + 3z - 8 = 0$

Answer: (A) $3x - 2y + 3z - 8 = 0$ · The council's preliminary key

Q50 TS EAPCET 2026 · 10 May · Shift 2 MCQ

Let O be the origin and $\bar{r}$ be the position vector of a point P. If $\overline{OP}$ makes angles $\frac{\pi}{6}$ and $\frac{\pi}{3}$ with $\bar{i}$ and $\bar{j}$ respectively, then a vector along $\overline{OP}$ with magnitude 2 units is

(A) $\bar{i} + \sqrt{3}\bar{j}$
(B) $\bar{j} + \sqrt{3}\bar{k}$
(C) $\sqrt{3}\bar{i} + \bar{j}$
(D) $\sqrt{3}\bar{j} + \bar{k}$

Answer: (C) $\sqrt{3}\bar{i} + \bar{j}$ · The council's preliminary key

Q51 TS EAPCET 2026 · 10 May · Shift 2 MCQ

If the angle between the straight lines whose direction cosines satisfy the equations $l - 2m + n = 0$ and $2l^2 - 3m^2 + n^2 = 0$ is θ, then $\cos\theta =$

(A) $\frac{9}{\sqrt{105}}$
(B) $\frac{3\sqrt{3}}{\sqrt{7}}$
(C) $\frac{\pi}{2}$
(D) $\frac{\pi}{4}$

Answer: (A) $\frac{9}{\sqrt{105}}$ · The council's preliminary key

Q52 TS EAPCET 2026 · 10 May · Shift 2 MCQ

If the equation of the plane passing through the points $(3, 5, 7)$, $(7, -5, 3)$ and parallel to the line joining the points $(1, -2, -4)$, $(4, 2, -1)$ is $ax + by + cz + 80 = 0$ then $a + b + c =$

(A) -2
(B) 3
(C) 7
(D) -4

Answer: (D) -4 · The council's preliminary key

Q53 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If the line $\overline{r} = \overline{a} + t\overline{b}$ lies on the plane $\overline{r} \cdot \overline{n} = p$, then $p =$

(A) $|\overline{a} \times \overline{b}|$
(B) $\overline{a} \cdot \overline{n}$
(C) $|\overline{b} \times \overline{n}|$
(D) $|\overline{a}| + |\overline{b}|$

Answer: (B) $\overline{a} \cdot \overline{n}$ · The council's preliminary key

Q54 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If the shortest distance between the two skew lines $\vec{r} = \bar{i} + \bar{j} + \bar{k} + t\left(3\bar{i} + 2\bar{j} + \bar{k}\right)$ and $\vec{r} = \bar{i} - \bar{j} + x\bar{k} + s\left(\bar{i} + 2\bar{j} + 3\bar{k}\right)$ is at most $2\sqrt{6}$ units, then all the values of x lie in the interval

(A) $[-9, 15]$
(B) $[-15, 9]$
(C) $(-\infty, -15)$
(D) $\mathbb{R} - [-11, 9]$

Answer: (B) $[-15, 9]$ · The council's preliminary key

Q55 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If $P(1, 2, 5)$, $Q(3, 0, 7)$, $R(6, -3, 10)$ are three points on a line and (α, β, γ) is a point at a distance of 3 units from P on the same line, then value of $\alpha + \beta + \gamma$ that lies between 6 and 7 is

(A) $13 - \sqrt{3}$
(B) $8 - \sqrt{3}$
(C) $16 + \sqrt{3}$
(D) $7 - \sqrt{2}$

Answer: (B) $8 - \sqrt{3}$ · The council's preliminary key

Q56 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If the direction cosines of the line common to the planes $x + 2y - z - 1 = 0$ and $3x - 4y + z - 5 = 0$ are (l, m, n) then $|l + m - n| =$

(A) $\frac{6}{\sqrt{30}}$
(B) $\frac{4}{\sqrt{30}}$
(C) $\frac{2}{\sqrt{30}}$
(D) $\frac{8}{\sqrt{30}}$

Answer: (C) $\frac{2}{\sqrt{30}}$ · The council's preliminary key

Q57 TS EAPCET 2026 · 9 May · Shift 2 MCQ

Let D be the harmonic conjugate of a point C with respect to the points $A(1, -3, 5)$ and $B(5, -3, 1)$. If C divides AB in the ratio $3 : 5$ then the point which divides CD in the ratio $1 : 2$ is

(A) $(-5,-3,11)$
(B) $\left(\frac{5}{2},-3,\frac{7}{2}\right)$
(C) $(3,-3,3)$
(D) $(0,-3,6)$

Answer: (D) $(0,-3,6)$ · The council's preliminary key

Q58 TS EAPCET 2026 · 9 May · Shift 2 MCQ

If $(1,-2,2)$ and $(2,6,-3)$ are the direction ratios of two straight lines then the direction cosines of the line bisecting an angle between these two lines are

(A) $\left(\frac{1}{\sqrt{41}},\frac{4}{\sqrt{41}},\frac{5}{\sqrt{41}}\right)$
(B) $\left(\frac{13}{\sqrt{1218}},\frac{32}{\sqrt{1218}},\frac{5}{\sqrt{1218}}\right)$
(C) $\left(\frac{13}{\sqrt{210}},\frac{4}{\sqrt{210}},\frac{5}{\sqrt{210}}\right)$
(D) $\left(\frac{13}{\sqrt{714}},\frac{4}{\sqrt{714}},\frac{23}{\sqrt{714}}\right)$

Answer: (C) $\left(\frac{13}{\sqrt{210}},\frac{4}{\sqrt{210}},\frac{5}{\sqrt{210}}\right)$ · The council's preliminary key

Q59 TS EAPCET 2026 · 9 May · Shift 2 MCQ

If the image of a point $(1,-1,1)$ in the plane $x-2y+3z=4$ is (x_1,y_1,z_1), then $x_1-y_1-z_1=$

(A) 0
(B) 1
(C) 4
(D) 3

Answer: (B) 1 · The council's preliminary key

Q60 AP EAPCET 2025 · 27 May · Shift 1 MCQ

The circum radius of the triangle formed by the points $(2,-1,1)$, $(1,-3,-5)$ and $(3,-4,-4)$ is

(A) $\frac{\sqrt{35}}{2}$
(B) $\frac{\sqrt{25}}{3}$
(C) $\sqrt{41}$
(D) $\frac{\sqrt{41}}{2}$

Answer: (D) $\frac{\sqrt{41}}{2}$ · The council's preliminary key

Q61 AP EAPCET 2025 · 27 May · Shift 1 MCQ

Let $A(2,3,5)$, $B(-1,3,2)$, $C(\lambda,5,\mu)$ be the vertices of ΔABC. If the median through the vertex A is equally inclined to the coordinate axes, then

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(A) $5\lambda - 8\mu = 0$
(B) $8\lambda - 5\mu = 0$
(C) $10\lambda - 7\mu = 0$
(D) $7\lambda - 10\mu = 0$

Answer: (C) $10\lambda - 7\mu = 0$ · The council's preliminary key

Q62 AP EAPCET 2025 · 27 May · Shift 1 MCQ

Equation of the plane passing through the origin and perpendicular to the planes $x + 2y - z = 1$ and $3x - 4y + z = 5$ is

(A) $x + 2y - 5z = 0$
(B) $x - 2y + 5z = 0$
(C) $x + 2y + 5z = 0$
(D) $3x + y - 5z = 0$

Answer: (C) $x + 2y + 5z = 0$ · The council's preliminary key

Q63 AP EAPCET 2025 · 26 May · Shift 1 MCQ

If the line joining the points $\bar{i} + 2\bar{j}$ and $\bar{j} - 2\bar{k}$ intersects the plane passing through the points $2\bar{i} - \bar{j}$, $2\bar{j} + 3\bar{k}$ and $\bar{k} - 2\bar{i}$ at $\bar{r}$, then $\bar{r}.(\bar{i} + \bar{j} + \bar{k}) =$

(A) 15
(B) 5
(C) 3
(D) 7

Answer: (A) 15 · The council's preliminary key

Q64 AP EAPCET 2025 · 26 May · Shift 1 MCQ

The vector equation of a plane passing through the line of intersection of the planes $\vec{r} \cdot (\vec{i} - 2\vec{k}) = 3$, $\vec{r} \cdot (2\vec{j} + \vec{k}) = 5$ and the point $\vec{i} + 2\vec{j} + 3\vec{k}$ is

(A) $\vec{r} \cdot (\vec{i} + 4\vec{j}) = 13$
(B) $\vec{r} \cdot (\vec{i} + 6\vec{j} + \vec{k}) = 18$
(C) $\vec{r} \cdot (\vec{i} + 2\vec{j} - \vec{k}) = 8$
(D) $\vec{r} \cdot (\vec{i} + 8\vec{j} + 2\vec{k}) = 23$

Answer: (D) $\vec{r} \cdot (\vec{i} + 8\vec{j} + 2\vec{k}) = 23$ · The council's preliminary key

Q65 AP EAPCET 2025 · 26 May · Shift 1 MCQ

The points $A(-1, 2, 3)$, $B(2, -3, 1)$, $C(3, 1, -2)$

(A) are collinear
(B) form an isosceles triangle
(C) form a right angled triangle
(D) form a scalene triangle

Answer: (D) form a scalene triangle · The council's preliminary key

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Q66 AP EAPCET 2025 · 26 May · Shift 1 MCQ

The direction cosines of the line making angles $\frac{\pi}{4}, \frac{\pi}{3}$ and $\theta\left(0<\theta<\frac{\pi}{2}\right)$ respectively with X, Y and Z axes are

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

Answer: (A) $\frac{1}{\sqrt{2}}, \frac{1}{2}, \frac{1}{2}$ · The council's preliminary key

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Q67 AP EAPCET 2025 · 26 May · Shift 1 MCQ

If the equation of the plane passing through the point $(3,2,5)$ and perpendicular to the planes $2x-3y+5z=7$ and $5x+2y-3z=11$ is $x+by+cz+d=0$, then $2b+3c+d=$

(A) 0
(B) 35
(C) 1
(D) 20

Answer: (B) 35 · The council's preliminary key

Q68 AP EAPCET 2025 · 26 May · Shift 2 MCQ

Line L_1 passes through the points $\bar{i}+\bar{j}$ and $\bar{k}-\bar{i}$. Line L_2 passes through the point $\bar{j}+2\bar{k}$ and is parallel to the vector $\bar{i}+\bar{j}+\bar{k}$. If $x\bar{i}+y\bar{j}+z\bar{k}$ is the point of intersection of the lines L_1 and L_2, then $(y-x)=$

(A) $2z$
(B) $-2z$
(C) z
(D) $-z$

Answer: (C) z · The council's preliminary key

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Q69 AP EAPCET 2025 · 26 May · Shift 2 MCQ

The point in the xy-plane which is equidistant from the points A $(2,0,3)$, B $(0,3,2)$ and C$(0,0,1)$ has the coordinates

(A) $(3,2,0)$
(B) $(2,3,0)$
(C) $(2,0,8)$
(D) $(0,3,1)$

Answer: (A) $(3,2,0)$ · The council's preliminary key

Q70 AP EAPCET 2025 · 26 May · Shift 2 MCQ

If the direction ratios of two lines L_1 and L_2 are given by $(1,-2,2)$ and $(-2,3,-6)$ respectively, then the direction ratios of the line which is perpendicular to the lines L_1 and L_2 are

(A) $(1,-2,3)$
(B) $(-2,3,5)$
(C) $(6,2,-1)$
(D) $(2,-1,3)$

Answer: (C) $(6,2,-1)$ · The council's preliminary key

Q71 AP EAPCET 2025 · 26 May · Shift 2 MCQ

If the image of the point $A(1,1,1)$ with respect to the plane $4x+2y+4z+1=0$ is $B(\alpha,\beta,\gamma)$, then $\alpha+\beta+\gamma=$

(A) -2
(B) $-\frac{28}{9}$
(C) $\frac{55}{36}$
(D) $\frac{35}{16}$

Answer: (B) $-\frac{28}{9}$ · The council's preliminary key

Q72 AP EAPCET 2025 · 24 May · Shift 1 MCQ

Assertion (A) : For the lines $\overline{r}=\overline{a}+t\overline{b}$ and $\overline{r}=\overline{p}+s\overline{q}$, if $(\overline{a}-\overline{p}).(\overline{b}\times\overline{q})\neq 0$, then the two lines are coplanar

Reason (R) : $|(\overline{a}-\overline{p}).(\overline{b}\times\overline{q})|$ is $|\overline{b}\times\overline{q}|$ times the shortest distance between the lines $\overline{r}=\overline{a}+t\overline{b}$ and $\overline{r}=\overline{p}+s\overline{q}$.

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(A) (A) is true, (R) is true and (R) is correct explanation to (A)
(B) (A) is true, (R) is true and (R) is not the correct explanation to (A)
(C) (A) is true, (R) is false
(D) (A) is false, (R) is true

Answer: (D) (A) is false, (R) is true · The council's preliminary key

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Q73 AP EAPCET 2025 · 24 May · Shift 1 MCQ

The locus of a point at which the line joining the points $(-3,1,2)$, $(1,-2,4)$ subtends a right angle, is

(A) $x^2+y^2+z^2+2x+y-6z-3=0$
(B) $x^2+y^2+z^2+2x-y-6z+3=0$
(C) $x^2+y^2+z^2+2x+y-6z+3=0$
(D) $x^2+y^2+z^2-2x+y-6z+3=0$

Answer: (C) $x^2+y^2+z^2+2x+y-6z+3=0$ · The council's preliminary key

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Q74 AP EAPCET 2025 · 24 May · Shift 1 MCQ

Let $A=(2,0,-1)$, $B=(1,-2,0)$, $C=(1,2,-1)$ and $D=(0,-1,-2)$ be four points. If θ is the acute angle between the plane determined by A, B, C and the plane determined by A, C, D, then $\tan\theta=$

(A) $\sqrt{\frac{14}{5}}$
(B) $\frac{3}{\sqrt{14}}$
(C) $\frac{3}{\sqrt{5}}$
(D) $\frac{\sqrt{5}}{3}$

Answer: (C) $\frac{3}{\sqrt{5}}$ · The council's preliminary key

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Q75 AP EAPCET 2025 · 23 May · Shift 1 MCQ

If $\bar{i}+\bar{j}-\bar{k}$, $-\bar{i}+2\bar{j}+\bar{k}$, $\bar{j}+2\bar{k}$, $2\bar{i}-\bar{j}+2\bar{k}$ are the position vectors of four points A, B, C, D respectively, then the shortest distance between the lines AB and CD is

(A) $\frac{1}{6}$
(B) $\frac{7}{3}$
(C) $\frac{1}{3}$
(D) $\frac{7}{6}$

Answer: (C) $\frac{1}{3}$ · The council's preliminary key

Q76 AP EAPCET 2025 · 23 May · Shift 1 MCQ

If $A(2,-1,1)$, $B(2,5,1)$ and $C(0,-2,3)$ are the vertices of a triangle. If D is the point of intersection of the side BC and the internal angular bisector of angle A, then $AD=$

(A) $\frac{5}{\sqrt{7}}$
(B) $\frac{3}{\sqrt{2}}$
(C) $\frac{\sqrt{3}}{2}$
(D) $\frac{4}{\sqrt{3}}$

Answer: (D) $\frac{4}{\sqrt{3}}$ · The council's preliminary key

Q77 AP EAPCET 2025 · 23 May · Shift 1 MCQ

A line segment PQ has the length 63 and direction ratios $(3,-2,6)$. If this line makes an obtuse angle with X-axis, then the components of the vector $\overline{PQ}$ are

(A) $7,8,-4$
(B) $-7,8,-4$
(C) $27,-18,54$
(D) $-27,18,-54$

Answer: (D) $-27,18,-54$ · The council's preliminary key

Q78 AP EAPCET 2025 · 23 May · Shift 1 MCQ

A plane π given by $ax+by+11z+d=0$ is perpendicular to the planes $2x-3y+z=4$, $3x+y-z=5$ and the perpendicular distance from the origin to the plane π is $\sqrt{6}$ units. If all the intercepts made by the plane π on the coordinate axes are positive, then $d=$

(A) ab
(B) $-2ab$
(C) $4ab$
(D) $-3ab$

Answer: (D) $-3ab$ · The council's preliminary key

Q79 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If $A(0,1,2)$, $B(2,-1,3)$ and $C(1,-3,1)$ are the vertices of a triangle, then the distance between its circumcentre and orthocentre is

(A) $\frac{3}{\sqrt{2}}$
(B) $\frac{3}{2}$
(C) 3
(D) $\frac{9}{2}$

Answer: (A) $\frac{3}{\sqrt{2}}$ · The council's preliminary key

Q80 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If the direction cosines of two lines satisfy the equations $l - 2m + n = 0$, $lm + 10mn - 2nl = 0$ and θ is the angle between the lines, then $\cos\theta =$

(A) $\frac{\pi}{6}$
(B) $\frac{8}{\sqrt{70}}$
(C) $\frac{\pi}{3}$
(D) $\frac{20}{3\sqrt{70}}$

Answer: (B) $\frac{8}{\sqrt{70}}$ · The council's preliminary key

Q81 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If $(2, -1, 3)$ is the foot of the perpendicular drawn from the origin $(0, 0, 0)$ to a plane then the equation of that plane is

(A) $2x + y - 3z + 6 = 0$
(B) $2x - y + 3z - 14 = 0$
(C) $2x - y + 3z - 13 = 0$
(D) $2x + y + 3z - 10 = 0$

Answer: (B) $2x - y + 3z - 14 = 0$ · The council's preliminary key

Q82 AP EAPCET 2025 · 22 May · Shift 1 MCQ

$\bar{i} - 2\bar{j}$ is a point on the line parallel to the vector $2\bar{i} + \bar{k}$. If $\bar{i} + 2\bar{j}$ is a point on the plane parallel to the vectors $2\bar{j} - \bar{k}$ and $\bar{i} + 2\bar{k}$, then the point of intersection of the line and the plane is

(A) $-\frac{1}{3}(\bar{i} + 6\bar{j} + 2\bar{k})$
(B) $\frac{1}{3}(\bar{i} + 6\bar{j} + 2\bar{k})$
(C) $-\frac{1}{3}(\bar{i} - 6\bar{j} + 2\bar{k})$
(D) $\frac{1}{3}(\bar{i} - 6\bar{j} + 2\bar{k})$

Answer: (A) $-\frac{1}{3}(\bar{i} + 6\bar{j} + 2\bar{k})$ · The council's preliminary key

Q83 AP EAPCET 2025 · 22 May · Shift 1 MCQ

Points P and Q are given by $\overline{OP} = \bar{i} - \bar{j} - \bar{k}$ and $\overline{OQ} = -\bar{i} + \bar{j} + \bar{k}$. A line along the vector $\bar{a} = \bar{i} + \bar{j}$ passes through the point P and another line along the vector $\bar{b} = \bar{j} - \bar{k}$ passes through the point Q. If a line along the vector $\bar{c} = \bar{i} - \bar{j} + \bar{k}$ intersects both the lines along the vectors $\bar{a}$ and $\bar{b}$ at L and M respectively, then $\overline{PM} =$

(A) $\bar{i} - \bar{j} + 2\bar{k}$
(B) $4\bar{i} + 4\bar{j}$
(C) $-2\bar{i} + 10\bar{j} - 6\bar{k}$
(D) $3\bar{i} - 2\bar{j} + \bar{k}$

Answer: (C) $-2\bar{i} + 10\bar{j} - 6\bar{k}$ · The council's preliminary key

Q84 AP EAPCET 2025 · 22 May · Shift 1 MCQ

Angle between a diagonal of a cube and a diagonal of its face which are coterminus is

(A) $\frac{\pi}{2}$
(B) $\cos^{-1}\left(\sqrt{\frac{2}{3}}\right)$
(C) $\cos^{-1}\left(\frac{1}{\sqrt{3}}\right)$
(D) $\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$

Answer: (B) $\cos^{-1}\left(\sqrt{\frac{2}{3}}\right)$ · The council's preliminary key

Q85 AP EAPCET 2025 · 22 May · Shift 1 MCQ

If A(0, 0, 0), B(3, 4, 0), C(0, 12, 5) are the vertices of a triangle ABC, then the x-coordinate of its incentre is

(A) $\frac{25}{18+7\sqrt{2}}$
(B) $\frac{25}{26}$
(C) $\frac{39}{18+7\sqrt{2}}$
(D) $\frac{39}{26}$

Answer: (C) $\frac{39}{18+7\sqrt{2}}$ · The council's preliminary key

Q86 AP EAPCET 2025 · 22 May · Shift 1 MCQ

If $A = (0, 4, -3)$, $B = (5, 0, 12)$ and $C = (7, 24, 0)$, then \underline{|BAC|} =

(A) 60°
(B) $\text{Cos}^{-1}\left(\frac{16}{\sqrt{13}}\right)$
(C) $\text{Cos}^{-1}\left(\frac{13}{38}\right)$
(D) 90°

Answer: (D) 90° · The council's preliminary key

Q87 AP EAPCET 2025 · 22 May · Shift 1 MCQ

A plane π is passing through the points A(1, −2, 3) and B(6, 4, 5). If the plane π is perpendicular the plane $3x - y + z = 2$, then the perpendicular distance from (0, 0, 0) to the plane π is

(A) $\frac{63}{\sqrt{594}}$
(B) $\frac{32}{\sqrt{594}}$
(C) $\frac{72}{\sqrt{435}}$
(D) $\frac{23}{\sqrt{135}}$

Answer: (A) $\frac{63}{\sqrt{594}}$ · The council's preliminary key

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Q88 AP EAPCET 2025 · 22 May · Shift 2 MCQ

For a positive real number p, if the perpendicular distance from a point $-\bar{i} + p\bar{j} - 3\bar{k}$ to the plane $\bar{r} \cdot (2\bar{i} - 3\bar{j} + 6\bar{k}) = 7$ is 6 units, then p =

(A) $\frac{4}{5}$
(B) $\frac{5}{6}$
(C) 6
(D) 5

Answer: (D) 5 · The council's preliminary key

Q89 AP EAPCET 2025 · 22 May · Shift 2 MCQ

If Q (α, β, γ) is the harmonic conjugate of the point P(0,−7,1) with respect to the line segment joining the points (2, −5, 3) and (−1, −8, 0), then $\alpha - \beta + \gamma =$

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

Answer: (A) 4 · The council's preliminary key

Q90 AP EAPCET 2025 · 22 May · Shift 2 MCQ

On a line with direction cosines l, m, n, $A(x_1, y_1, z_1)$ is a fixed point. If $B = (x_1 + 4kl, y_1 + 4km, z_1 + 4kn)$ and $C = (x_1 + kl, y_1 + km, z_1 + kn)$ $(k > 0)$ then the ratio in which the point B divides the line segment joining A and C is

(A) $1 : 2$
(B) $1 : -4$
(C) $4 : -3$
(D) $4 : 3$

Answer: (C) $4 : -3$ · The council's preliminary key

Q91 AP EAPCET 2025 · 22 May · Shift 2 MCQ

If the line of intersection of the planes $2x + 3y + z = 1$ and $x + 3y + 2z = 2$ makes an angle α with the positive x-axis, then $\cos\alpha =$

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

Answer: (A) $\frac{1}{\sqrt{3}}$ · The council's preliminary key

Q92 AP EAPCET 2025 · 21 May · Shift 1 MCQ

G(1,0,1) is the centroid of the triangle ABC. If A = (1, −4, 2) and B = (3,1,0) then $AG^2 + CG^2 =$

(A) BG^2
(B) $2BG^2$
(C) $6BG^2$
(D) $5BG^2$

Answer: (D) $5BG^2$ · The council's preliminary key

Q93 AP EAPCET 2025 · 21 May · Shift 1 MCQ

If the sum of the distances of the point $(3, 4, \alpha)$, $\alpha \in R$ from X-axis, Y-axis and Z-axis is minimum, then $\sec\alpha =$

(A) 2
(B) 1
(C) 0
(D) -1

Answer: (B) 1 · The council's preliminary key

Q94 AP EAPCET 2025 · 21 May · Shift 1 MCQ

If the equation of the plane passing through the point $(2,-1,3)$ and perpendicular to each of the planes $3x-2y+z=8$ and $x+y+z=6$ is $lx+my+nz=1$, then $4m+2n-3l=$

(A) 0

(B) $\frac{-20}{11}$

(C) 1

(D) 3

Answer: (C) 1 · The council's preliminary key

Q95 AP EAPCET 2025 · 21 May · Shift 2 MCQ

The point of intersection of the lines represented by $\overline{r}=(\overline{i}-6\overline{j}+2\overline{k})+t(\overline{i}+2\overline{j}+\overline{k})$ and $\overline{r}=(4\overline{j}+\overline{k})+s(2\overline{i}+\overline{j}+2\overline{k})$ is

(A) $8\overline{i}+9\overline{j}+10\overline{k}$

(B) $8\overline{i}+8\overline{j}+7\overline{k}$

(C) $8\overline{i}+9\overline{j}+8\overline{k}$

(D) $8\overline{i}+8\overline{j}+9\overline{k}$

Answer: (D) $8\overline{i}+8\overline{j}+9\overline{k}$ · The council's preliminary key

Q96 AP EAPCET 2025 · 21 May · Shift 2 MCQ

If $O(0,0,0)$, $A(1,2,1)$, $B(2,1,3)$ and $C(-1,1,2)$ are the vertices of a tetrahedron, then the acute angle between its face OAB and edge BC is

(A) $\text{Cos}^{-1}\left(\frac{6\sqrt{2}}{5\sqrt{7}}\right)$

(B) $\text{Sin}^{-1}\left(\frac{6\sqrt{2}}{5\sqrt{7}}\right)$

(C) $\text{Tan}^{-1}\left(\frac{6\sqrt{2}}{5\sqrt{7}}\right)$

(D) $\frac{\pi}{2}$

Answer: (B) $\text{Sin}^{-1}\left(\frac{6\sqrt{2}}{5\sqrt{7}}\right)$ · The council's preliminary key

Q97 AP EAPCET 2025 · 21 May · Shift 2 MCQ

If the four points $(6,2,4)$, $(1,3,5)$, $(1,-2,3)$ and $(6,k,2)$ are coplanar, then $k=$

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(A) -5
(B) 4
(C) -3
(D) 1

Answer: (C) -3 · The council's preliminary key

Q98 TS EAPCET 2025 · 4 May · Shift 1 MCQ

The equation of the locus of a point whose distance from XY-plane is twice its distance from Z-axis is

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

Answer: (D) $4x^2+4y^2-z^2=0$ · The council's preliminary key

Q99 TS EAPCET 2025 · 4 May · Shift 1 MCQ

If α is the angle between any two diagonals of a cube and β is the angle between a diagonal of a cube and a diagonal of its face, which intersects this diagonal of the cube then $\cos\alpha+\cos^2\beta=$

(A) $\frac{5}{9}$
(B) $\frac{2}{9}$
(C) 1
(D) $\frac{2}{3}$

Answer: (C) 1 · The council's preliminary key

Q100 TS EAPCET 2025 · 4 May · Shift 1 MCQ

If the angle between the planes $ax-y+3z=2a$ and $3x+ay+z=3a$ is $\frac{\pi}{3}$ then the direction ratios of the line perpendicular to the plane $(a+2)x+(a-4)y+2az=a$ are

(A) $(2,-1,2)$
(B) $(2,1,-2)$
(C) $(2,1,2)$
(D) $(2,2,-1)$

Answer: (A) $(2,-1,2)$ · The council's preliminary key

Q101 TS EAPCET 2025 · 4 May · Shift 2 MCQ

A plane π_1 contains the vectors $\bar{i}+\bar{j}$ and $\bar{i}+2\bar{j}$. Another plane π_2 contains the vectors $2\bar{i}-\bar{j}$ and $3\bar{i}+2\bar{k}$. $\bar{a}$ is a vector parallel to the line of intersection of π_1 and π_2. If the angle θ between $\bar{a}$ and $\bar{i}-2\bar{j}+2\bar{k}$ is acute, then $\theta=$

(A) $\frac{\pi}{2}$
(B) $\frac{\pi}{4}$
(C) $\cos^{-1}\left(\frac{4}{3\sqrt{5}}\right)$
(D) $\cos^{-1}\left(\frac{2}{\sqrt{5}}\right)$

Answer: (C) $\cos^{-1}\left(\frac{4}{3\sqrt{5}}\right)$ · The council's preliminary key

Q102 TS EAPCET 2025 · 4 May · Shift 2 MCQ

Consider the following

Assertion (A): The two lines $\overline{r} = \overline{a} + t(\overline{b})$ and $\overline{r} = \overline{b} + s(\overline{a})$ intersect each other.

Reason (R): The shortest distance between the lines $\overline{r} = \overline{p} + t(\overline{q})$ and $\overline{r} = \overline{c} + s(\overline{d})$ is equal to the length of projection of the vector $(\overline{p} - \overline{c})$ on $(\overline{q} \times \overline{d})$

The correct answer is

(A) Both (A) and (R) are true and (R) is the correct explanation of (A)
(B) Both (A) and (R) are true and (R) is not the correct explanation of (A)
(C) (A) is true, but (R) is false
(D) (A) is false, but (R) is true

Answer: (A) Both (A) and (R) are true and (R) is the correct explanation of (A) · The council's preliminary key

Q103 TS EAPCET 2025 · 4 May · Shift 2 MCQ

Let $A(\alpha, 4, 7)$ and $B(3, \beta, 8)$ be two points in space. If YZ plane and ZX plane respectively divide the line segment joining the points A and B in the ratio $2:3$ and $4:5$, then the point C which divides $\overline{AB}$ in the ratio $\alpha:\beta$ externally is

(A) $\left(\frac{16}{3}, 10, 3\right)$
(B) $\left(\frac{-16}{3}, \frac{28}{3}, \frac{19}{3}\right)$
(C) $\left(\frac{-16}{3}, \frac{-28}{3}, \frac{-19}{3}\right)$
(D) $\left(\frac{-16}{3}, 10, \frac{19}{3}\right)$

Answer: (D) $\left(\frac{-16}{3}, 10, \frac{19}{3}\right)$ · The council's preliminary key

Q104 TS EAPCET 2025 · 4 May · Shift 2 MCQ

The direction ratios of the line bisecting the angle between the x-axis and the line having direction ratios $(3, -1, 5)$ are

(A) $\frac{3}{\sqrt{7}}, -\frac{1}{\sqrt{7}}, \frac{5}{\sqrt{7}}$
(B) $\frac{3+\sqrt{35}}{\sqrt{7}}, \frac{1}{\sqrt{5}}, -\frac{5}{\sqrt{5}}$
(C) $\frac{\sqrt{35}-3}{\sqrt{5}}, \frac{1}{\sqrt{5}}, -\sqrt{5}$
(D) $\frac{\sqrt{35}-3}{\sqrt{35}}, \frac{1}{\sqrt{7}}, \frac{5}{\sqrt{7}}$

Answer: (C) $\frac{\sqrt{35}-3}{\sqrt{5}}, \frac{1}{\sqrt{5}}, -\sqrt{5}$ · The council's preliminary key

Q105 TS EAPCET 2025 · 4 May · Shift 2 MCQ

If the plane $-4x - 2y + 2z + \alpha = 0$ is at a distance of two units from the plane $2x + y - z + 1 = 0$, then the product of all the possible values of α is

(A) -23
(B) 42
(C) -92
(D) 72

Answer: (C) -92 · The council's preliminary key

Q106 TS EAPCET 2025 · 3 May · Shift 1 MCQ

If $m : n$ is the ratio in which the point $\left(\frac{8}{5}, -\frac{1}{5}, \frac{8}{5}\right)$ divides the line segment joining the points $(2, p, 2)$ and $(p, -2, p)$ where p is an integer then $\frac{3m+n}{3n} =$

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

Answer: (A) p · The council's preliminary key

Q107 TS EAPCET 2025 · 3 May · Shift 1 MCQ

If (α, β, γ) is the foot of the perpendicular drawn from a point $(-1, 2, -1)$ to the line joining the points $(2, -1, 1)$ and $(1, 1, -2)$, then $\alpha + \beta + \gamma =$

(A) 2
(B) $-\frac{1}{7}$
(C) 0
(D) $\frac{3}{14}$

Answer: (B) $-\frac{1}{7}$ · The council's preliminary key

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Q108 TS EAPCET 2025 · 3 May · Shift 1 MCQ

If $A(2,1,-1)$, $B(6,-3,2)$, $C(-3,12,4)$ are the vertices of a triangle ABC and the equation of the plane containing the triangle ABC is $53x+by+cz+d=0$, then $\frac{d}{b+c}=$

(A) -5
(B) 1
(C) 4
(D) -15

Answer: (D) -15 · The council's preliminary key

Q109 TS EAPCET 2025 · 3 May · Shift 2 MCQ

The number of values of 'k' for which the points $(-4,9,k)$, $(-1,6,k)$, $(0,7,10)$ form a right-angled isosceles triangle is

(A) 0
(B) 1
(C) 2
(D) 4

Answer: (C) 2 · The council's preliminary key

Q110 TS EAPCET 2025 · 3 May · Shift 2 MCQ

A line makes angles 60°, 45°, θ with positive X, Y, Z-axes respectively. If θ is an acute angle, then $\tan\theta=$

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

Answer: (A) $\sqrt{3}$ · The council's preliminary key

Q111 TS EAPCET 2025 · 3 May · Shift 2 MCQ

If the foot of the perpendicular drawn from the point $(2,0,-3)$ to the plane π is $(1,-2,0)$ and the equation of the plane π is $ax+by-3z+d=0$ then $a+b+d=$

(A) 0
(B) 1
(C) 6
(D) 2

Answer: (C) 6 · The council's preliminary key

Q112 TS EAPCET 2025 · 2 May · Shift 1 MCQ

The point of intersection of the line joining the points $\bar{i}+2\bar{j}+\bar{k}$, $2\bar{i}-\bar{j}-\bar{k}$ and the plane passing through the points $\bar{i}$, $2\bar{j}$, $3\bar{k}$ is

(A) $\bar{i}+2\bar{j}+3\bar{k}$
(B) $\frac{1}{7}\left(3\bar{i}-\bar{j}+\bar{k}\right)$
(C) $\bar{i}-3\bar{j}-2\bar{k}$
(D) $\frac{1}{7}\left(15\bar{i}-10\bar{j}-9\bar{k}\right)$

Answer: (D) $\frac{1}{7}\left(15\bar{i}-10\bar{j}-9\bar{k}\right)$ · The council's preliminary key

Q113 TS EAPCET 2025 · 2 May · Shift 1 MCQ

The shortest distance between the lines $\bar{r}=(3\bar{i}-5\bar{j}+2\bar{k})+t(4\bar{i}+3\bar{j}-\bar{k})$ and $\bar{r}=(\bar{i}+2\bar{j}-4\bar{k})+s(6\bar{i}+3\bar{j}-2\bar{k})$ is

(A) 7
(B) 8
(C) 9
(D) 12

Answer: (B) 8 · The council's preliminary key

Q114 TS EAPCET 2025 · 2 May · Shift 1 MCQ

If $A(0,3,4)$, $B(1,5,6)$, $C(-2,0,-2)$ are the vertices of a triangle ABC and the bisector of angle A meets the side BC at D, then $AD=$

(A) $\frac{\sqrt{21}}{5}$
(B) $\frac{\sqrt{42}}{10}$
(C) 10
(D) 4

Answer: (B) $\frac{\sqrt{42}}{10}$ · The council's preliminary key

Q115 TS EAPCET 2025 · 2 May · Shift 1 MCQ

If the direction cosines of two lines satisfy the equations $2l+m-n=0$, $l^2-2m^2+n^2=0$ and θ is the angle between the lines then $\cos\theta=$

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(A) $\frac{1}{5}$
(B) $\frac{\pi}{4}$
(C) $\frac{2}{3}$
(D) $\frac{\pi}{3}$

Answer: (A) $\frac{1}{5}$ · The council's preliminary key

Q116 TS EAPCET 2025 · 2 May · Shift 1 MCQ

If the equation of the plane passing through the points $(2,1,2)$, $(1,2,1)$ and perpendicular to the plane $2x-y+2z=1$ is $ax+by+cz+d=0$ then $\frac{a+b}{c+d}=$

(A) 0
(B) 1
(C) -1
(D) 2

Answer: (C) -1 · The council's preliminary key

Q117 TS EAPCET 2025 · 2 May · Shift 2 MCQ

Let A be a point having position vector $\bar{i}-3\bar{j}$ and $\bar{r}=(\bar{i}-3\bar{j})+t(\bar{j}-2\bar{k})$ be a line. If P is a point on this line and is at a minimum distance from the plane $\bar{r}\cdot(2\bar{i}+3\bar{j}+5\bar{k})=0$, then the equation of the plane through P and perpendicular to AP, is

(A) $\bar{r}\cdot(-\bar{j}+2\bar{k})=8$
(B) $\bar{r}\cdot(\bar{j}+\bar{k})=4$
(C) $\bar{r}\cdot(\bar{i}+\bar{j}+\bar{k})=8$
(D) $\bar{r}\cdot(\bar{i}-\bar{j})=12$

Answer: (A) $\bar{r}\cdot(-\bar{j}+2\bar{k})=8$ · The council's preliminary key

Q118 TS EAPCET 2025 · 2 May · Shift 2 MCQ

$O(0,0,0)$, $A(3,1,4)$, $B(1,3,2)$ and $C(0,4,-2)$ are the vertices of a tetrahedron. If G is the centroid of the tetrahedron and G_1 is the centroid of its face ABC, then the point which divides GG_1 in the ratio $1:2$ is

(A) $\left(\frac{10}{3},\frac{20}{3},\frac{10}{3}\right)$
(B) $\left(\frac{20}{9},\frac{10}{9},\frac{10}{9}\right)$
(C) $\left(\frac{10}{9},\frac{20}{9},\frac{10}{9}\right)$
(D) $\left(\frac{20}{3},\frac{10}{3},\frac{10}{3}\right)$

Answer: (C) $\left(\frac{10}{9},\frac{20}{9},\frac{10}{9}\right)$ · The council's preliminary key

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Q119 TS EAPCET 2025 · 2 May · Shift 2 MCQ

If L is a line common to the planes $3x + 4y + 7z = 1$, $x - y + z = 5$ then the direction ratios of the line L are

(A) $(16, 0, -1)$
(B) $(11, 4, -7)$
(C) $(2, 5, 1)$
(D) $(4, -7, 11)$

Answer: (B) $(11, 4, -7)$ · The council's preliminary key

Q120 TS EAPCET 2025 · 2 May · Shift 2 MCQ

If the points $(1, 1, \lambda)$ and $(-3, 0, 1)$ are equidistant from the plane $3x + 4y - 12z + 13 = 0$, then the values of λ are

(A) $-1, \frac{7}{3}$
(B) $1, \frac{-7}{3}$
(C) $-1, \frac{-7}{3}$
(D) $1, \frac{7}{3}$

Answer: (D) $1, \frac{7}{3}$ · The council's preliminary key

Q121 AP EAPCET 2024 · 23 May · Shift 1 MCQ

The length of the internal bisector of angle A in ΔABC with vertices A (4, 7, 8), B (2, 3, 4) and C (2, 5, 7) is

(A) $\frac{1}{3}\sqrt{29}$
(B) $\frac{2}{3}\sqrt{29}$
(C) $\frac{2}{3}\sqrt{34}$
(D) $\frac{4}{3}\sqrt{34}$

Answer: (C) $\frac{2}{3}\sqrt{34}$ · The council's preliminary key

Q122 AP EAPCET 2024 · 23 May · Shift 1 MCQ

If the direction cosines of two lines are given by $l + m + n = 0$ and $mn - 2lm - 2nl = 0$, then the acute angle between those lines is

(A) $2\pi/5$
(B) $\pi/3$
(C) $\pi/4$
(D) $\pi/60$

Answer: (B) $\pi/3$ · The council's preliminary key

Q123 AP EAPCET 2024 · 23 May · Shift 1 MCQ

If the angle θ between the line $\frac{x+1}{1} = \frac{y-1}{2} = \frac{z-2}{2}$ and the plane $2x - y + \sqrt{\lambda}\, z + 4 = 0$ is such that $\sin\theta = \frac{1}{3}$, then the value of $\lambda =$

(A) $\frac{3}{5}$
(B) $\frac{5}{4}$
(C) $\frac{5}{3}$
(D) $\frac{4}{3}$

Answer: (C) $\frac{5}{3}$ · The council's preliminary key

Q124 AP EAPCET 2024 · 22 May · Shift 1 MCQ

The distance of a point $(2, 3, -5)$ from the plane $\overline{r}.(4i - 3j + 2k) = 4$ is

(A) $\frac{11}{2}$
(B) $\frac{11}{\sqrt{29}}$
(C) $\frac{15}{\sqrt{29}}$
(D) $\frac{11}{\sqrt{38}}$

Answer: (C) $\frac{15}{\sqrt{29}}$ · The council's preliminary key

Q125 AP EAPCET 2024 · 22 May · Shift 1 MCQ

The orthocentre of triangle formed by points: $(2, 1, 5)$, $(3, 2, 3)$ and $(4, 0, 4)$ is

(A) $(3, 1, 2)$
(B) $(3, 2, 3)$
(C) $(3, 1, 4)$
(D) $(1, 4, 0)$

Answer: (C) $(3, 1, 4)$ · The council's preliminary key

Q126 AP EAPCET 2024 · 22 May · Shift 1 MCQ

If $P = (0, 1, 2), Q = (4, -2, 1)$ and $O = (0, 0, 0)$ then $\angle POQ =$

(A) $\frac{\pi}{6}$
(B) $\frac{\pi}{4}$
(C) $\frac{\pi}{3}$
(D) $\frac{\pi}{2}$

Answer: (D) $\frac{\pi}{2}$ · The council's preliminary key

Q127 AP EAPCET 2024 · 22 May · Shift 1 MCQ

If the perpendicular distance from $(1, 2, 4)$ to the plane $2x + 2y - z + k = 0$ is 3, then $k =$

(A) 4
(B) 7
(C) 9
(D) 19

Answer: (B) 7 · The council's preliminary key

Q128 AP EAPCET 2024 · 22 May · Shift 2 MCQ

If $A = (1, 2, 3)$, $B = (3, 4, 7)$ and $C = (-3, -2, -5)$ are three points then the ratio in which the point C divides AB externally is

(A) $2 : 3$
(B) $3 : 2$
(C) $4 : 3$
(D) $3 : 4$

Answer: (A) $2 : 3$ · The council's preliminary key

Q129 AP EAPCET 2024 · 22 May · Shift 2 MCQ

If a line L makes angles $\frac{\pi}{3}$ and $\frac{\pi}{4}$ with Y-axis and Z -axis respectively, then the angle between L and another line having direction ratios 1, 1, 1 is

(A) $\cos^{-1}\left(\frac{2}{\sqrt{6}}\right)$
(B) $\cos^{-1}\left(\frac{\sqrt{2}+1}{3\sqrt{3}}\right)$
(C) $\cos^{-1}\left(\frac{\sqrt{2}-1}{3}\right)$
(D) $\cos^{-1}\left(\frac{\sqrt{2}+1}{\sqrt{6}}\right)$

Answer: (D) $\cos^{-1}\left(\frac{\sqrt{2}+1}{\sqrt{6}}\right)$ · The council's preliminary key

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Q130 AP EAPCET 2024 · 22 May · Shift 2 MCQ

If l, m, n are the direction cosines of a line that is perpendicular to the lines having the direction ratios $1, 2, -1$ and $1, -2, 1$ then $(l+m+n)^2 =$

(A) $\frac{1}{20}$
(B) $\frac{9}{5}$
(C) $\frac{1}{5}$
(D) $\frac{3}{20}$

Answer: (B) $\frac{9}{5}$ · The council's preliminary key

Q131 AP EAPCET 2024 · 22 May · Shift 2 MCQ

The foot of the perpendicular drawn from a point A $(1, 1, 1)$ on to a plane π is P $(-3, 3, 5)$. If the equation of the plane parallel to the plane π and passing through the midpoint of AP is $ax - y + cz + d = 0$, then $a + c - d =$

(A) -10
(B) 5
(C) -12
(D) 2

Answer: (A) -10 · The council's preliminary key

Q132 AP EAPCET 2024 · 21 May · Shift 1 MCQ

A(1, 2, 1), B(2, 3, 2), C(3, 1, 3) and D(2, 1, 3) are the vertices of a tetrahedron. If θ is the angle between the faces ABC and ABD then $\cos\theta =$

(A) $\frac{5}{\sqrt{14}}$
(B) $\frac{15}{8\sqrt{7}}$
(C) $\frac{3}{\sqrt{14}}$
(D) $\frac{5}{2\sqrt{7}}$

Answer: (D) $\frac{5}{2\sqrt{7}}$ · The council's preliminary key

Q133 AP EAPCET 2024 · 21 May · Shift 1 MCQ

Consider the tetrahedron with the vertices $A(3, 2, 4), B(x_1, y_1, 0), C(x_2, y_2, 0), D(x_3, y_3, 0)$. If the triangle BCD is formed by the lines $y = x$, $x + y = 6$ and $y = 1$, then the centroid of the tetrahedron is

(A) $\left(\frac{9}{4}, \frac{7}{4}, 1\right)$
(B) $\left(\frac{11}{4}, \frac{5}{4}, 1\right)$
(C) $\left(3, \frac{7}{4}, 1\right)$
(D) $(3, 2, 1)$

Answer: (C) $\left(3, \frac{7}{4}, 1\right)$ · The council's preliminary key

Q134 AP EAPCET 2024 · 21 May · Shift 1 MCQ

If $P(2, \beta, \alpha)$ lies on the plane $x + 2y - z - 2 = 0$ and $Q(\alpha, -1, \beta)$ lies on the plane $2x - y + 3z + 6 = 0$ then the direction cosines of the line PQ are

(A) $\left(-\frac{4}{\sqrt{17}}, 0, \frac{1}{\sqrt{17}}\right)$
(B) $\left(+\frac{4}{\sqrt{17}}, 0, \frac{1}{\sqrt{17}}\right)$
(C) $\left(\frac{1}{\sqrt{17}}, 0, \frac{4}{\sqrt{17}}\right)$
(D) $\left(-\frac{1}{\sqrt{17}}, 0, \frac{4}{\sqrt{17}}\right)$

Answer: (A) $\left(-\frac{4}{\sqrt{17}}, 0, \frac{1}{\sqrt{17}}\right)$ · The council's preliminary key

Q135 AP EAPCET 2024 · 21 May · Shift 1 MCQ

Let π be the plane that passes through the point $(-2, 1, -1)$ and parallel to the plane $2x - y + 2z = 0$. Then the foot of perpendicular drawn from the point $(1, 2, 1)$ to the plane π is

(A) $(-3, -1, 1)$
(B) $(-1, 1, -3)$
(C) $(-3, 3, -1)$
(D) $(-1, 3, -1)$

Answer: (D) $(-1, 3, -1)$ · The council's preliminary key

Q136 AP EAPCET 2024 · 21 May · Shift 2 MCQ

Angle between the planes $\overline{r} \cdot (12\overline{i} + 4\overline{j} - 3\overline{k}) = 5$ and $\overline{r} \cdot (5\overline{i} + 3\overline{j} + 4\overline{k}) = 7$ is

(A) $\text{Cos}^{-1}\left(\frac{12}{13}\right)$
(B) $\text{Cos}^{-1}\left(\frac{6\sqrt{2}}{13}\right)$
(C) $\text{Cos}^{-1}\left(\frac{3\sqrt{2}}{13}\right)$
(D) $\text{Cos}^{-1}\left(\frac{6}{13}\right)$

Answer: (B) $\text{Cos}^{-1}\left(\frac{6\sqrt{2}}{13}\right)$ · The council's preliminary key

Q137 AP EAPCET 2024 · 21 May · Shift 2 MCQ

The shortest distance between the skew lines $\overline{r} = (2\overline{i} - \overline{j}) + t(\overline{i} + 2\overline{k})$ and $\overline{r} = (-2\overline{i} + \overline{k}) + s(\overline{i} - \overline{j} - \overline{k})$ is

(A) $\frac{3\sqrt{2}}{\sqrt{7}}$
(B) $\frac{3}{\sqrt{7}}$
(C) $\frac{3}{\sqrt{14}}$
(D) $\frac{4}{\sqrt{14}}$

Answer: (A) $\frac{3\sqrt{2}}{\sqrt{7}}$ · The council's preliminary key

Q138 AP EAPCET 2024 · 21 May · Shift 2 MCQ

If the plane $x - y + z + 4 = 0$ divides the line joining the points $P(2, 3, -1)$ and $Q(1, 4, -2)$ in the ratio $l : m$, then $l + m$ is

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

Answer: (B) 3 · The council's preliminary key

Q139 AP EAPCET 2024 · 21 May · Shift 2 MCQ

If the line with direction ratios $(1, \alpha, \beta)$ is perpendicular to the line with direction ratios $(-1, 2, 1)$ and parallel to the line with direction ratios $(\alpha, 1, \beta)$, then (α, β) is

(A) $(-1, -1)$
(B) $(1, -1)$
(C) $(-1, 3)$
(D) $(1, 1)$

Answer: (B) $(1, -1)$ · The council's preliminary key

Q140 AP EAPCET 2024 · 21 May · Shift 2 MCQ

Let $P(x_1, y_1, z_1)$ be the foot of perpendicular drawn from the point $Q(2, -2, 1)$ to the plane $x - 2y + z = 1$. If d is the perpendicular distance from the point Q to the plane and $l = x_1 + y_1 + z_1$, then $l + 3d^2$ is

(A) 5
(B) 7
(C) 19
(D) 26

Answer: (C) 19 · The council's preliminary key

Q141 AP EAPCET 2024 · 20 May · Shift 1 MCQ

The distance of the point $O(\overline{0})$ from the plane $\overline{r} \cdot (\overline{i} + \overline{j} + \overline{k}) = 5$ measured parallel to $2\overline{i} + 3\overline{j} - 6\overline{k}$ is

(A) 35
(B) 30
(C) 25
(D) 42

Answer: (A) 35 · The council's preliminary key

Q142 AP EAPCET 2024 · 20 May · Shift 1 MCQ

If A $(1, 0, 2)$, B $(2, 1, 0)$, C $(2, -5, 3)$, D $(0, 3, 2)$ are four points and the point of intersection of the lines AB and CD is P (a, b, c), then $a + b + c =$

(A) 3
(B) -5
(C) 5
(D) -3

Answer: (A) 3 · The council's preliminary key

Q143 AP EAPCET 2024 · 20 May · Shift 1 MCQ

The direction cosines of two lines are connected by the relations $l + m - n = 0$ and $lm - 2mn + nl = 0$. If θ is the acute angle between those lines then $\cos\theta =$

(A) $\frac{\pi}{6}$
(B) $\frac{1}{\sqrt{7}}$
(C) $\sqrt{\frac{5}{6}}$
(D) $\frac{\pi}{3}$

Answer: (B) $\frac{1}{\sqrt{7}}$ · The council's preliminary key

Q144 AP EAPCET 2024 · 20 May · Shift 1 MCQ

The distance from a point $(1, 1, 1)$ to a variable plane π is 12 units and the points of intersections of the plane π and X, Y, Z -axes are A, B, C respectively. If the point of intersection of the planes through the points A, B, C and parallel to the coordinate planes is P, then the equation of the locus of P is

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(A) $\left(\frac{1}{xy}+\frac{1}{yz}+\frac{1}{zx}\right)=143\left(\frac{1}{x^2}+\frac{1}{y^2}+\frac{1}{z^2}\right)$

(B) $\frac{1}{x^2}+\frac{1}{y^2}+\frac{1}{z^2}=144$

(C) $\left(\frac{1}{x}+\frac{1}{y}+\frac{1}{z}-1\right)^2=144\left(\frac{1}{x^2}+\frac{1}{y^2}+\frac{1}{z^2}\right)$

(D) $\left(\frac{1}{x}+\frac{1}{y}+\frac{1}{z}-1\right)^2=144\left(\frac{1}{x^2}+\frac{1}{y^2}+\frac{1}{z^2}\right)^2$

Answer: (C) $\left(\frac{1}{x}+\frac{1}{y}+\frac{1}{z}-1\right)^2=144\left(\frac{1}{x^2}+\frac{1}{y^2}+\frac{1}{z^2}\right)$ · The council's preliminary key

Q145 AP EAPCET 2024 · 20 May · Shift 2 MCQ

The angle between the line with the direction ratios $(2,5,1)$ and the plane $8x+2y-z=4$ is

(A) $\cos^{-1}\left(\frac{64}{\sqrt{9804}}\right)$

(B) $\sin^{-1}\left(\frac{64}{\sqrt{9804}}\right)$

(C) $\sin^{-1}\left(\frac{25}{\sqrt{2070}}\right)$

(D) $\cos^{-1}\left(\frac{25}{\sqrt{2070}}\right)$

Answer: (C) $\sin^{-1}\left(\frac{25}{\sqrt{2070}}\right)$ · The council's preliminary key

Q146 AP EAPCET 2024 · 20 May · Shift 2 MCQ

The direction cosines of the line of intersection of the planes $x+2y+z-4=0$ and $2x-y+z-3=0$ are

(A) $\left(\frac{3}{\sqrt{26}},\frac{1}{\sqrt{26}},\frac{-4}{\sqrt{26}}\right)$

(B) $\left(\frac{3}{\sqrt{14}},\frac{2}{\sqrt{14}},\frac{-1}{\sqrt{14}}\right)$

(C) $\left(\frac{3}{\sqrt{35}},\frac{1}{\sqrt{35}},\frac{-5}{\sqrt{35}}\right)$

(D) $\left(\frac{3}{\sqrt{22}},\frac{-2}{\sqrt{22}},\frac{3}{\sqrt{22}}\right)$

Answer: (C) $\left(\frac{3}{\sqrt{35}},\frac{1}{\sqrt{35}},\frac{-5}{\sqrt{35}}\right)$ · The council's preliminary key

Q147 AP EAPCET 2024 · 20 May · Shift 2 MCQ

If L_1 and L_2 are two lines which pass through origin and having direction ratios $(3,1,-5)$ and $(2,3,-1)$ respectively, then equation of the plane containing L_1 and L_2 is

(A) $4x+5y-63=0$

(B) $5x-y+3z=0$

(C) $2x-y+z=0$

(D) $x-5y+3z=0$

Answer: (C) $2x-y+z=0$ · The council's preliminary key

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Q148 AP EAPCET 2024 · 19 May · Shift 2 MCQ

The shortest distance between the skew lines $\bar{r} = (-\bar{i} - 2\bar{j} - 3\bar{k}) + t(3\bar{i} - 2\bar{j} - 2\bar{k})$ and $\bar{r} = (7\bar{i} + 4\bar{k}) + s(\bar{i} - 2\bar{j} + 2\bar{k})$ is

(A) 15
(B) 0
(C) 9
(D) 16

Answer: (C) 9 · The council's preliminary key

Q149 AP EAPCET 2024 · 19 May · Shift 2 MCQ

If $A(1,2,0), B(2,0,1), C(-3,0,2)$ are the vertices of ΔABC, then the length of the internal bisector of $\angle BAC$ is

(A) $3\sqrt{6}$
(B) $\frac{2\sqrt{14}}{3}$
(C) $6\sqrt{14}$
(D) $\frac{2\sqrt{6}}{3}$

Answer: (B) $\frac{2\sqrt{14}}{3}$ · The council's preliminary key

Q150 AP EAPCET 2024 · 19 May · Shift 2 MCQ

The perpendicular distance from the point $(-1,1,0)$ to the line joining the points $(0,2,4)$ and $(3,0,1)$ is

(A) 10
(B) $\frac{2\sqrt{5}}{5}$
(C) $\frac{5}{\sqrt{2}}$
(D) 8

Answer: (C) $\frac{5}{\sqrt{2}}$ · The council's preliminary key

Q151 AP EAPCET 2024 · 19 May · Shift 2 MCQ

A line L passes through the points $(1,2,-3)$ and $(3,3,-1)$ and a plane π passes through the points $(2,1,-2), (-2,-3,6), (0,2,-1)$. If θ is the angle between the line L and plane π, then $27\cos^2\theta =$

(A) 25
(B) 9
(C) 5
(D) 2

Answer: (D) 2 · The council's preliminary key

Q152 AP EAPCET 2024 · 18 May · Shift 1 MCQ

The equation $axy + byz = cy$ represent the locus of the points which lie on

(A) zx-plane or on the planes perpendicular to zx-plane
(B) on the planes perpendicular to x-axis
(C) on the lines perpendicular to zx-plane
(D) on the lines perpendicular to xy-plane

Answer: (A) zx-plane or on the planes perpendicular to zx-plane · The council's preliminary key

Q153 AP EAPCET 2024 · 18 May · Shift 1 MCQ

Let $P(\alpha, 4, 7)$ and $Q(3, \beta, 8)$ are two points. If YZ- plane divides the join of the points P and Q in the ratio 2:3 and ZX- plane divides the join of P and Q in the ratio 4:5, then length of line segment PQ is

(A) $\sqrt{107}$
(B) $\sqrt{27}$
(C) $\sqrt{83}$
(D) $\sqrt{97}$

Answer: (A) $\sqrt{107}$ · The council's preliminary key

Q154 AP EAPCET 2024 · 18 May · Shift 1 MCQ

If (α, β, γ) are the Direction cosines of an angular bisector of two lines whose Direction ratios are $(2, 2, 1)$ and $(2, -1, -2)$, then $(\alpha + \beta + \gamma)^2 =$

(A) 3
(B) 2
(C) 4
(D) 5

Answer: (B) 2 · The council's preliminary key

Q155 AP EAPCET 2024 · 18 May · Shift 1 MCQ

If the distance between the planes $2x + y + z + 1 = 0$ and $2x + y + z + \alpha = 0$ is 3 units, then product of all possible values of α is

(A) -43
(B) 43
(C) 53
(D) -53

Answer: (D) -53 · The council's preliminary key

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Q156 TS EAPCET 2024 · 11 May · Shift 1 MCQ

A plane π passing through the points $2\bar{i}-3\bar{j}$, $3\bar{i}+4\bar{k}$ is parallel to the vector $2\bar{i}+3\bar{j}-4\bar{k}$. If a line joining the points $\bar{i}+2\bar{j}$ and $\bar{j}-2\bar{k}$ intersects the plane π at the point $a\bar{i}+b\bar{j}+c\bar{k}$, then $a+b+2c=$

(A) 31
(B) 29
(C) 23
(D) 19

Answer: (A) 31 · The council's preliminary key

Q157 TS EAPCET 2024 · 11 May · Shift 1 MCQ

$\bar{r}.(\bar{i}-\bar{j}+\bar{k})=5$ and $\bar{r}.(2\bar{i}+\bar{j}-\bar{k})=3$ are two planes. A plane π passing through the line of intersection of these two planes, passes through the point $(0,1,2)$. If the equation of π is $\bar{r}.(a\bar{i}+b\bar{j}+c\bar{k})=\mathrm{m}$, then $\frac{bc}{a^2}=$

(A) $\frac{1}{2}$
(B) $-\frac{1}{2}$
(C) 4
(D) -4

Answer: (D) -4 · The council's preliminary key

Q158 TS EAPCET 2024 · 11 May · Shift 1 MCQ

If $A(-2,4,a)$, $B(1,b,3)$, $C(c,0,4)$ and $D(-5,6,1)$ are collinear points, then $a+b+c=$

(A) 4
(B) 8
(C) 12
(D) -4

Answer: (B) 8 · The council's preliminary key

Q159 TS EAPCET 2024 · 11 May · Shift 1 MCQ

$A(1,-2,1)$ and $B(2,-1,2)$ are the end points of a line segment. If $D(\alpha,\beta,\gamma)$ is the foot of the perpendicular drawn from $C(1,2,3)$ to AB, then $\alpha^2+\beta^2+\gamma^2=$

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(A) 18
(B) 14
(C) 9
(D) 27

Answer: (A) 18 · The council's preliminary key

Q160 TS EAPCET 2024 · 11 May · Shift 1 MCQ

The foot of the perpendicular drawn from the point $(-2, -1, 3)$ to a plane π is $(1, 0, -2)$. If a, b, c are the intercepts made by the plane π on X, Y, Z-axes respectively, then $3a + b + 5c =$

(A) 39
(B) 26
(C) 13
(D) 0

Answer: (C) 13 · The council's preliminary key

Q161 TS EAPCET 2024 · 10 May · Shift 1 MCQ

A plane π_1 passing through the point $3\bar{i} - 7\bar{j} + 5\bar{k}$ is perpendicular to the vector $\bar{i} + 2\bar{j} - 2\bar{k}$ and another plane π_2 passing through the point $2\bar{i} + 7\bar{j} - 8\bar{k}$ is perpendicular to the vector $3\bar{i} + 2\bar{j} + 6\bar{k}$. If p_1 and p_2 are the perpendicular distances from the origin to the planes π_1 and π_2 respectively, then $p_1 - p_2 =$

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

Answer: (C) 3 · The council's preliminary key

Q162 TS EAPCET 2024 · 10 May · Shift 1 MCQ

$A(2, 3, k)$, $B(-1, k, -1)$, $C(4, -3, 2)$ are the vertices of ΔABC. If $AB = AC$ and $k > 0$, then ABC is

(A) an equilateral triangle
(B) a right-angled isosceles triangle
(C) an isosceles triangle but not right angled
(D) an obtuse angled isosceles triangle

Answer: (B) a right-angled isosceles triangle · The council's preliminary key

Q163 TS EAPCET 2024 · 10 May · Shift 1 MCQ

If $A(1, 2, -3)$, $B(2, 3, -1)$, $C(3, 1, 1)$ are the vertices of ΔABC then $\left|\frac{\cos A}{\cos B}\right| =$

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

Answer: (B) $\frac{3\sqrt{3}}{\sqrt{7}}$ · The council's preliminary key

Q164 TS EAPCET 2024 · 10 May · Shift 1 MCQ

If a, b, c are the intercepts made on X, Y, Z-axes respectively by the plane passing through the points $(1, 0, -2)$, $(3, -1, 2)$ and $(0, -3, 4)$, then $3a + 4b + 7c =$

(A) -5
(B) 5
(C) -15
(D) 15

Answer: (C) -15 · The council's preliminary key

Q165 TS EAPCET 2024 · 10 May · Shift 2 MCQ

If $\bar{a} = \bar{i} - \bar{j} + 3\bar{k}$, $\bar{c} = -\bar{k}$ are position vectors of two points and $\bar{b} = 2\bar{i} - \bar{j} + \lambda\bar{k}$, $\bar{d} = \bar{i} + 2\bar{j} - \bar{k}$ are two vectors, then the lines $\bar{r} = \bar{a} + t\bar{b}$, $\bar{r} = \bar{c} + s\bar{d}$ are

(A) skew lines when $\lambda = \frac{19}{3}$
(B) coplanar $\forall \lambda \in \mathbb{R}$
(C) skew lines when $\lambda \neq \frac{19}{3}$
(D) coplanar when $\lambda \neq \frac{19}{3}$

Answer: (C) skew lines when $\lambda \neq \frac{19}{3}$ · The council's preliminary key

Q166 TS EAPCET 2024 · 10 May · Shift 2 MCQ

If the harmonic Conjugate of $P(2, 3, 4)$ with respect to the line segment joining the points $A(3, -2, 2)$ and $B(6, -17, -4)$ is $Q(\alpha, \beta, \gamma)$, then $\alpha + \beta + \gamma =$

(A) $-\frac{2}{5}$
(B) $-\frac{3}{5}$
(C) $\frac{7}{5}$
(D) $\frac{8}{5}$

Answer: (B) $-\frac{3}{5}$ · The council's preliminary key

Q167 TS EAPCET 2024 · 10 May · Shift 2 MCQ

If L is the line of intersection of two planes $x+2y+2z=15$ and $x-y+z=4$ and the direction ratios of the line L are (a, b, c), then $\frac{a^2+b^2+c^2}{b^2}=$

(A) 14
(B) 10
(C) 22
(D) 26

Answer: (D) 26 · The council's preliminary key

Q168 TS EAPCET 2024 · 10 May · Shift 2 MCQ

The foot of the perpendicular drawn from $A(1,2,2)$ onto the plane $x+2y+2z-5=0$ is $B(\alpha,\beta,\gamma)$. If $\pi(x,y,z)\equiv x+2y+2z+5=0$ is a plane then $-\pi(A):\pi(B)=$

(A) $15:32$
(B) $-7:5$
(C) $-15:47$
(D) $-27:20$

Answer: (B) $-7:5$ · The council's preliminary key

Q169 TS EAPCET 2024 · 9 May · Shift 1 MCQ

If the ratio of the perpendicular distances of a variable point $P(x,y,z)$ from the X-axis and from the YZ-plane is $2:3$, then the equation of the locus of P is

(A) $4x^2-9y^2-9z^2=0$
(B) $9x^2-4y^2-4z^2=0$
(C) $4x^2-4y^2-9z^2=0$
(D) $9x^2-9y^2-4z^2=0$

Answer: (A) $4x^2-9y^2-9z^2=0$ · The council's preliminary key

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Q170 TS EAPCET 2024 · 9 May · Shift 1 MCQ

The direction cosines of two lines are connected by the relations $l - m + n = 0$ and $2lm - 3mn + nl = 0$. If θ is the angle between these two lines, then $\cos\theta =$

(A) $\frac{1}{4}$
(B) $\frac{1}{\sqrt{19}}$
(C) $\frac{1}{3}$
(D) $\frac{1}{3\sqrt{2}}$

Answer: (B) $\frac{1}{\sqrt{19}}$ · The council's preliminary key

Q171 TS EAPCET 2024 · 9 May · Shift 1 MCQ

A plane π passes through the points $(5, 1, 2)$, $(3, -4, 6)$ and $(7, 0, -1)$. If p is the perpendicular distance from the origin to the plane π and l, m, n are the direction cosines of a normal to the plane π, then $|3l + 2m + 5n| =$

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

Answer: (C) p · The council's preliminary key

Q172 TS EAPCET 2024 · 9 May · Shift 2 MCQ

If $\bar{i} + \bar{j}$, $\bar{j} + \bar{k}$, $\bar{k} + \bar{i}$, $\bar{i} - \bar{j}$, $\bar{j} - \bar{k}$ are the position vectors of the points A, B, C, D, E respectively, then the point of intersection of the line AB and the plane passing through C, D, E is

(A) $\bar{i} + \bar{j} + \bar{k}$
(B) $\frac{1}{2}\bar{i} + \bar{j} + \frac{1}{2}\bar{k}$
(C) $\frac{1}{2}\left(\bar{i} + \bar{j} + \bar{k}\right)$
(D) $\frac{1}{2}\bar{i} - \bar{j} + \frac{1}{2}\bar{k}$

Answer: (B) $\frac{1}{2}\bar{i} + \bar{j} + \frac{1}{2}\bar{k}$ · The council's preliminary key

Q173 TS EAPCET 2024 · 9 May · Shift 2 MCQ

$A(3, 2, -1)$, $B(4, 1, 0)$, $C(2, 1, 4)$ are the vertices of a triangle ABC. If the bisector of $\angle BAC$ intersects the side BC at $D(p, q, r)$ then $\sqrt{2p + q + r} =$

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

Answer: (C) 3 · The council's preliminary key

Q174 TS EAPCET 2024 · 9 May · Shift 2 MCQ

$(3, 0, 2)$ and $(0, 2, k)$ are the direction ratios of two lines and θ is the angle between them. If $|\cos\theta| = \frac{6}{13}$, then $k =$

(A) ± 2
(B) ± 3
(C) ± 5
(D) ± 7

Answer: (B) ± 3 · The council's preliminary key

Q175 TS EAPCET 2024 · 9 May · Shift 2 MCQ

A plane (π) passing through the point $(1, 2, -3)$ is perpendicular to the planes $x + y - z + 4 = 0$ and $2x - y + z + 1 = 0$. If the equation of the plane (π) is $ax + by + cz + 1 = 0$ then $a^2 + b^2 + c^2 =$

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

Answer: (C) 2 · The council's preliminary key

Q176 AP EAPCET 2023 · 19 May · Shift 1 MCQ

The vector equation of any plane passing through the line of intersection of the planes $\vec{r}.\vec{m}_1 = q_1$ and $\vec{r}.\vec{m}_2 = q_2$, is given by $\vec{r}.(\vec{m}_1 + \lambda\vec{m}_2) = q_1 + \lambda q_2$ for $\lambda \in \mathbb{R}$. The vector equation of a plane passing through the point $2\vec{i} - 3\vec{j} + \vec{k}$ and the line of intersection of the planes $\vec{r}.(\vec{i} - 2\vec{j} + 3\vec{k}) = 5$ and $\vec{r}.(3\vec{i} + \vec{j} - 2\vec{k}) = 7$ is

(A) $\vec{r}.(-2\vec{i} - 3\vec{j} + 5\vec{k}) = -2$
(B) $\vec{r}.(7\vec{i} - \vec{k}) = 19$
(C) $\vec{r}.(4\vec{i} - \vec{j} + \vec{k}) = 12$
(D) $\vec{r}.(8\vec{i} + 5\vec{j} - 9\vec{k}) = 16$

Answer: (C) $\vec{r}.(4\vec{i} - \vec{j} + \vec{k}) = 12$ · The council's preliminary key

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Q177 AP EAPCET 2023 · 19 May · Shift 1 MCQ

The coordinates of the point which divides the line joining the points $(2, 3, 4)$ and $(3, -4, 7)$ in the ratio $2 : 4$ externally is

(A) $(10, 1, 1)$
(B) $(1, 10, 1)$
(C) $(10, -10, 10)$
(D) $(1, 1, 10)$

Answer: (B) $(1, 10, 1)$ · The council's preliminary key

Q178 AP EAPCET 2023 · 19 May · Shift 1 MCQ

If a straight line is equally inclined at an angle θ with all the three coordinate axes, then $\tan\theta =$

(A) $2\sqrt{2}$
(B) $\sqrt{2}$
(C) 1
(D) $1 + \sqrt{5}$

Answer: (B) $\sqrt{2}$ · The council's preliminary key

Q179 AP EAPCET 2023 · 19 May · Shift 1 MCQ

If the planes $2x + 3y + 4z + 7 = 0$ and $4x + ky + 8z + 1 = 0$ are parallel, then the equation of the plane passing through the point (k, k, k) and having the direction ratios of its normal as $(k - 1, k, k + 1)$ is

(A) $x + 2y + 3z = 36$
(B) $3x + 4y + 5z = 72$
(C) $4x + 5y + 6z = 90$
(D) $5x + 6y + 7z = 108$

Answer: (D) $5x + 6y + 7z = 108$ · The council's preliminary key

Q180 AP EAPCET 2023 · 18 May · Shift 1 MCQ

If a point $R(4, y, z)$ lies on the line joining the points $P(2, -3, 4)$ and $Q(8, 0, 10)$, then distance of R from origin is

(A) $2\sqrt{14}$
(B) 6
(C) $\sqrt{53}$
(D) $2\sqrt{21}$

Answer: (A) $2\sqrt{14}$ · The council's preliminary key

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Q181 AP EAPCET 2023 · 18 May · Shift 1 MCQ

If the foot of the perpendicular drawn from $(0,0,0)$ to a plane is $(1,2,3)$, then equation of the plane is

(A) $2x+y+3z=14$
(B) $x+2y+3z=14$
(C) $x+2y+3z+14=0$
(D) $x+2y-3z=14$

Answer: (B) $x+2y+3z=14$ · The council's preliminary key

Q182 AP EAPCET 2023 · 18 May · Shift 2 MCQ

If $(k,1,5),(1,0,3),(7,-2,m)$ are collinear then $(k,m)=$

(A) $(-2,-1)$
(B) $(2,1)$
(C) $(-2,1)$
(D) $(2,-1)$

Answer: (A) $(-2,-1)$ · The council's preliminary key

Q183 AP EAPCET 2023 · 18 May · Shift 2 MCQ

If a line L makes angles $\frac{\pi}{3}$ and $\frac{\pi}{4}$ with the positive X-axis and positive Y-axis respectively, then the angle made by L with the positive direction of Z-axis is

(A) $\frac{\pi}{2}$
(B) $\frac{\pi}{3}$
(C) $\frac{\pi}{4}$
(D) $\frac{5\pi}{12}$

Answer: (B) $\frac{\pi}{3}$ · The council's preliminary key

Q184 AP EAPCET 2023 · 18 May · Shift 2 MCQ

The equation of a plane passing through $(-1,2,3)$ and whose normal makes equal angles with the coordinate axes is

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

Answer: (C) $x+y+z-4=0$ · The council's preliminary key

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Q185 AP EAPCET 2023 · 17 May · Shift 1 MCQ

Let L be the line passing through the points $\bar{i} - 9\bar{k}$ and $7\bar{j} + \bar{k}$ and π be the plane passing through the point $6\bar{i} + \bar{j}$ and perpendicular to the vector $\bar{i} + \bar{j} + \bar{k}$. If θ is the angle between L and π, then $\sin\theta =$

(A) $\frac{8\sqrt{2}}{15}$
(B) $\frac{3\sqrt{3}}{8}$
(C) $\frac{7}{13}$
(D) $\frac{24}{25}$

Answer: (A) $\frac{8\sqrt{2}}{15}$ · The council's preliminary key

Q186 AP EAPCET 2023 · 17 May · Shift 1 MCQ

If the extremities of a diagonal of a square are $(1, -2, 3)$ and $(2, -3, 5)$, then the length of its side is

(A) $\sqrt{6}$
(B) $\sqrt{3}$
(C) $\sqrt{5}$
(D) $\sqrt{7}$

Answer: (B) $\sqrt{3}$ · The council's preliminary key

Q187 AP EAPCET 2023 · 17 May · Shift 1 MCQ

Coordinate planes and the planes π_1, π_2, π_3 which are respectively parallel to YZ, ZX, XY planes at distances a, b, c, form a rectangular parallelepiped. d_1 is a diagonal of the face on XY-plane not passing through origin and d_2 is diagonal of plane π_2 coterminous with d_1. If none of the coordinates of the vertices of the parallelepiped are negative and angle between d_1 and d_2 is θ, then $\cos\theta =$

(A) $\frac{a^2}{\sqrt{a^2+b^2}\sqrt{a^2+c^2}}$
(B) $\frac{a}{a^2+b^2+c^2}$
(C) $\frac{\pi}{2}$
(D) $\frac{a^2}{\sqrt{a^2+b^2}\sqrt{b^2+c^2}}$

Answer: (A) $\frac{a^2}{\sqrt{a^2+b^2}\sqrt{a^2+c^2}}$ · The council's preliminary key

Q188 AP EAPCET 2023 · 17 May · Shift 1 MCQ

An equation of a plane parallel to the plane $x - 2y + 2z - 5 = 0$ and which is at one unit distance from the origin is

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(A) $x-2y+2z-1=0$
(B) $x-2y+2z+5=0$
(C) $x-2y+2z-3=0$
(D) $x-2y+2z+1=0$

Answer: (C) $x-2y+2z-3=0$ · The council's preliminary key

Q189 AP EAPCET 2023 · 17 May · Shift 2 MCQ

If $\overline{p}=4\overline{i}-\overline{j}+\overline{k}$ is a point and $\overline{q}=9\overline{i}-2\overline{j}+6\overline{k}$ is a vector, then the perpendicular distance of origin from the plane passing through $\overline{p}$ and perpendicular to $\overline{q}$ is

(A) 4
(B) $3\sqrt{2}$
(C) 9
(D) 11

Answer: (A) 4 · The council's preliminary key

Q190 AP EAPCET 2023 · 17 May · Shift 2 MCQ

In ΔABC, if the midpoints of the sides AB, BC and CA are respectively $(l,0,0),(0,m,0)$ and $(0,0,n)$, then $\frac{AB^2+BC^2+CA^2}{l^2+m^2+n^2}=$

(A) 2
(B) 4
(C) 8
(D) 16

Answer: (C) 8 · The council's preliminary key

Q191 AP EAPCET 2023 · 17 May · Shift 2 MCQ

$A(2,3,5)$, $B(\alpha,3,3)$ and $C(7,5,\beta)$ are the vertices of a triangle. If the median through A is equally inclined with the coordinate axes, then $\frac{\beta}{\alpha}=$

(A) -9
(B) $\frac{-1}{9}$
(C) $\frac{-2}{9}$
(D) $\frac{9}{2}$

Answer: (A) -9 · The council's preliminary key

Q192 AP EAPCET 2023 · 17 May · Shift 2 MCQ

The equation of the plane passing through the point $(1, 2, 2)$ and perpendicular to the planes $x - y + 2z = 3$ and $2x - 2y + z + 12 = 0$, is

(A) $x - 2y + 2z - 1 = 0$
(B) $2x - 3y + 4z - 4 = 0$
(C) $x + y + z - 5 = 0$
(D) $x + y - 3 = 0$

Answer: (D) $x + y - 3 = 0$ · The council's preliminary key

Q193 AP EAPCET 2023 · 16 May · Shift 1 MCQ

Let $A(1, -1, 2)$, $B(6, 11, 2)$, $C(1, 2, 6)$ be three points. If l_1, m_1, n_1 are the direction cosines of AB and l_2, m_2, n_2 are the direction cosines of AC, then $|l_1l_2 + m_1m_2 + n_1n_2| =$

(A) $\frac{63}{65}$
(B) $\frac{36}{65}$
(C) $\frac{16}{65}$
(D) $\frac{13}{64}$

Answer: (B) $\frac{36}{65}$ · The council's preliminary key

Q194 AP EAPCET 2023 · 16 May · Shift 1 MCQ

If the plane $56x + 4y + 9z = 2016$ meets the coordinate axes in A, B and C, then the centroid of the ΔABC is

(A) $(12, 168, 224)$
(B) $(12, 168, 112)$
(C) $(12, 168, \frac{224}{3})$
(D) $(12, -168, \frac{224}{3})$

Answer: (C) $(12, 168, \frac{224}{3})$ · The council's preliminary key

Q195 AP EAPCET 2023 · 16 May · Shift 2 MCQ

If $A = (2, 3, 4)$ and $B = (-2, 3, 4)$, then the locus of a point P such that $PA + PB = 4$ is

(A) $y^2 + z^2 + 6y + 8z + 25 = 0$
(B) $y^2 - z^2 + 6y + 8z - 25 = 0$
(C) $y^2 + z^2 - 6y - 8z + 25 = 0$
(D) $y^2 + z^2 - 6y - 8z - 25 = 0$

Answer: (C) $y^2 + z^2 - 6y - 8z + 25 = 0$ · The council's preliminary key

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Q196 AP EAPCET 2023 · 16 May · Shift 2 MCQ

If (l_1, m_1, n_1), (l_2, m_2, n_2) are the direction cosines of two lines, then $(l_1m_2 - l_2m_1)^2 + (m_1n_2 - m_2n_1)^2 + (n_1l_2 - n_2l_1)^2 + (l_1l_2 + m_1m_2 + n_1n_2)^2 =$

(A) 0
(B) 1
(C) 2
(D) 4

Answer: (B) 1 · The council's preliminary key

Q197 AP EAPCET 2023 · 16 May · Shift 2 MCQ

A point on the plane passing through the points $(\sqrt{2}, 1, 4)$, $(0, -1, 0)$ and $(0, 0, 1)$ is

(A) $(-\sqrt{2}, 1, -4)$
(B) $(\sqrt{2}, 1, 4)$
(C) $(\sqrt{2}, -1, 4)$
(D) $(-\sqrt{2}, -1, -4)$

Answer: (B) $(\sqrt{2}, 1, 4)$ · The council's preliminary key

Q198 AP EAPCET 2023 · 15 May · Shift 1 MCQ

Let π_1 be the plane determined by the vectors $\bar{i} + 2\bar{j}$ and $3\bar{j} - 2\bar{k}$. Let π_2 be the plane determined by the vectors $\bar{j} + 2\bar{k}$ and $3\bar{k} - 2\bar{i}$. If θ is the angle between π_1 and π_2, then $\cos\theta =$

(A) $\frac{7}{26}$
(B) $-\frac{14}{29}$
(C) $-\frac{32}{5\sqrt{2}}$
(D) $\frac{23}{38}$

Answer: (B) $-\frac{14}{29}$ · The council's preliminary key

Q199 AP EAPCET 2023 · 15 May · Shift 1 MCQ

If the line passing through the points $(5, 1, a)$ and $(3, b, 1)$ crosses the YZ plane at the point $\left(0, \frac{17}{2}, \frac{-13}{2}\right)$, then $a + b =$

(A) 12
(B) 10
(C) 8
(D) 4

Answer: (B) 10 · The council's preliminary key

Q200 AP EAPCET 2023 · 15 May · Shift 1 MCQ

ΔABC is formed by $A(1,8,4), B(0,-11,4)$ and $C(2,-3,1)$. If D is the foot of the perpendicular drawn from A to BC, then the coordinates of D are

(A) $(-4,5,2)$
(B) $(4,-5,2)$
(C) $(4,-5,-2)$
(D) $(4,5,-2)$

Answer: (D) $(4,5,-2)$ · The council's preliminary key

Q201 AP EAPCET 2023 · 15 May · Shift 1 MCQ

The distance between two parallel planes $ax+by+cz+d_1=0$, $ax+by+cz+d_2=0$ is given by $\frac{|d_1-d_2|}{\sqrt{a^2+b^2+c^2}}$. If the plane $2x-y+2z+3=0$ has the distances $\frac{1}{3}$ and $\frac{2}{3}$ units from the planes $4x-2y+4z+\lambda=0$ and $2x-y+2z+\mu=0$ respectively, then the maximum value of $\lambda+\mu$ is

(A) 15
(B) 5
(C) 13
(D) 9

Answer: (C) 13 · The council's preliminary key

Q202 AP EAPCET 2023 · 15 May · Shift 2 MCQ

Let ABCD be a tetrahedron in which the coordinates of each of its vertices are in arithmetic progression with same common difference. If the centroid G of the tetrahedron is $(2,3,k)$, then the distance of G from the origin is

(A) $\sqrt{38}$
(B) 7
(C) $\sqrt{22}$
(D) $\sqrt{29}$

Answer: (D) $\sqrt{29}$ · The council's preliminary key

Q203 AP EAPCET 2023 · 15 May · Shift 2 MCQ

If $A(3,-1,11)$, $B(0,2,3)$, $C(4,8,11)$ are three points, then the coordinates of the foot of the perpendicular drawn from the point A to the line joining the points B and C is

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(A) $(3,5,7)$
(B) $(5,9,6)$
(C) $(2,5,7)$
(D) $(1,2,3)$

Answer: (C) $(2,5,7)$ · The council's preliminary key

Q204 AP EAPCET 2023 · 15 May · Shift 2 MCQ

If S is the set of all real values of 'a' such that a plane passing through the points $(-a^2,1,1)$, $(1,-a^2,1)$, $(1,1,-a^2)$ also passes through the point $(-1,-1,1)$, then S =

(A) $\{\sqrt{3}\}$
(B) $\{\sqrt{3},-\sqrt{3}\}$
(C) $\{1,-1\}$
(D) $\{3,-3\}$

Answer: (B) $\{\sqrt{3},-\sqrt{3}\}$ · The council's preliminary key

Q205 TS EAMCET 2023 · 14 May · Shift 1 MCQ

In a triangle ABC, if the mid points of sides AB, BC, CA are $(3,0,0),(0,4,0),(0,0,5)$ respectively, then $AB^2+BC^2+CA^2=$

(A) 50
(B) 200
(C) 300
(D) 400

Answer: (D) 400 · The council's preliminary key

Q206 TS EAMCET 2023 · 14 May · Shift 1 MCQ

If l,m,n and a, b, c are direction cosines of two lines then

(A) they are parallel when $la+mb+nc=0$
(B) they are perpendicular when $\frac{l}{a}=\frac{m}{b}=\frac{n}{c}$
(C) the direction ratios of the bisectors of the angles between the two lines are $l\pm a, m\pm b, n\pm c$
(D) the direction ratios of the bisectors of the angles between the two lines are la, mb, nc

Answer: (C) the direction ratios of the bisectors of the angles between the two lines are $l\pm a, m\pm b, n\pm c$ · The council's preliminary key

Q207 TS EAMCET 2023 · 14 May · Shift 1 MCQ

If $(2,-1,3)$ is the foot of the perpendicular drawn from the origin to a plane, then the equation of that plane is

(A) $2x + y - 3z + 6 = 0$
(B) $2x - y + 3z - 14 = 0$
(C) $2x - y + 3z - 13 = 0$
(D) $2x + y + 3z - 10 = 0$

Answer: (B) $2x - y + 3z - 14 = 0$ · The council's preliminary key

Q208 TS EAMCET 2023 · 14 May · Shift 2 MCQ

If the circumcenter of the triangle formed by the points $(1, 2, 3)$, $(3, -1, 5)$ and $(4, 0, -3)$ is (α, β, γ), then $|\alpha| + |\beta| =$

(A) $|\gamma|$
(B) $3|\gamma|$
(C) $4|\gamma|$
(D) $2|\gamma|$

Answer: (C) $4|\gamma|$ · The council's preliminary key

Q209 TS EAMCET 2023 · 14 May · Shift 2 MCQ

If θ is the acute angle between the two lines whose direction cosines are connected by the relations $l + m + n = 0$ and $2lm + 2nl - mn = 0$, then $\cos\theta =$

(A) $\frac{1}{2}$
(B) $\frac{\sqrt{3}}{2}$
(C) $\frac{5}{6}$
(D) $\frac{3}{5}$

Answer: (A) $\frac{1}{2}$ · The council's preliminary key

Q210 TS EAMCET 2023 · 14 May · Shift 2 MCQ

If the foot of the perpendicular drawn from the point $(1, 0, -2)$ to the plane π is $(2, 0, -1)$ and the equation of the plane π is $ax + by + cz = 2$ then $a^2 + b^2 + c^2 =$

(A) 2
(B) 8
(C) 4
(D) 9

Answer: (B) 8 · The council's preliminary key

Q211 TS EAMCET 2023 · 13 May · Shift 1 MCQ

Let $\overline{OA} = \bar{i} - 3\bar{j} + \bar{k}$, $\overline{OB} = \bar{i} + 3\bar{j} - 2\bar{k}$ and $\overline{OC} = 4\bar{i} + 3\bar{j} + 5\bar{k}$ be the position vectors of three points A, B and C. Let P be the point which divides AB in the ratio 2:1. If l, m, n are the direction cosines of the vector $\overline{PC}$, then $l + 3m + 2n =$

(A) 23/7
(B) 5
(C) 18/7
(D) 3

Answer: (D) 3 · The council's preliminary key

Q212 TS EAMCET 2023 · 13 May · Shift 1 MCQ

The point of intersection of the line passing through the points $\bar{i}-\bar{j}$, $\bar{j}-\bar{k}$ and the plane passing through the points $2\bar{i}+\bar{j}$, $2\bar{j}-\bar{k}$, $\bar{i}+2\bar{k}$ is

(A) $\frac{1}{6}(-5\bar{i}+16\bar{j}-11\bar{k})$
(B) $\frac{1}{23}(22\bar{i}-44\bar{j}+25\bar{k})$
(C) $\frac{1}{5}(18\bar{i}+16\bar{j}-21\bar{k})$
(D) $\frac{1}{11}(5\bar{i}-41\bar{j}+21\bar{k})$

Answer: (A) $\frac{1}{6}(-5\bar{i}+16\bar{j}-11\bar{k})$ · The council's preliminary key

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Q213 TS EAMCET 2023 · 13 May · Shift 1 MCQ

A plane π passing through the point $3\bar{i}-4\bar{j}+5\bar{k}$ is parallel to the plane which passes through the point $\bar{i}+\bar{j}-\bar{k}$ and perpendicular to the vector $\bar{i}+2\bar{j}-3\bar{k}$. Then the cartesian equation of π is

(A) $3x-4y+5z+20=0$
(B) $2x-y+3z-25=0$
(C) $x+2y-3z+20=0$
(D) $4x+5y-6z+38=0$

Answer: (C) $x+2y-3z+20=0$ · The council's preliminary key

Q214 TS EAMCET 2023 · 13 May · Shift 1 MCQ

Let A (4, 3, 5), B (1, -2, 1), C (3, 2, 1) be the vertices of a triangle ABC. If the internal bisector of $\angle BAC$ meet the side BC at D, then CD =

(A) $\frac{\sqrt{5}}{4}$
(B) $\frac{3\sqrt{5}}{4}$
(C) $2\sqrt{5}$
(D) $\frac{5\sqrt{5}}{2}$

Answer: (B) $\frac{3\sqrt{5}}{4}$ · The council's preliminary key

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Q215 TS EAMCET 2023 · 13 May · Shift 1 MCQ

Let the direction cosines of two lines satisfy the equations $3l+2m+n=0$ and $2mn-3nl+5lm=0$. If θ is the angle between these two lines, then $\cos\theta=$

(A) $\sqrt{\frac{19}{28}}$
(B) $\frac{3}{\sqrt{28}}$
(C) $\frac{25}{\sqrt{2991}}$
(D) $\frac{1}{6}$

Answer: (C) $\frac{25}{\sqrt{2991}}$ · The council's preliminary key

Q216 TS EAMCET 2023 · 13 May · Shift 1 MCQ

$(1, -2, 1)$ is a point on a plane π and π is parallel to the plane $x - y - z = 0$. If the equation of π is $ax + by + cz - 2 = 0$, then $b - 2c =$

(A) $-a$
(B) $2a$
(C) $-2a$
(D) a

Answer: (D) a · The council's preliminary key

Q217 TS EAMCET 2023 · 13 May · Shift 2 MCQ

A(1, 2, 3), B (2, 3, 1) and C(3, 1, 2) are three points. If the point P divides AB in the ratio 1 : 2 and the point Q divides BC in the ratio -2 : 3, then the distance between P and Q is

(A) $\sqrt{312}$
(B) 13
(C) $\frac{2}{3}\sqrt{78}$
(D) 25

Answer: (C) $\frac{2}{3}\sqrt{78}$ · The council's preliminary key

Q218 TS EAMCET 2023 · 13 May · Shift 2 MCQ

If the image of the point $(1, -2, 1)$ with respect to the line passing through the points $B(1, 1, 2)$ and $C(2, 2, 1)$ is (l, m, n), then $l^2 + m^2 + n^2 =$

(A) 1
(B) 9
(C) 22
(D) 26

Answer: (D) 26 · The council's preliminary key

Q219 TS EAMCET 2023 · 13 May · Shift 2 MCQ

A plane π passing through the point $(1,1,1)$ is perpendicular to the line joining the points $(6,3,2)$ and $(1,-4,-9)$. If $ax+by+cz-23=0$ is the equation of the plane π then $a+b-c=$

(A) 1
(B) 23
(C) 9
(D) 13

Answer: (A) 1 · The council's preliminary key

Q220 TS EAMCET 2023 · 12 May · Shift 1 MCQ

If the position vectors of P and Q are $\bar{i}+2\bar{j}-7\bar{k}$ and $5\bar{i}-3\bar{j}+4\bar{k}$ respectively, then the cosine of the angle between $\overline{PQ}$ and Z-axis is

(A) $\frac{4}{\sqrt{162}}$
(B) $\frac{11}{\sqrt{162}}$
(C) $\frac{5}{\sqrt{162}}$
(D) $\frac{-5}{\sqrt{162}}$

Answer: (B) $\frac{11}{\sqrt{162}}$ · The council's preliminary key

Q221 TS EAMCET 2023 · 12 May · Shift 1 MCQ

If the direction cosines (l,m,n) of two lines are connected by the relations $l+m+n=0$ and $lm=0$, then the angle between those lines is

(A) $\frac{\pi}{3}$
(B) $\frac{\pi}{4}$
(C) $\frac{\pi}{2}$
(D) $\frac{\pi}{6}$

Answer: (A) $\frac{\pi}{3}$ · The council's preliminary key

Q222 TS EAMCET 2023 · 12 May · Shift 1 MCQ

The sum of the squares of the perpendicular distances of a point (x,y,z) from the coordinate axes is k times the square of the distance of the point from the origin. Then $k=$

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

Answer: (A) 2 · The council's preliminary key

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Q223 TS EAMCET 2023 · 12 May · Shift 1 MCQ

Equation of the plane through the mid-point of the line segment joining the points $A(4, 5, -10)$ and $B(-1, 2, 1)$ and perpendicular to AB is

(A) $10x + 6y - 22z + 135 = 0$
(B) $10x + 6y - 22z - 135 = 0$
(C) $5x + 3y + 11z = 135$
(D) $10x + 6y - 22z + 185 = 0$

Answer: (B) $10x + 6y - 22z - 135 = 0$ · The council's preliminary key

Q224 TS EAMCET 2023 · 12 May · Shift 2 MCQ

If M is the foot of the perpendicular drawn from P(1, 2, -1) to the plane passing through the point A(3, -2, 1) and perpendicular to the vector $4\bar{i} + 7\bar{j} - 4\bar{k}$, then the length of PM is

(A) $\frac{16}{3}$
(B) $\frac{18}{5}$
(C) $\frac{22}{9}$
(D) $\frac{28}{9}$

Answer: (D) $\frac{28}{9}$ · The council's preliminary key

Q225 TS EAMCET 2023 · 12 May · Shift 2 MCQ

If $A = (1, -1, 2)$, $B = (3, 4, -2)$, $C = (0, 3, 2)$ and $D = (3, 5, 6)$ then the angle between the lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ is

(A) 30°
(B) 45°
(C) 60°
(D) 90°

Answer: (D) 90° · The council's preliminary key

Q226 TS EAMCET 2023 · 12 May · Shift 2 MCQ

Consider the following statements:

Assertion (A) : The direction ratios of a line L_1 are 2, 5, 7 and the direction ratios of another line L_2 are $\frac{4}{\sqrt{19}}, \frac{10}{\sqrt{19}}, \frac{14}{\sqrt{19}}$. Then the lines L_1, L_2 are parallel

Reason (R) : If the direction ratios of a line L_1 are a_1, b_1, c_1, the direction ratios of a line L_2 are a_2, b_2, c_2 and $a_1a_2 + b_1b_2 + c_1c_2 = 0$, then the lines of L_1, L_2 are parallel

Which one of the following is True?

(A) (A) and (R) are true. (R) is the correct explanation of (A)

(B) (A) and (R) are true, but (R) is not the correct explanation of (A)

(C) (A) is true, (R) is false

(D) (A) is false, (R) is true

Answer: (C) (A) is true, (R) is false · The council's preliminary key

Q227 TS EAMCET 2023 · 12 May · Shift 2 MCQ

A line L is parallel to both the planes $2x + 3y + z = 1$ and $x + 3y + 2z = 2$. If line L makes an angle α with the positive direction of X-axis, then $\cos\alpha =$

(A) $\frac{1}{\sqrt{3}}$

(B) $\frac{1}{\sqrt{2}}$

(C) $\frac{1}{2}$

(D) $\frac{\sqrt{3}}{2}$

Answer: (A) $\frac{1}{\sqrt{3}}$ · The council's preliminary key

Q228 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

Let L be a line passing through the points $2\bar{i} + 3\bar{j} + 8\bar{k}$ and $\bar{i} + 6\bar{j} + 4\bar{k}$. Let P be a plane passing through $-5\bar{i} + 19\bar{j} - 14\bar{k}$ and parallel to the vectors $\bar{i} - \bar{j} + \bar{k}$ and $\bar{i} - 2\bar{j} + 3\bar{k}$. If L meets the plane P at a point A, then the position vector of A, is

(A) $-\bar{i} - 12\bar{j} + 4\bar{k}$

(B) $-\bar{i} + 12\bar{j} - 4\bar{k}$

(C) $\bar{i} - 12\bar{j} - 4\bar{k}$

(D) $\bar{i} + 12\bar{j} + 4\bar{k}$

Answer: (B) $-\bar{i} + 12\bar{j} - 4\bar{k}$ · The council's preliminary key

Q229 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

If $\bar{r} \cdot (2\bar{i} + 3\bar{j} + 4\bar{k}) = 5$, $\bar{r} \cdot (\bar{i} + \bar{j} - \bar{k}) = 7$ are two planes and (16, −9, 0) is a point common to both the planes then the vector equation of the line of intersection of the planes is $\bar{r} =$

(A) $(16 + 7\lambda)\bar{i} + (6\lambda + 9)\bar{j} + \lambda\bar{k}$

(B) $(16 - 7\lambda)\bar{i} + (6\lambda - 9)\bar{j} - \lambda\bar{k}$

(C) $16\bar{i} - 9\bar{j} + \lambda(\bar{i} - 7\bar{j} + 6\bar{k})$

(D) $16\bar{i} - 9\bar{j} + \lambda(6\bar{i} - \bar{j} - 7\bar{k})$

Answer: (B) $(16 - 7\lambda)\bar{i} + (6\lambda - 9)\bar{j} - \lambda\bar{k}$ · The council's preliminary key

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Q230 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

A(1, 1, 1), B(1, −4, 3), C(2, −2, 0) and D(8, 1, 4) are the vertices of a tetrahedron. G_1, G_2, G_3 and G_4 are the centroids of the faces ABC, BCD, CDA and DAB. Then the centroid of the tetrahedron having G_1, G_2, G_3, G_4 as its vertices is

(A) (12, −4, 8)
(B) $\left(4, \frac{-4}{3}, \frac{8}{3}\right)$
(C) $\left(2, \frac{-2}{3}, \frac{4}{3}\right)$
(D) (3, −1, 2)

Answer: (D) (3, −1, 2) · The council's preliminary key

Q231 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

Let A(2, 3, −1), B(4, 1, 0), C(−1, −1, 11) be the vertices of a triangle ABC. Let D be the point where the bisector of ∠BAC meet the side BC. Then the direction ratios of AD are

(A) $(35, -19, 49)$
(B) $(17, -14, 49)$
(C) $(17, -38, 49)$
(D) $(17, -38, 23)$

Answer: (C) $(17, -38, 49)$ · The council's preliminary key

Q232 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

If a plane passing through the points (2, 3, 0), (0, −5, 2) and (−2, 0, 3) meets the X, Y, Z-axes in A, B, C respectively then A =

(A) $\left(\frac{3}{7}, 0, 0\right)$
(B) $\left(\frac{7}{3}, 0, 0\right)$
(C) $\left(\frac{21}{13}, 0, 0\right)$
(D) $(21, 0, 0)$

Answer: (B) $\left(\frac{7}{3}, 0, 0\right)$ · The council's preliminary key

Q233 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

If $\bar{r} = (2 - \lambda + \mu)\bar{i} + (1 - \mu)\bar{j} + (2 - 3\lambda + 2\mu)\bar{k}$ is the vector equation of a plane, then the equivalent cartesian equation of the plane is

(A) $3x + y - z = 5$
(B) $3x - y + z = 5$
(C) $-3x + y + z = 5$
(D) $3x - y - z = 5$

Answer: (A) $3x + y - z = 5$ · The council's preliminary key

Q234 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

Let π_1 be a plane passing through the point $\bar{i} + \bar{j} + \bar{k}$ and perpendicular to the vector $-\bar{j} + 2\bar{k}$. Let the line L passing through the points $3\bar{i} - 2\bar{j} + \bar{k}$ and $-\bar{i} + 3\bar{j} + \bar{k}$ be a normal to the plane π_2. If the angle between the planes π_1 and π_2 is θ then $\cos\theta =$

(A) $\sqrt{\frac{5}{41}}$
(B) $\frac{-14}{\sqrt{205}}$
(C) $\frac{\pi}{4}$
(D) $\frac{\pi}{2}$

Answer: (A) $\sqrt{\frac{5}{41}}$ · The council's preliminary key

Q235 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

Let $A = (1, 2, 0),\ B = (2, 0, -1),\ C = (0, -2, 3)$ and $D = (-1, 2, -3)$ be four points in the space. Let G_1 be the centroid of triangle ABC and G_2 be the centroid of tetrahedron ABCD. If P divides G_1G_2 in the ratio 4 : 3 internally then P =

(A) $\left(\frac{5}{7}, \frac{2}{7}, \frac{1}{7}\right)$
(B) $\left(\frac{1}{7}, \frac{2}{7}, \frac{3}{7}\right)$
(C) $\left(\frac{4}{7}, \frac{-2}{7}, \frac{1}{7}\right)$
(D) $\left(\frac{1}{7}, \frac{-3}{7}, \frac{5}{7}\right)$

Answer: (A) $\left(\frac{5}{7}, \frac{2}{7}, \frac{1}{7}\right)$ · The council's preliminary key

Q236 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

If the d.r.'s of two lines are connected by the relations $a - b + c = 0,\ a^2 - b^2 + 2c^2 = 0$ and θ is the angle between these lines then $\cos\theta =$

(A) $\frac{2}{\sqrt{7}}$
(B) $\frac{3}{2\sqrt{7}}$
(C) $\frac{3}{4\sqrt{2}}$
(D) $\frac{1}{3\sqrt{2}}$

Answer: (A) $\frac{2}{\sqrt{7}}$ · The council's preliminary key

Q237 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

If l, m, n are the d.c.'s of a normal to the plane passing through the points $(0,1,2)$, $(3,0,2)$, $(4,5,0)$ then $|l|+|m|+|n| =$

(A) $\frac{13}{\sqrt{91}}$
(B) $\frac{11}{\sqrt{57}}$
(C) $\frac{13}{\sqrt{77}}$
(D) $\frac{12}{\sqrt{74}}$

Answer: (D) $\frac{12}{\sqrt{74}}$ · The council's preliminary key

Q238 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

If $\mathrm{A}(1,2,3)$, $\mathrm{B}(2,-3,1)$, $\mathrm{C}(3,2,-1)$ are three vertices of a tetrahedron ABCD and $\mathrm{G}\left(\frac{5}{2},\frac{3}{2},\frac{9}{4}\right)$ is its centroid then the point which divides GD in the ratio $1:2$ is

(A) $(6,1,3)$
(B) $\left(3,\frac{8}{3},3\right)$
(C) $\left(\frac{1}{3},\frac{2}{3},1\right)$
(D) $\left(3,\frac{8}{3},\frac{7}{2}\right)$

Answer: (D) $\left(3,\frac{8}{3},\frac{7}{2}\right)$ · The council's preliminary key

Q239 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

Let D be the foot of the perpendicular drawn from the point $\mathrm{A}(2,0,3)$ to the line joining the points $\mathrm{B}(0,4,1)$ and $\mathrm{C}(-2,0,4)$. Then the ratio in which D divides BC is

(A) $3:2$
(B) $2\sqrt{6}:\sqrt{17}$
(C) $18:11$
(D) $16:9$

Answer: (C) $18:11$ · The council's preliminary key

Q240 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

Let $6x-3y+2z-6=0$ be the given plane. If a,b,c are the intercepts made by the plane on $\mathrm{X},\mathrm{Y},\mathrm{Z}$ - axes respectively; l,m,n are the direction cosines of a normal drawn to the plane and p is the perpendicular distance from the origin to the plane, then $|al+bm+cn|=$

(A) p
(B) $2\mathrm{p}$
(C) $3\mathrm{p}$
(D) $4\mathrm{p}$

Answer: (C) $3\mathrm{p}$ · The council's preliminary key

Q241 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

The point which lies on the plane passing through the points $\bar{i}-2\bar{j}-3\bar{k}$, $3\bar{i}-\bar{j}+4\bar{k}$, $-3\bar{i}+2\bar{j}-5\bar{k}$ is

(A) $-\bar{i}+3\bar{j}-2\bar{k}$
(B) $7\bar{i}-5\bar{j}-6\bar{k}$
(C) $-\bar{i}+9\bar{j}+14\bar{k}$
(D) $3\bar{i}-7\bar{j}+8\bar{k}$

Answer: (C) $-\bar{i}+9\bar{j}+14\bar{k}$ · The council's preliminary key

Q242 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

If the angle between the planes $\bar{r}\cdot(11\bar{i}-2\bar{j}+\alpha\bar{k})=7$ and $\bar{r}\cdot(2\bar{i}+4\bar{j}-2\bar{k})=5$ is $\frac{\pi}{2}$, then $\alpha=$

(A) 2
(B) 3
(C) 5
(D) 7

Answer: (D) 7 · The council's preliminary key

Q243 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

A (27, -243, 81) is a point in space. B, C, D are images of A with respect to XY, YZ and ZX planes respectively. If the centroid of the triangle BCD is (α,β,γ), then $\alpha+\beta+\gamma=$

(A) -25
(B) 45
(C) 25
(D) -45

Answer: (D) -45 · The council's preliminary key

Q244 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

Let $A(2,5,7)$ be the image of the point $B(1,-2,3)$ with respect to a plane π. Let C be the point where AB meets the plane π. Let $D=(2,1,6)$. Then the direction cosines of CD are

(A) $\frac{1}{\sqrt{11}}, \frac{3}{\sqrt{11}}, \frac{-1}{\sqrt{11}}$
(B) $\frac{1}{\sqrt{6}}, \frac{-1}{\sqrt{6}}, \frac{2}{\sqrt{6}}$
(C) $\frac{3}{\sqrt{46}}, \frac{-1}{\sqrt{46}}, \frac{6}{\sqrt{46}}$
(D) $\frac{1}{\sqrt{14}}, \frac{2}{\sqrt{14}}, \frac{3}{\sqrt{14}}$

Answer: (B) $\frac{1}{\sqrt{6}}, \frac{-1}{\sqrt{6}}, \frac{2}{\sqrt{6}}$ · The council's preliminary key

Q245 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

If a plane $x+y+z-5=0$ intersects the line joining A(1, 1, 1) and B(2, 2, 2) at P then $AP : PB =$

(A) $1:2$
(B) $2:3$
(C) $3:2$
(D) $2:1$

Answer: (D) $2:1$ · The council's preliminary key

Q246 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

The cartesian equation of the plane passing through the point $(1,-2,3)$ and perpendicular to the vector $-\bar{i}+2\bar{j}-3\bar{k}$, is

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

Answer: (B) $x-2y+3z=14$ · The council's preliminary key

Q247 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

Let $A(1,2,3), B(-1,4,6), C(0,-6,4)$ and $D(1,1,1)$ be the vertices of a tetrahedron, G be its centroid and G_1 be the centroid of its face BCD. Then $\frac{AG_1}{AG} =$

(A) $\frac{5}{3}$
(B) $\frac{4}{3}$
(C) $\frac{7}{6}$
(D) $\frac{5}{4}$

Answer: (B) $\frac{4}{3}$ · The council's preliminary key

Q248 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

If a line L is common to the planes $x-y+z+2=0$ and $2x+y-2z+5=0$ then the direction cosines of the line L are

(A) $\left(\frac{1}{\sqrt{26}}, \frac{4}{\sqrt{26}}, \frac{3}{\sqrt{26}}\right)$
(B) $\left(\frac{1}{3}, \frac{2}{3}, \frac{2}{3}\right)$
(C) $\left(\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}\right)$
(D) $\left(\frac{-1}{6}, \frac{5}{6}, \frac{\sqrt{10}}{6}\right)$

Answer: (A) $\left(\frac{1}{\sqrt{26}}, \frac{4}{\sqrt{26}}, \frac{3}{\sqrt{26}}\right)$ · The council's preliminary key

Q249 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

Let the foot of the perpendicular drawn from the point $(1,2,3)$ to a plane be $(-1,3,-2)$. Then the perpendicular distance from the origin to the plane is

(A) $\frac{5}{\sqrt{30}}$
(B) $\sqrt{\frac{15}{2}}$
(C) $\frac{2}{\sqrt{15}}$
(D) $\frac{1}{\sqrt{3}}$

Answer: (B) $\sqrt{\frac{15}{2}}$ · The council's preliminary key

Q250 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

Let a plane P has the points $\bar{i}$, $\bar{j}$ and $\bar{i}+\bar{j}+\bar{k}$. Let L be the line through the point A and parallel to the vector $\bar{i}-\bar{j}+\bar{k}$. If the plane P and line L intersect at a point $B(0,3,2)$ and the distance from A to B is 3 units, then equations of the normal to the plane P through A are

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

Answer: (A) $\frac{x-3}{1}=\frac{y}{1}=\frac{z-5}{-1}$ · The council's preliminary key

Q251 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

Let π_1 be the plane passing through the point $2\bar{i}-\bar{j}+\bar{k}$ and perpendicular to the vector $a\bar{i}+2\bar{j}-3\bar{k}$ and π_2 be the plane passing through the point $\bar{i}+2\bar{j}-\bar{k}$ and perpendicular to the vector $\bar{i}-2\bar{j}+\bar{k}$. If θ is the angle between the planes π_1 and π_2 and $\cos\theta=-\sqrt{\frac{3}{7}}$, then the integral value of a is

(A) -2
(B) -1
(C) 2
(D) 1

Answer: (D) 1 · The council's preliminary key

Q252 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

If the points $A(1,3,5)$, $B(2,4,6)$, $C(4,5,k)$ form a right angled triangle then the number of possible values of k is

(A) 2
(B) 3
(C) 0
(D) 1

Answer: (A) 2 · The council's preliminary key

Q253 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

Let $A=(3,4,0)$, $B=(4,4,4)$, $C=(-6,2,3)$ and $D=(1,1,2)$. If θ is the acute angle between the lines AB and CD then $\cos\theta=$

(A) $\frac{4}{17\sqrt{3}}$
(B) $\frac{3}{17\sqrt{3}}$
(C) $\frac{12}{17\sqrt{3}}$
(D) $\frac{11}{17\sqrt{3}}$

Answer: (B) $\frac{3}{17\sqrt{3}}$ · The council's preliminary key

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Q254 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

A plane containing two lines whose direction ratios are $(-1, 2, 1)$ and $(1, 3, 2)$ passes through the point $(2, 1, k)$. If this plane also passes through the point $(3, -1, 4)$, then $k =$

(A) 5
(B) 3
(C) 6
(D) -3

Answer: (A) 5 · The council's preliminary key

Q255 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

$A(2, 1, 2)$, $B(1, 0, 0)$, $C(1 + \sqrt{3}, \sqrt{3}, -\sqrt{6})$ are vertices of a triangle. If the length of the median drawn through A is $\lambda\sqrt{9 - 2\sqrt{3} + 2\sqrt{6}}$ then $\lambda =$

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

Answer: (D) 1 · The council's preliminary key

Q256 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

If d_1, d_2, d_3 are the distances of the point $(1, 2, 3)$ from the X, Y, Z – coordinate axes respectively then $2d_2^2 + d_3^2 + 1 =$

(A) d_1^2
(B) $2d_1^2$
(C) $3d_1^2$
(D) $4d_1^2$

Answer: (B) $2d_1^2$ · The council's preliminary key

Q257 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

If $P = (3, 12, 4)$ and Q is a point on the line OP such that $OQ = 3$ then the sum of all the coordinates of Q is

(A) $\pm\frac{10}{13}$
(B) $\pm\frac{28}{13}$
(C) $\pm\frac{19}{13}$
(D) $\pm\frac{57}{13}$

Answer: (D) $\pm\frac{57}{13}$ · The council's preliminary key

Q258 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

Let $A = (-3, -2, 7)$ and $B = (3, 1, -2)$. Let a plane perpendicular to the line segment AB divide AB in the ratio $2 : 1$. Then the intercept made by the plane on y-axis is

(A) $\frac{-1}{2}$
(B) $\frac{1}{3}$
(C) 2
(D) -1

Answer: (D) -1 · The council's preliminary key

Q259 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

If the coordinates of the vertices of a triangle ABC are $A(7, 6, 4)$, $B(5, 4, 6)$, $C(3, 2, 0)$ and the bisector of $\angle BAC$ meets the side BC at D, then the coordinates of D are

(A) $\left(\frac{13}{3}, \frac{10}{3}, 4\right)$
(B) $\left(\frac{11}{3}, \frac{8}{3}, 2\right)$
(C) $(9, 8, 6)$
(D) $(7, 5, 3)$

Answer: (A) $\left(\frac{13}{3}, \frac{10}{3}, 4\right)$ · The council's preliminary key

Q260 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

If the direction cosines of a line satisfy the relations $l - m + n = 0$ and $lm + mn - 4nl = 0$, then the direction cosines of the line are

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

Answer: (D) $\left(\frac{1}{\sqrt{6}}, \frac{2}{\sqrt{6}}, \frac{1}{\sqrt{6}}\right)$ · The council's preliminary key

Q261 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

Let π be the plane passing through the point $(3, -3, 1)$ and perpendicular to the line joining the points $(3, 4, -1)$ and $(2, -1, 5)$. If the equation of the plane containing the points $(3, 4, -1)$, $(-1, 2, 5)$ and perpendicular to the plane π is $ax + y + cz - d = 0$ then $3(a + c) =$

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(A) $-d$
(B) $2d$
(C) d
(D) $-2d$

Answer: (C) d · The council's preliminary key

Q262 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

If the point $(3,4,5)$ divides the line segment joining the points $(1,2,3)$ and $(4,5,6)$ in the ratio $\lambda:1$ then the point which divides the line segment joining the points $(3,4,5)$ and $(1,2,3)$ in the ratio $-1:\lambda$ is

(A) $(6,7,8)$
(B) $(5,6,7)$
(C) $(-4,-5,-6)$
(D) $(-5,-6,-7)$

Answer: (B) $(5,6,7)$ · The council's preliminary key

Q263 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

Suppose (l_1,m_1,n_1) and (l_2,m_2,n_2) are the directional cosines of two lines and θ is the angle between them and $\cos\theta=\pm(l_1l_2+m_1m_2+n_1n_2)$. Let $A=(1,-2,3)$, $B=(3,1,-3)$ and $C=(-3,1,3)$ be the vertices of a triangle ABC. Then $\cos A=$

(A) $-\frac{1}{35}$
(B) $\frac{1}{7}$
(C) $-\frac{1}{7}$
(D) $\frac{1}{35}$

Answer: (D) $\frac{1}{35}$ · The council's preliminary key

Q264 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

Let $ax+by+cz+d=0$ be the equation of a plane. Given that $4a+4b+c=0$ and $a+2b+c=0$. Then $d=$

(A) 9
(B) -7
(C) 4
(D) -5

Answer: (B) -7 · The council's preliminary key

Q265 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

If the centroid of a triangle with vertices (4, p, -3), (-1, -1, 2) and (3, 5, -8) is given by mid point of (1, 4, -2) and (q, 2, -4), then $p^2 + q^2 =$

(A) 26
(B) 25
(C) 24
(D) 34

Answer: (D) 34 · The council's preliminary key

Q266 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

A ray makes angles $\frac{\pi}{3}$ and $\frac{\pi}{4}$ with Y and Z-axes respectively. Then the value of the sine of the angle made by the ray with X-axis is

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

Answer: (A) $\sqrt{3}/2$ · The council's preliminary key

Q267 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

A plane meets the X, Y, Z - axes in A, B, C respectively. If the centroid of the triangle ABC is (2, -3, 5) then the perpendicular distance from origin to the given plane is

(A) $\frac{7}{\sqrt{40}}$
(B) $6/7$
(C) $\frac{8}{\sqrt{50}}$
(D) $\frac{90}{19}$

Answer: (D) $\frac{90}{19}$ · The council's preliminary key

Q268 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

If the vertices of a triangle ABC are $A(1, 2, 3)$ $B(h, -3, 0)$ and $C(-4, k, -1)$ and the centroid of the triangle is $(5, -1, \frac{2}{3})$ then triangle ABC is

(A) an obtuse angled triangle
(B) an acute angled triangle
(C) an isosceles triangle
(D) a right angled triangle

Answer: (A) an obtuse angled triangle · The council's preliminary key

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Q269 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

If a, b, c are the direction ratios of a line L and ℓ, m, n are its direction cosines, then $\frac{a^2}{b^2+c^2} =$

(A) $\frac{1-\ell^2}{\ell^2}$
(B) $\frac{\ell^2}{1+\ell^2}$
(C) $\frac{\ell^2}{\ell^2+m^2}$
(D) $\frac{\ell^2}{1-\ell^2}$

Answer: (D) $\frac{\ell^2}{1-\ell^2}$ · The council's preliminary key

Q270 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

If a, b, c are the intercepts made by the plane passing through the point $(1, 2, 3)$ parallel to the plane $3x + 4y - 5z = 0$ on X, Y, Z - axes respectively then $3a + b + 5c =$

(A) 0
(B) 1
(C) -1
(D) 2

Answer: (C) -1 · The council's preliminary key

Q271 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

Let the centroid of a triangle formed by the points A(4, x, 1), B(y, -5, 2) and C(7, 8, 3) be G(3, 5, 2) and CG meet AB in F. Then F =

(A) $\left(\frac{5}{2}, \frac{3}{2}, \frac{5}{2}\right)$
(B) $\left(\frac{11}{2}, 10, 2\right)$
(C) $\left(1, \frac{7}{2}, \frac{3}{2}\right)$
(D) $(10, 12, 5)$

Answer: (C) $\left(1, \frac{7}{2}, \frac{3}{2}\right)$ · The council's preliminary key

Q272 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

If (l_1, m_1, n_1) and (l_2, m_2, n_2) are the direction cosines of two lines satisfying the relations $l^2 + mn - 6n^2 = 0$ and $2l - m + 3n = 0$, then $|l_1 l_2| + |m_1 m_2| =$

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(A) $\frac{16}{3\sqrt{57}}$
(B) $\frac{2\sqrt{3}}{\sqrt{19}}$
(C) $\frac{4}{3\sqrt{57}}$
(D) $\frac{19}{3\sqrt{57}}$

Answer: (B) $\frac{2\sqrt{3}}{\sqrt{19}}$ · The council's preliminary key

Q273 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

If (3, 4, -7) is the foot of the perpendicular drawn from the point (-2, 3, 6) to the plane π then the sum of the intercepts made by the plane π on the x and y- axes is

(A) 132
(B) 142
(C) 210
(D) 175

Answer: (A) 132 · The council's preliminary key

Q274 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

If P divides the line segment joining the points $A(1, 2, -1)$ and $B(-1, 0, 1)$ externally in the ratio $1 : 2$ and $Q = (1, 3, -1)$ then $PQ =$

(A) $\sqrt{10}$
(B) 3
(C) 1
(D) $\sqrt{13}$

Answer: (B) 3 · The council's preliminary key

Q275 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

If the direction cosines of a line are $\left(\frac{a}{\sqrt{83}}, \frac{5}{\sqrt{83}}, \frac{c}{\sqrt{83}}\right)$ and $c - a = 4$ then $ca =$

(A) 24
(B) 21
(C) 18
(D) 33

Answer: (B) 21 · The council's preliminary key

Q276 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

Let the plane π pass through the point $(1,0,1)$ and perpendicular to the planes $2x+3y-z=2$ and $x-y+2z=1$. Let the equation of the plane passing through the point $(11,7,5)$ and parallel to the plane π be $ax+by-z+d=0$. Then $\frac{a}{b}+\frac{b}{d}=$

(A) 3
(B) 0
(C) 2
(D) -2

Answer: (D) -2 · The council's preliminary key

Q277 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

If the centroid of triangle whose vertices are $(a,1,3)$, $(-2,b,-5)$ and $(4,7,c)$ be the origin, then $a^2+b^2+c^2=$

(A) 68
(B) 64
(C) 72
(D) 54

Answer: (C) 72 · The council's preliminary key

Q278 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

If $\alpha, 2\alpha, 3\alpha$ are angles made by a ray with OX, OY, OZ axes respectively then all the possible values of α are

(A) $\frac{\pi}{6}, \frac{\pi}{12}$
(B) $\frac{\pi}{6}, \frac{\pi}{3}$
(C) $\frac{\pi}{4}, \frac{\pi}{3}$
(D) $\frac{\pi}{6}, \frac{\pi}{4}$

Answer: (D) $\frac{\pi}{6}, \frac{\pi}{4}$ · The council's preliminary key

Q279 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

If $-2, \frac{4}{3}, \frac{-4}{5}$ are the intercepts made by a plane on X, Y, Z - axes respectively then the direction cosines of a normal to this plane are

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(A) $\left(\frac{-1}{3}, \frac{2}{3}, \frac{-2}{3}\right)$
(B) $\left(\frac{2}{3\sqrt{5}}, \frac{-4}{3\sqrt{5}}, \frac{5}{3\sqrt{5}}\right)$
(C) $\left(\frac{-4}{\sqrt{57}}, \frac{4}{\sqrt{57}}, \frac{-5}{\sqrt{57}}\right)$
(D) $\left(\frac{2}{\sqrt{38}}, \frac{-3}{\sqrt{38}}, \frac{5}{\sqrt{38}}\right)$

Answer: (D) $\left(\frac{2}{\sqrt{38}}, \frac{-3}{\sqrt{38}}, \frac{5}{\sqrt{38}}\right)$ · The council's preliminary key

Q280 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

If the point (a, 8, -2) divides the line segment joining the points (1, 4, 6) and (5, 2, 10) in the ratio m : n then $\frac{2m}{n} - \frac{a}{3} =$

(A) -7
(B) 1
(C) -2
(D) 3

Answer: (B) 1 · The council's preliminary key

Q281 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

If (a, b, c) are the direction ratios of a line joining the points (4, 3, -5) and (-2, 1, -8) then the point P (a, 3b, 2c) lies on the plane

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

Answer: (B) x + y - 2z = 0 · The council's preliminary key

Q282 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

The x-intercept of a plane π passing through the point (1, 1, 1) is $\frac{5}{2}$ and the perpendicular distance from the origin to the plane π is $\frac{5}{7}$. If the y-intercept of the plane π is negative and the z-intercept is positive then its y-intercept is

(A) $-5/3$
(B) $-5/6$
(C) $-3/2$
(D) $-5/2$

Answer: (A) $-5/3$ · The council's preliminary key

Q283 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

If the equation of the plane passing through the point A(-2, 1, 3) and perpendicular to the vector $3\overline{i} + \overline{j} + 5\overline{k}$ is $ax + by + cz + d = 0$ then $\frac{a+b}{c+d} =$

(A) $4/5$
(B) $2/3$
(C) 1
(D) $-4/5$

Answer: (D) $-4/5$ · The council's preliminary key

Q284 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

If x-coordinate of a point P on the line joining the points Q(2, 2, 1) and R(5, 2, -2) is 4, then the y-coordinate of P =

(A) $-\frac{1}{2}$ (x-coordinate of P)
(B) -2 (z-coordinate of P)
(C) 2 (z-coordinate of P)
(D) Sum of x and z coordinates of P

Answer: (B) -2 **(z-coordinate of P)** · The council's preliminary key

Q285 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

If (2, 3, c) are the direction ratios of a ray passing through the point C(5, q, 1) and also the mid point of the line segment joining the points A (p, -4, 2) and B (3, 2, -4) then c. (p + 7q) =

(A) 17
(B) 34
(C) 21
(D) 28

Answer: (B) 34 · The council's preliminary key

Q286 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

If the equation of the plane which is at a distance of $\frac{1}{3}$ units from the origin and perpendicular to a line whose directional ratios are (1, 2, 2) is $x + py + qz + r = 0$ then $\sqrt{p^2 + q^2 + r^2} =$

(A) 3
(B) $\sqrt{5}$
(C) $\sqrt{13}$
(D) 2

Answer: (A) 3 · The council's preliminary key

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Q287 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

The point $(3, -5, -4)$ lies in the _____ octant.

(A) 5th
(B) 8th
(C) 7th
(D) 3rd

Answer: (B) 8th · The council's preliminary key

Q288 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

The angle between the lines whose direction cosines satisfy the equations $l + m + n = 0$ and $l^2 + m^2 - n^2 = 0$ is _____

(A) $\frac{\pi}{2}$
(B) $\frac{\pi}{4}$
(C) $\frac{\pi}{6}$
(D) $\frac{\pi}{3}$

Answer: (D) $\frac{\pi}{3}$ · The council's preliminary key

Q289 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

Given points $A(1, 2, 2)$, $B(2, 3, 6)$ and $C(3, 4, 12)$, find the direction cosines of a line which is equally inclined with OA, OB and OC, where O is the origin.

(A) $\left\langle \frac{1}{\sqrt{2}}, \frac{-1}{\sqrt{2}}, 0 \right\rangle$
(B) $\left\langle \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}, 0 \right\rangle$
(C) $\left\langle \frac{1}{\sqrt{3}}, \frac{-1}{\sqrt{3}}, \frac{1}{\sqrt{3}} \right\rangle$
(D) $\left\langle \frac{1}{\sqrt{3}}, \frac{-1}{\sqrt{3}}, \frac{-1}{\sqrt{3}} \right\rangle$

Answer: (D) $\left\langle \frac{1}{\sqrt{3}}, \frac{-1}{\sqrt{3}}, \frac{-1}{\sqrt{3}} \right\rangle$ · The council's preliminary key

Q290 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

If the origin is the centroid of the triangle for which $(-2, 3, 4)$ and $(3, -1, 5)$ are two vertices, then the third vertex is _____

(A) $(1, 2, 9)$
(B) $(-1, -2, 9)$
(C) $(1, -2, -9)$
(D) $(-1, -2, -9)$

Answer: (D) $(-1, -2, -9)$ · The council's preliminary key

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Q291 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

If the line joining the points $(k, 2, 3)$ and $(1, 1, 2)$ is parallel to the line joining the points $(5, 4, -1)$ and $(3, 2, -3)$, then the value of $k =$ _____

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

Answer: (B) 2 · The council's preliminary key

Q292 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

The angle between any two diagonals of a cube is _____

(A) $\text{Cos}^{-1}\left(\frac{1}{3}\right)$
(B) $\text{Cos}^{-1}\left(\frac{1}{\sqrt{3}}\right)$
(C) $\text{Cos}^{-1}\left(\frac{1}{2}\right)$
(D) $\text{Cos}^{-1}\left(\frac{2}{3}\right)$

Answer: (A) $\text{Cos}^{-1}\left(\frac{1}{3}\right)$ · The council's preliminary key

Q293 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

The plane passing through the points $(1, 1, 1)$, $(1, -1, 1)$ and $(-7, -3, -5)$ is _____

(A) Parallel to x-axis
(B) Parallel to y-axis
(C) Parallel to z-axis
(D) $3x - 4z - 1 = 0$

Answer: (B) Parallel to y-axis · The council's preliminary key

Q294 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

Which of the following points lie on the plane passing through $2i + 3j - k$, $3i + 2j + k$ and $i + j + 4k$?

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(A) $2i - 3j + 12k$ & $2i + j + \frac{5}{2}k$
(B) $2i - 3j + 13k$ & $2i + j + 6k$
(C) $2i - 3j + 13k$ & $2i + \frac{3}{2}j + \frac{5}{2}k$
(D) $2i + 6k$ & $2i + \frac{3}{2}j + 3k$

Answer: (C) $2i - 3j + 13k$ & $2i + \frac{3}{2}j + \frac{5}{2}k$ · The council's preliminary key

Q295 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

If the lengths of projections of a line of length 'l' over the co-ordinate axes are l_1, l_2 and l_3 respectively, then $l_1^2 + l_2^2 + l_3^2 =$ _____

(A) $2l^2$
(B) $3l^2$
(C) l^2
(D) $5l^2$

Answer: (C) l^2 · The council's preliminary key

Q296 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

If the direction ratios of two lines are given by $3lm - 4ln + mn = 0$ and $l + 2m + 3n = 0$, then the angle between the lines is _____

(A) $\frac{\pi}{2}$
(B) $\frac{\pi}{3}$
(C) $\frac{\pi}{4}$
(D) $\frac{\pi}{6}$

Answer: (A) $\frac{\pi}{2}$ · The council's preliminary key

Q297 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

The perpendicular distance from origin to the plane $x + 2y - 2z + 5 = 0$ equals _____ units.

(A) $\frac{3}{5}$
(B) $\frac{5}{3}$
(C) $\frac{5}{9}$
(D) 5

Answer: (B) $\frac{5}{3}$ · The council's preliminary key

Q298 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

The harmonic conjugate of the point $(2, 3, 4)$ with respect to the points $(3, -2, 2)$ and $(6, -17, -4)$ is _____

(A) $\left(\frac{18}{5}, -5, \frac{4}{5}\right)$

(B) $(11, -16, 2)$

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

(D) $(0, 0, 0)$

Answer: (A) $\left(\frac{18}{5}, -5, \frac{4}{5}\right)$ · The council's preliminary key

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Q299 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

If three consecutive vertices of a parallelogram are $A(4, 3, 5)$, $B(0, 6, 0)$ $C(-8, 1, 4)$ and D is the fourth vertex, then the angle between $\overline{AC}$ and $\overline{BD}$ is

(A) $\cos^{-1}\left(\frac{65}{\sqrt{149}\sqrt{161}}\right)$

(B) $\cos^{-1}\left(\frac{55}{\sqrt{149}\sqrt{161}}\right)$

(C) $\cos^{-1}\left(\frac{73}{\sqrt{149}\sqrt{161}}\right)$

(D) $\cos^{-1}\left(\frac{15}{\sqrt{149}\sqrt{161}}\right)$

Answer: (B) $\cos^{-1}\left(\frac{55}{\sqrt{149}\sqrt{161}}\right)$ · The council's preliminary key

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Q300 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

The angle between the lines whose direction cosines are given by the equations $l^2 + m^2 - n^2 = 0$, $l + m + n = 0$ is _____

(A) $\frac{\pi}{6}$

(B) $\frac{\pi}{4}$

(C) $\frac{\pi}{3}$

(D) $\frac{\pi}{2}$

Answer: (C) $\frac{\pi}{3}$ · The council's preliminary key

Q301 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

Find the equation of a plane, given that the foot of perpendicular drawn to the plane from origin is $(2, 1, 2)$.

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(A) $3x + y + z = 6$
(B) $x + y + z - 5 = 0$
(C) $2x - y - 2z = -1$
(D) $2x + y + 2z = 9$

Answer: (D) $2x + y + 2z = 9$ · The council's preliminary key

Q302 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

If the orthocenter and circumcenter of a triangle respectively are $(3, -4, 2)$ and $(2, 1, 3)$, then its centroid is _____

(A) $\left(\frac{-7}{3}, \frac{6}{3}, \frac{-4}{3}\right)$
(B) $\left(\frac{7}{3}, \frac{-6}{3}, \frac{4}{3}\right)$
(C) $\left(\frac{7}{3}, \frac{-6}{3}, \frac{-4}{3}\right)$
(D) $\left(\frac{7}{3}, \frac{-2}{3}, \frac{8}{3}\right)$

Answer: (D) $\left(\frac{7}{3}, \frac{-2}{3}, \frac{8}{3}\right)$ · The council's preliminary key

Q303 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

If the direction cosines of a straight line are $\left(\frac{1}{c}, \frac{1}{c}, \frac{1}{c}\right)$, then $c =$ _____

(A) $\pm\sqrt{2}$
(B) $\pm\sqrt{3}$
(C) ± 2
(D) ± 3

Answer: (B) $\pm\sqrt{3}$ · The council's preliminary key

Q304 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

A line AB in three dimensions makes angles 45° and 120° with the positive x-axis and the positive y-axis respectively. If AB makes an acute angle θ with the positive z-axis, then θ equals _____

(A) 30°
(B) 45°
(C) 60°
(D) 75°

Answer: (C) 60° · The council's preliminary key

Q305 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

A variable plane $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=1$, which is at a unit distance from the origin cuts the coordinate axes at A, B and C. If the centroid (x, y, z) of ΔABC satisfies $\frac{1}{x^2}+\frac{1}{y^2}+\frac{1}{z^2}=k$, then 'k' equals _____

(A) 9
(B) 3
(C) $\frac{1}{9}$
(D) $\frac{1}{3}$

Answer: (A) 9 · The council's preliminary key

Q306 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

A ray of light passing through the point $A(1,2,3)$ strikes the plane $x+y+z=12$ at B and on reflection it passes through $C(3,5,9)$, then $OB=$

(A) $\sqrt{420}$
(B) $\sqrt{380}$
(C) $\sqrt{410}$
(D) $\sqrt{390}$

Answer: (C) $\sqrt{410}$ · The council's preliminary key

Q307 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

The incenter of the triangle formed by the points $(0,0,0)$, $(3,0,0)$, $(0,4,0)$ is _____

(A) $(1,1,0)$
(B) $(-1,-1,0)$
(C) $(1,0,1)$
(D) $(-1,0,-1)$

Answer: (A) $(1,1,0)$ · The council's preliminary key

Q308 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

If the line joining the points $A(7,p,2)$ and $B(q,-2,5)$ is parallel to the line joining the points $C(2,-3,5)$ and $D(-6,-15,11)$, then the value of $p^2+q^2=$

(A) 25
(B) 16
(C) 9
(D) 7

Answer: (A) 25 · The council's preliminary key

Q309 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

The angle between the planes $2x - y + z = 6$ and $x + y + 2z = 3$ is _____

(A) $\frac{\pi}{3}$
(B) $\text{Cos}^{-1}\left(\frac{1}{6}\right)$
(C) $\frac{\pi}{4}$
(D) $\frac{\pi}{6}$

Answer: (A) $\frac{\pi}{3}$ · The council's preliminary key

Q310 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

The plane passing through $(2, 1, -3)$ and perpendicular to $3i - j + 2k$ contains the points

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

Answer: (B) $\left(\frac{1}{3}, 3, \frac{1}{2}\right)$ & $\left(1, 5, \frac{1}{2}\right)$ · The council's preliminary key

Q311 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

If a line makes angles 90°, 135° and 45° with the positive x, y and z axes respectively, then its direction cosines are _____

(A) $\langle 0, \frac{1}{2}, \frac{1}{\sqrt{2}} \rangle$
(B) $\langle 0, \frac{-1}{\sqrt{2}}, \frac{1}{\sqrt{2}} \rangle$
(C) $\langle 1, \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}} \rangle$
(D) $\langle 1, \frac{-1}{\sqrt{2}}, \frac{1}{\sqrt{2}} \rangle$

Answer: (B) $\langle 0, \frac{-1}{\sqrt{2}}, \frac{1}{\sqrt{2}} \rangle$ · The council's preliminary key

Q312 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

If the line joining $A(4, 1, 2)$ and $B(0, k, 1)$ is perpendicular to the line joining $C(-2, 1, 1)$ and $D(4, 2, 5)$, then the value of $k =$ _____

(A) 31
(B) -29
(C) -31
(D) 29

Answer: (D) 29 · The council's preliminary key

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Q313 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

Find the equation of the plane which passes through the points $(0,1,2)$ and $(-1,0,3)$, and is perpendicular to the plane $2x+3y+z=5$.

(A) $3x-4y+18z+32=0$
(B) $3x+4y-18z+32=0$
(C) $4x+3y-z+1=0$
(D) $4x-3y+z+1=0$

Answer: (D) $4x-3y+z+1=0$ · The council's preliminary key

Q314 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

If the lines $\frac{x-3}{2}=\frac{y-2}{3}=\frac{z-1}{\lambda}$ and $\frac{x-2}{3}=\frac{y-3}{2}=\frac{z-2}{3}$ are coplanar, then $\mathrm{Sin}^{-1}(\sin\lambda)+\mathrm{Cos}^{-1}(\cos\lambda)=$

(A) $8-2\pi$
(B) $6-\pi$
(C) $3\pi-8$
(D) $4\pi-8$

Answer: (C) $3\pi-8$ · The council's preliminary key

Q315 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

The line passing through $(1,1,-1)$ and parallel to the vector $\hat{i}+2\hat{j}-\hat{k}$ meets the line $\frac{x-3}{-1}=\frac{y+2}{5}=\frac{z-2}{-4}$ at A and the plane $2x-y+2z+7=0$ at B. Then $AB=$

(A) $\sqrt{6}$
(B) $2\sqrt{6}$
(C) $3\sqrt{6}$
(D) $4\sqrt{6}$

Answer: (B) $2\sqrt{6}$ · The council's preliminary key

Q316 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

$A(2,3,4), B(4,5,7), C(2,-6,3), D(4,-4,k)$ are four points. If the line $\overline{AB}$ is parallel to $\overline{CD}$, then k is equal to _____

(A) 2
(B) 4
(C) 5
(D) 6

Answer: (D) 6 · The council's preliminary key

Q317 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

If the direction cosines of two lines are $\left\langle \frac{2}{3}, \frac{2}{3}, \frac{1}{3} \right\rangle$ and $\left\langle \frac{5}{13}, \frac{12}{13}, 0 \right\rangle$, then identify the direction ratios of a line which is bisecting one of the angle between them.

(A) $\langle 40, 60, 13 \rangle$
(B) $\langle 41, 60, 10 \rangle$
(C) $\langle 41, 62, 13 \rangle$
(D) $\langle 1, 2, 3 \rangle$

Answer: (C) $\langle 41, 62, 13 \rangle$ · The council's preliminary key

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Q318 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

The equation of the plane passing through $3i + 2j + 6k$ and parallel to the vectors $2i + j + k$ and $i - j + k$ is

(A) $x + y + z = 11$
(B) $2x - y - 3z = -14$
(C) $2x - y + z = 10$
(D) $x - 2y + 3z = 17$

Answer: (B) $2x - y - 3z = -14$ · The council's preliminary key

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Q319 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

The direction cosines of the line joining the points $(-2, 4, -5)$ and $(1, 2, 3)$ are _____

(A) $\left\langle \frac{3}{\sqrt{77}}, \frac{-2}{\sqrt{77}}, \frac{8}{\sqrt{77}} \right\rangle$
(B) $\left\langle \frac{3}{\sqrt{77}}, \frac{2}{\sqrt{77}}, \frac{8}{\sqrt{77}} \right\rangle$
(C) $\langle 1, 0, 0 \rangle$
(D) $\left\langle \frac{-3}{77}, \frac{-2}{77}, \frac{8}{77} \right\rangle$

Answer: (A) $\left\langle \frac{3}{\sqrt{77}}, \frac{-2}{\sqrt{77}}, \frac{8}{\sqrt{77}} \right\rangle$ · The council's preliminary key

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Q320 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

The points $(2, 3, 4), (-1, -2, 1)$ and $(5, 8, 7)$ are _____

(A) collinear
(B) vertices of a right-angled triangle
(C) vertices of an equilateral triangle
(D) vertices of an isosceles triangle

Answer: (A) collinear · The council's preliminary key

Q321 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

The sum of intercepts of the plane $4x + 3y + 2z = 2$ on the coordinate axes is _____

(A) $\frac{13}{6}$
(B) 9
(C) $\frac{13}{12}$
(D) 2

Answer: (A) $\frac{13}{6}$ · The council's preliminary key

Q322 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

A vector makes equal angles α with x and y axes and 90° with z - axis. Then $\alpha =$

(A) 60° or 120°
(B) 30° or 150°
(C) 45° or 135°
(D) 90°

Answer: (C) 45° or 135° · The council's preliminary key

Q323 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

Angle made by the position vector of the point $(5, -4, -3)$ with the positive direction of X - axis is _____

(A) $\frac{\pi}{2}$
(B) $\frac{\pi}{6}$
(C) $\frac{\pi}{4}$
(D) $\frac{\pi}{3}$

Answer: (C) $\frac{\pi}{4}$ · The council's preliminary key

Q324 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

The ratio in which the YZ-plane divides the line joining $(2, 4, 5)$ and $(3, 5, -4)$ is _____

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(A) $2:3$ internally
(B) $3:2$ internally
(C) $3:2$ externally
(D) $2:3$ externally

Answer: (D) $2:3$ **externally** · The council's preliminary key

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Q325 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

The direction cosines of a line which makes equal angles with the co-ordinate axes are _____

(A) $\left\langle \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}} \right\rangle$
(B) $\left\langle \frac{-1}{\sqrt{3}}, \frac{-1}{\sqrt{3}}, \frac{-1}{\sqrt{3}} \right\rangle$
(C) $\left\langle \frac{\pm 1}{\sqrt{3}}, \frac{\pm 1}{\sqrt{3}}, \frac{\pm 1}{\sqrt{3}} \right\rangle$
(D) $\left\langle \frac{12}{13}, \frac{5}{13}, 0 \right\rangle$

Answer: (C) $\left\langle \frac{\pm 1}{\sqrt{3}}, \frac{\pm 1}{\sqrt{3}}, \frac{\pm 1}{\sqrt{3}} \right\rangle$ · The council's preliminary key

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Q326 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

Let 'O' be the origin and 'P' be a point which is at a distance of 3 units from the origin. If the direction ratios of $\overline{OP}$ are $(1, -2, -2)$, then the coordinates of 'P' are _____

(A) $(1, -2, -2)$
(B) $(3, -6, -6)$
(C) $\left(\frac{1}{3}, \frac{-2}{3}, \frac{-2}{3}\right)$
(D) $\left(\frac{1}{9}, \frac{-2}{9}, \frac{-2}{9}\right)$

Answer: (A) $(1, -2, -2)$ · The council's preliminary key

Q327 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

Which of the following vector is equally inclined with the coordinate axes?

(A) $\hat{i} + 2\hat{j} + 3\hat{k}$
(B) $2\hat{i} - 2\hat{j} + \hat{k}$
(C) $3\hat{i} + 3\hat{j} - 3\hat{k}$
(D) $4\hat{i} + 4\hat{j} + 4\hat{k}$

Answer: (D) $4\hat{i} + 4\hat{j} + 4\hat{k}$ · The council's preliminary key

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Q328 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

X intercept of the plane containing the line of intersection of the planes $x-2y+z+2=0$ and $3x-y-z+1=0$ and also passing through $(1,1,1)$ is _____

(A) $\frac{1}{3}$
(B) 2
(C) $\frac{1}{2}$
(D) $\frac{1}{4}$

Answer: (C) $\frac{1}{2}$ · The council's preliminary key

Q329 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

Let L_1 (resp. L_2) be the line passing through $2i-k$ (resp. $2i+j-3k$) and parallel to $3i-j+2k$ (resp. $i-2j+k$). Then the shortest distance between the lines L_1 and L_2 is equal to

(A) $\frac{10}{\sqrt{35}}$
(B) $\frac{8}{\sqrt{35}}$
(C) $\frac{11}{\sqrt{35}}$
(D) $\frac{9}{\sqrt{35}}$

Answer: (D) $\frac{9}{\sqrt{35}}$ · The council's preliminary key

Q330 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

If the points $(2,4,-1)$, $(3,6,-1)$ and $(4,5,1)$ are three consecutive vertices of a parallelogram, then its fourth vertex is _____

(A) $(3,3,1)$
(B) $(3,1,3)$
(C) $(1,3,3)$
(D) $(0,0,0)$

Answer: (A) $(3,3,1)$ · The council's preliminary key

Q331 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

$A(-1,2,-3)$, $B(5,0,-6)$, $C(0,4,-1)$ are the vertices of a triangle ABC. The direction cosines of internal bisector of $\angle BAC$ are _____

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(A) $\frac{25}{\sqrt{714}}, \frac{8}{\sqrt{714}}, \frac{-5}{\sqrt{714}}$
(B) $\frac{25}{\sqrt{714}}, \frac{8}{\sqrt{714}}, \frac{5}{\sqrt{714}}$
(C) $\frac{5}{\sqrt{74}}, \frac{6}{\sqrt{74}}, \frac{8}{\sqrt{74}}$
(D) $\frac{-5}{\sqrt{74}}, \frac{6}{\sqrt{74}}, \frac{-8}{\sqrt{74}}$

Answer: (B) $\frac{25}{\sqrt{714}}, \frac{8}{\sqrt{714}}, \frac{5}{\sqrt{714}}$ · The council's preliminary key

Q332 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

If the projections of the line segment $\overline{AB}$ on XY, YZ and ZX planes are $\sqrt{15}, \sqrt{46}, 7$ respectively, then the projection of $\overline{AB}$ on x-axis is _____

(A) 9
(B) 3
(C) 4
(D) 7

Answer: (B) 3 · The council's preliminary key

Q333 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

Find the equation of the plane passing through the point $(2, 1, 3)$ and perpendicular to the planes $x - 2y + 2z + 3 = 0$ and $3x - 2y + 4z - 4 = 0$.

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

Answer: (A) $2x - y - 2z + 3 = 0$ · The council's preliminary key

Q334 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

The direction cosines of the supporting line of the vector $\bar{i} + \bar{j} - 2\bar{k}$ are

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

Answer: (A) $\left(\frac{1}{\sqrt{6}}, \frac{1}{\sqrt{6}}, \frac{-2}{\sqrt{6}}\right)$ · The council's preliminary key

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Q335 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

The perpendicular distance from the point P $(3, 5, 2)$ to the line L passing through the point $2\bar{i} + \bar{j}$ and parallel to the vector $\bar{i} + 5\bar{j} + 2\bar{k}$ is

(A) $\frac{1}{\sqrt{6}}$
(B) $\frac{2}{\sqrt{6}}$
(C) $\frac{\sqrt{6}}{\sqrt{5}}$
(D) $7\sqrt{6}$

Answer: (A) $\frac{1}{\sqrt{6}}$ · The council's preliminary key

Q336 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

If the cartesian equation of the plane passing through the point $\bar{i} + 2\bar{j} + \bar{k}$ and parallel to the vectors $2\bar{i} + 3\bar{j} + \bar{k}$ and $-\bar{i} + 2\bar{j} - 3\bar{k}$ is $ax + by + cz = 1$ then $18(a + b + c) =$

(A) -3
(B) 3
(C) 4
(D) -4

Answer: (B) 3 · The council's preliminary key

Q337 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

A$(2, 3, -4)$, B$(-3, 3, -2)$, C$(-1, 4, 2)$, D$(3, 5, 1)$ are the vertices of a tetrahedron. If G_1, G_2, G_3 are the centroids of the three faces having the vertex D in common, then the centroid of the triangle $G_1G_2G_3$ is

(A) $(0, 0, 0)$
(B) $\left(\frac{5}{9}, \frac{35}{9}, \frac{-5}{3}\right)$
(C) $\left(\frac{5}{3}, \frac{35}{3}, \frac{-5}{3}\right)$
(D) $\left(\frac{5}{9}, \frac{35}{9}, \frac{-5}{9}\right)$

Answer: (D) $\left(\frac{5}{9}, \frac{35}{9}, \frac{-5}{9}\right)$ · The council's preliminary key

Q338 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

Suppose the distance of a point P from the origin O is 63. If the direction ratios of the line OP are $3, -2, 6$ then the coordinates of the point P is

(A) $(-27, 18, 54)$
(B) $(27, -18, -54)$
(C) $(27, -18, 54)$
(D) $(-27, -18, -54)$

Answer: (C) $(27, -18, 54)$ · The council's preliminary key

Q339 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

The volume (in cubic units) of the tetrahedron bounded by the plane $3x + 4y - 5z = 60$ and the three coordinate planes is

(A) 60
(B) 720
(C) 600
(D) 4800

Answer: (C) 600 · The council's preliminary key

Q340 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

If α, β are scalars and $\vec{r} = (2 + \alpha - 3\beta)\vec{i} + (\beta - 3)\vec{j} + (2\alpha - 5\beta - 1)\vec{k}$ is equation of a plane, then that equation in Cartesian form is

(A) $2x + y - z + 2 = 0$
(B) $2x - y - z = 8$
(C) $2x - y - z + 8 = 0$
(D) $2x + y - z = 2$

Answer: (D) $2x + y - z = 2$ · The council's preliminary key

Q341 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

If $\vec{r} = \vec{b} + t\vec{a}$, $\vec{r} = \vec{d} + s\vec{c}$ are the two skew lines, then the shortest distance between them is

(A) Magnitude of vector $\vec{b} \times \vec{d}$
(B) Sum of orthogonal projection of $\vec{b}$ on $\vec{d}$ and projection of $\vec{d}$ on $\vec{b}$
(C) orthogonal projection of $(\vec{a} - \vec{c})$ on $(\vec{b} \times \vec{d})$
(D) orthogonal projection of $(\vec{b} - \vec{d})$ on $(\vec{a} \times \vec{c})$

Answer: (D) orthogonal projection of $(\vec{b} - \vec{d})$ on $(\vec{a} \times \vec{c})$ · The council's preliminary key

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Q342 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

The ratio in which $B\left(\frac{33}{5}, \frac{28}{5}, \frac{38}{5}\right)$ divides the line segment joining $A(3, 2, 4)$ and $C(9, 8, 10)$ is

(A) $2:1$

(B) $1:3$

(C) $3:2$

(D) $5:3$

Answer: (C) $3:2$ · The council's preliminary key

Q343 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

If $1,2,3$ and $-1,0,1$ are the direction ratios of the rays $\overrightarrow{OA}$ and $\overrightarrow{OB}$ respectively, then the direction cosines of a normal to the plane AOB are

(A) $\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}, \frac{-1}{\sqrt{3}}$

(B) $\frac{2}{3}, \frac{-2}{3}, \frac{1}{3}$

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

(D) $\frac{-3}{13}, \frac{4}{13}, \frac{12}{13}$

Answer: (C) $\frac{-1}{\sqrt{6}}, \frac{2}{\sqrt{6}}, \frac{-1}{\sqrt{6}}$ · The council's preliminary key

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Q344 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

If the equation of the plane passing through the point $(2,-3,4)$ and perpendicular to both the planes $2x-3y+5z=2$ and $x+y+2z=3$ is $x+py+qz=r$, then $r=$

(A) $\frac{5}{11}$

(B) $\frac{45}{11}$

(C) $\frac{-1}{11}$

(D) $\frac{39}{11}$

Answer: (A) $\frac{5}{11}$ · The council's preliminary key

Q345 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

The perpendicular distance from the origin to the plane containing the points having position vectors $\bar{i}+2\bar{j}+3\bar{k}$, $2\bar{i}+3\bar{j}-4\bar{k}$, $3\bar{i}-4\bar{j}+5\bar{k}$, is

(A) $\frac{10}{\sqrt{60}}$

(B) $\frac{12}{\sqrt{30}}$

(C) $\frac{15}{\sqrt{127}}$

(D) $\frac{25}{\sqrt{57}}$

Answer: (B) $\frac{12}{\sqrt{30}}$ · The council's preliminary key

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Q346 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

The four points $A(2,-1,3)$, $B(4,-2,1)$, $C(4,5,-7)$ and $D(2,6,-5)$ forms a

(A) Square
(B) Parallelogram
(C) Rectangle
(D) Rhombus

Answer: (B) Parallelogram · The council's preliminary key

Q347 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

Suppose L_1 and L_2 are two lines having the direction ratios $1,-2,-2$ and $0,2,1$ respectively. If the direction cosines of a line perpendicular to both L_1 and L_2 are l,m,n then $|l|+|m|+|n|=$

(A) 3
(B) $\frac{5}{3}$
(C) $\sqrt{3}$
(D) $\frac{7}{3}$

Answer: (B) $\frac{5}{3}$ · The council's preliminary key

Q348 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

The Cartesian equation of a plane parallel to the plane $\bar{r}\cdot(2\bar{i}+3\bar{j}-4\bar{k})=1$ and at a distance of 2 units from it is

(A) $2x+3y-4z=3$
(B) $2x+3y-4z=1\pm2\sqrt{29}$
(C) $2x+3y-4z=-1\pm2\sqrt{29}$
(D) $2x+3y-4z=-3$

Answer: (B) $2x+3y-4z=1\pm2\sqrt{29}$ · The council's preliminary key

Q349 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

The two lines $L_1:\bar{r}=(\bar{i}+5\bar{j}+5\bar{k})+t(4\bar{i}-4\bar{j}+5\bar{k})$ and $L_2:\bar{r}=(2\bar{i}+4\bar{j}+5\bar{k})+s(8\bar{i}-3\bar{j}+\bar{k})$ are such that

(A) both are parallel
(B) both are perpendicular
(C) both are Skew lines
(D) both are non-Skew lines, non-parallel, non-perpendicular

Answer: (C) both are Skew lines · The council's preliminary key

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Q350 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

The shortest distance between the Skew lines $\bar{r} = (3\bar{i} + 4\bar{j} - 2\bar{k}) + \lambda(-\bar{i} + 2\bar{j} + \bar{k})$ and $\bar{r} = (\bar{i} - 7\bar{j} - 2\bar{k}) + \mu(\bar{i} + 3\bar{j} + 2\bar{k})$ is

(A) $\frac{26}{5\sqrt{5}}$
(B) $\sqrt{45}$
(C) $\sqrt{35}$
(D) $\frac{36}{5\sqrt{5}}$

Answer: (C) $\sqrt{35}$ · The council's preliminary key

Q351 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

The centroid of a triangle with vertices A(3, 4, 5), B(6, 7, 2) and C(x, y, z) is (3, 2, 3) then $x + y + z =$

(A) -3
(B) 7
(C) 3
(D) -7

Answer: (A) -3 · The council's preliminary key

Q352 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

If $(2, -1, 2)$ and $(K, -3, -5)$ are the triads of direction ratios of two lines and the angle between the lines is 60°, then

(A) $K^2 - 56K - 208 = 0$
(B) $5K^2 - 110K + 112 = 0$
(C) $7K^2 - 112K - 110 = 0$
(D) $7K^2 - 112K + 110 = 0$

Answer: (C) $7K^2 - 112K - 110 = 0$ · The council's preliminary key

Q353 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

A point on the plane determined by the points A (1, 1, -1), B (2, -1, 0) and C (-1, 0, 2) among the following is

(A) $(1, 2, -2)$
(B) $(2, 1, -3)$
(C) $(2, -2, 2)$
(D) $(2, 1, 2)$

Answer: (A) $(1, 2, -2)$ · The council's preliminary key

Q354 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

If $\left(\frac{9}{4}, \frac{5}{4}, \frac{15}{4}\right)$ is the centroid of a tetrahedron whose vertices are $(a, 2, 1),\ (1, b, 4),\ (4, 0, c)$ and $(1, 1, 7)$, then

(A) a = b = c
(B) a = b = c + 1
(C) b = c = a + 1
(D) a = c = b + 1

Answer: (D) a = c = b + 1 · The council's preliminary key

Q355 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

The direction cosines of the line making angles $\frac{\pi}{4}, \frac{\pi}{3}$ and $\theta\ \left(0 < \theta < \frac{\pi}{2}\right)$ respectively with x, y and z axes, are

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

Answer: (A) $\frac{1}{\sqrt{2}}, \frac{1}{2}, \frac{1}{2}$ · The council's preliminary key

Q356 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

The point on the plane $2x - 2y + 4z + 5 = 0$ that is nearer to $\left(1, \frac{3}{2}, 2\right)$ is

(A) $\left(0, \frac{5}{2}, 0\right)$
(B) $\left(-5, \frac{-5}{2}, 0\right)$
(C) $\left(0, 0, \frac{-5}{4}\right)$
(D) $\left(-\frac{1}{2}, 0, -1\right)$

Answer: (A) $\left(0, \frac{5}{2}, 0\right)$ · The council's preliminary key

Q357 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

If a plane is at a distance of 6 units from the origin and the vector $2\bar{i} + 6\bar{j} - 3\bar{k}$ is its normal, then the equation of the plane in Cartesian form is

(A) $2x + 3y - 6z - 35 = 0$
(B) $2x + 6y - 3z - 42 = 0$
(C) $2x + 6y - 3z - 35 = 0$
(D) $2x - 6y + 3z - 42 = 0$

Answer: (B) $2x + 6y - 3z - 42 = 0$ · The council's preliminary key

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Q358 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

If the mid points of the sides AB, BC and CA of a triangle are respectively $D(1,2,-3)$, $E(3,0,1)$ and $F(-1,1,-4)$, then the centroid of the triangle ADF is

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

Answer: (A) $(-1,2,-5)$ · The council's preliminary key

Q359 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

The direction cosines of the line passing through $P(2,3,-1)$ and the origin are

(A) $\frac{2}{\sqrt{14}},\frac{3}{\sqrt{14}},\frac{1}{\sqrt{14}}$
(B) $\frac{2}{\sqrt{14}},\frac{-3}{\sqrt{14}},\frac{1}{\sqrt{14}}$
(C) $\frac{-2}{\sqrt{14}},\frac{-3}{\sqrt{14}},\frac{1}{\sqrt{14}}$
(D) $\frac{2}{\sqrt{14}},\frac{-3}{\sqrt{14}},\frac{-1}{\sqrt{14}}$

Answer: (C) $\frac{-2}{\sqrt{14}},\frac{-3}{\sqrt{14}},\frac{1}{\sqrt{14}}$ · The council's preliminary key

Q360 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

A plane $ax+by+cz+1=0$ is perpendicular to the two planes $2x-2y+z=0$ and $x-y+2z=4$ and passes through the point $(1,-2,1)$. Then $a+b-c=$

(A) -6
(B) 1
(C) 0
(D) 2

Answer: (D) 2 · The council's preliminary key

Q361 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

The line passing through the points $(1,1,-1)$ and $(3,-1,0)$ makes an angle of $\mathrm{Tan}^{-1}\left(\frac{1}{\sqrt{8}}\right)$ with plane $\sqrt{\lambda}\,x+3y+6z=17$. Then $\lambda=$

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(A) 5
(B) 25
(C) 15
(D) 12

Answer: (C) 15 · The council's preliminary key

Q362 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

If a line makes angles $\pi/3$, $\pi/4$ with the positive x and y-axes respectively, then the angle made by the line with positive z-axis is _____

(A) $\frac{\pi}{2}$
(B) $\frac{5\pi}{12}$
(C) $\frac{\pi}{4}$
(D) $\frac{\pi}{3}$

Answer: (D) $\frac{\pi}{3}$ · The council's preliminary key

Q363 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

If $P(-3,-2,4)$, $Q(-9,-8,10)$ and $R(-5,-4,6)$ are collinear, then the ratio in which R divides PQ is _____

(A) $1:2$
(B) $2:1$
(C) $3:1$
(D) $1:3$

Answer: (A) $1:2$ · The council's preliminary key

Q364 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

The angle between the lines with direction ratios $(2,-2,1)$ and $(1,-2,2)$ is _____

(A) $\text{Cos}^{-1}\left(\frac{4}{9}\right)$
(B) $\text{Cos}^{-1}\left(\frac{8}{9}\right)$
(C) $\frac{\pi}{6}$
(D) $\frac{\pi}{2}$

Answer: (B) $\text{Cos}^{-1}\left(\frac{8}{9}\right)$ · The council's preliminary key

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Q365 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

If $(a_1,b_1,c_1),(a_2,b_2,c_2)$ are the direction cosines of two lines making an angle θ with each other, then $\cos\theta =$

(A) $a_1a_2 + b_1b_2 + c_1c_2$

(B) $|a_1a_2 + b_1b_2 + c_1c_2|$

(C) $(a_1a_2 + b_1b_2 + c_1c_2)/\left(\sqrt{a_1^2a_2^2 + b_1^2b_2^2 + c_1^2c_2^2}\right)$

(D) $\frac{4}{3}$

Answer: (B) $|a_1a_2 + b_1b_2 + c_1c_2|$ · The council's preliminary key

Q366 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

Equation of the plane passing through the intersection of the lines $\frac{x-1}{1} = \frac{y-2}{2} = \frac{z-5}{-3}$ and $\frac{x+5}{3} = \frac{y-4}{-1} = \frac{z+3}{4}$ and parallel to the xy-plane is

(A) $z = 4$

(B) $z = 2$

(C) $z = 5$

(D) $z = -5$

Answer: (C) $z = 5$ · The council's preliminary key

Q367 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

Find the angle between the planes $x + 2y + 2z - 5 = 0$ and $3x + 3y + 2z - 8 = 0$.

(A) $\text{Cos}^{-1}\left(\frac{3}{\sqrt{22}}\right)$

(B) $\text{Cos}^{-1}\left(\frac{13}{3\sqrt{22}}\right)$

(C) $\text{Cos}^{-1}\left(\frac{1}{3\sqrt{22}}\right)$

(D) $\text{Cos}^{-1}\left(\frac{13}{31}\right)$

Answer: (B) $\text{Cos}^{-1}\left(\frac{13}{3\sqrt{22}}\right)$ · The council's preliminary key

Q368 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

The equation of the plane mid-parallel to the planes $2x - 3y + 6z + 21 = 0$ and $2x - 3y + 6z - 14 = 0$ is given by _____

(A) $4x + 6y - 12z + 7 = 0$

(B) $4x - 6y - 12z - 7 = 0$

(C) $4x - 6y + 12z + 7 = 0$

(D) $4x + 6y + 12z - 7 = 0$

Answer: (C) $4x - 6y + 12z + 7 = 0$ · The council's preliminary key

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Q369 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

The points $(5, -4, 5)$, $(-3, -3, 2)$ and $(-1, -6, 8)$ form _____

(A) an isosceles triangle
(B) an equilateral triangle
(C) a right-angled isosceles triangle
(D) a right-angled triangle

Answer: (A) an isosceles triangle · The council's preliminary key

Q370 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

Two lines whose direction cosines are given by $al + bm + cn = 0$ and $fmn + gnl + hlm = 0$ are perpendicular to each other if _____

(A) $\frac{f}{a} + \frac{g}{b} + \frac{h}{c} = 0$
(B) $\frac{f}{a} - \frac{g}{b} - \frac{h}{c} = 0$
(C) $\frac{f}{a} + \frac{g}{b} - \frac{h}{c} = 0$
(D) $\frac{f}{a} - \frac{g}{b} + \frac{h}{c} = 0$

Answer: (A) $\frac{f}{a} + \frac{g}{b} + \frac{h}{c} = 0$ · The council's preliminary key

Q371 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

The cartesian equation of a line is $2x - 3 = 3y + 1 = 5 - 6x$. The vector equation of the line passing through the point $(7, -5, 0)$ and parallel to the given line is

(A) $\vec{r} = (5\hat{i} - 7\hat{j}) + \lambda(3\hat{i} + 2\hat{j} - \hat{k})$
(B) $\vec{r} = (7\hat{i} + 5\hat{j}) + \lambda(3\hat{i} - 2\hat{j} + \hat{k})$
(C) $\vec{r} = (7\hat{i} - 5\hat{j}) + \lambda(3\hat{i} + 2\hat{j} - \hat{k})$
(D) $\vec{r} = (-5\hat{i} + 7\hat{j}) + \lambda(-3\hat{i} - 2\hat{j} - \hat{k})$

Answer: (C) $\vec{r} = (7\hat{i} - 5\hat{j}) + \lambda(3\hat{i} + 2\hat{j} - \hat{k})$ · The council's preliminary key

Q372 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

The foot of perpendicular from $(5, 7, 3)$ to the join of $(9, 13, 15)$ and $(12, 21, 10)$ is _____

(A) $(-2, -19, 7)$
(B) $(2, 19, 7)$
(C) $(2, 2, 3)$
(D) $(9, 13, 15)$

Answer: (D) $(9, 13, 15)$ · The council's preliminary key

Q373 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

The Cartesian equation of the line passing through the point $(-1, 3, -2)$ and perpendicular to the lines $\frac{x}{1} = \frac{y}{2} = \frac{z}{3}$ and $\frac{x+2}{-3} = \frac{y-1}{2} = \frac{z+1}{5}$ is _____

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

Answer: (D) $\frac{x+1}{2} = \frac{y-3}{-7} = \frac{z+2}{4}$ · The council's preliminary key

Q374 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

The direction cosines of two lines are $\left\langle \frac{\sqrt{3}}{2}, \frac{1}{4}, \frac{\sqrt{3}}{4} \right\rangle$ and $\left\langle \frac{-\sqrt{3}}{2}, \frac{1}{4}, \frac{\sqrt{3}}{4} \right\rangle$. Then the angle between the lines is equal to _____

(A) 30°
(B) 60°
(C) 45°
(D) 90°

Answer: (B) 60° · The council's preliminary key

Q375 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

The harmonic conjugate of $(2, 3, 4)$ with respect to the points $(3, -2, 2)$ and $(6, -17, -4)$ is _____

(A) $(11, -16, 2)$
(B) $\left(\frac{1}{2}, \frac{1}{3}, \frac{1}{4}\right)$
(C) $(0, 0, 0)$
(D) $\left(\frac{18}{5}, \frac{-5}{1}, \frac{4}{5}\right)$

Answer: (D) $\left(\frac{18}{5}, \frac{-5}{1}, \frac{4}{5}\right)$ · The council's preliminary key

Q376 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

The feet of perpendicular from the point $A(1, 0, 3)$ to the join of the points $B(4, 7, 1)$ and $C(3, 5, 3)$ is

(A) $\left(\frac{5}{3}, \frac{7}{3}, \frac{17}{3}\right)$
(B) $\left(\frac{10}{3}, \frac{17}{3}, \frac{6}{3}\right)$
(C) $\left(0, \frac{1}{2}, \frac{3}{2}\right)$
(D) $\left(\frac{1}{5}, \frac{3}{5}, \frac{7}{5}\right)$

Answer: (A) $\left(\frac{5}{3}, \frac{7}{3}, \frac{17}{3}\right)$ · The council's preliminary key

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Q377 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

Angle between the lines of intersection of the planes $x-y=0,\ 2x+y+z=0$ and $2x-z=0,\ x+y-3z=0$ is

(A) 60°
(B) 45°
(C) 30°
(D) 90°

Answer: (D) 90° · The council's preliminary key

Q378 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

The direction cosines of the vector $\vec{a}=-2\hat{i}+\hat{j}-5\hat{k}$ are

(A) $\frac{-2}{\sqrt{8}},\frac{1}{\sqrt{8}},\frac{-5}{\sqrt{8}}$
(B) $\frac{-2}{\sqrt{30}},\frac{1}{\sqrt{30}},\frac{-5}{\sqrt{30}}$
(C) $\frac{2}{\sqrt{8}},\frac{-1}{\sqrt{8}},\frac{5}{\sqrt{8}}$
(D) $\frac{-2}{\sqrt{30}},\frac{-1}{\sqrt{30}},\frac{-5}{\sqrt{30}}$

Answer: (B) $\frac{-2}{\sqrt{30}},\frac{1}{\sqrt{30}},\frac{-5}{\sqrt{30}}$ · The council's preliminary key

Q379 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

The locus of a point P such that $PA+PB=4$ where $A(2,3,4), B(-2,3,4)$ is

(A) $y^2+z^2+6y+8z+25=0$
(B) $y^2-z^2+6y+8z-25=0$
(C) $y^2+z^2-6y-8z+25=0$
(D) $y^2+z^2-6y-8z-25=0$

Answer: (C) $y^2+z^2-6y-8z+25=0$ · The council's preliminary key

Q380 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

The image of the point with position vector $(\hat{i}+3\hat{j}+4\hat{k})$, in the plane $\vec{r}\cdot(2\hat{i}-\hat{j}+\hat{k})+3=0$ is

(A) $(3,5,2)$
(B) $(3,5,-2)$
(C) $(-3,-5,2)$
(D) $(-3,5,2)$

Answer: (D) $(-3,5,2)$ · The council's preliminary key

Q381 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

The equation of the plane whose intercepts on x,y,z axes are $1,2,4$ respectively is

(A) $4x + 2y + z = 4$
(B) $4x + 2y + z = 2$
(C) $4x + 2y + z = 1$
(D) $x + 2y + 4z = 0$

Answer: (A) $4x + 2y + z = 4$ · The council's preliminary key

Q382 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

The equation of the locus of a point $P(x, y, z)$ such that it's distance from the x-axis is equal to its distance from the plane $x + z = 1$ is

(A) $x^2 - 2y^2 - z^2 + 2xz - 2x - 2z + 1 = 0$
(B) $x^2 - 2y^2 - z^2 + 2xz - 2x - 2z - 1 = 0$
(C) $x^2 + 2y^2 + z^2 + 2xz - 2x - 2z + 1 = 0$
(D) $x^2 - 2y^2 - z^2 + 2xz - 2x + 2z + 1 = 0$

Answer: (A) $x^2 - 2y^2 - z^2 + 2xz - 2x - 2z + 1 = 0$ · The council's preliminary key

Q383 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

The direction cosines of a line are $\left\langle \frac{-9}{11}, \frac{6}{11}, \frac{-2}{11} \right\rangle$ respectively. Then its direction ratios are

(A) $\langle 9,\ 6, -2 \rangle$
(B) $\langle -9, -6, 2 \rangle$
(C) $\langle -9,\ 6, -2 \rangle$
(D) $\langle 9, -6, -2 \rangle$

Answer: (C) $\langle -9,\ 6, -2 \rangle$ · The council's preliminary key

Q384 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

The line segment joining the points $A(2, 3, 4)$ and $B(-3, 5, -4)$ intersects yz-plane at the point

(A) $\left(0, \frac{19}{5}, \frac{4}{5}\right)$
(B) $(0, 4, 5)$
(C) $\left(9, \frac{14}{5}, 4\right)$
(D) $(0, 0, 0)$

Answer: (A) $\left(0, \frac{19}{5}, \frac{4}{5}\right)$ · The council's preliminary key

Q385 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

If two lines are parallel to each other, then which of the following is true? (if (l_1, m_1, n_1) and (l_2, m_2, n_2) are direction cosines of the two lines)

(A) $l_1l_2 + m_1m_2 + n_1n_2 = 0$

(B) $\Sigma(l_1l_2 - m_2m_1)^2 = 0$

(C) $\frac{l_1}{l_2} = \frac{m_1}{m_2} = \frac{n_1}{n_2}$

(D) $l_1l_2 + m_1m_2 + n_1n_2 = 1$

Answer: (C) $\frac{l_1}{l_2} = \frac{m_1}{m_2} = \frac{n_1}{n_2}$ · The council's preliminary key

Q386 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

Which of the following is false?

1) If (a, b, c) are direction ratios of a line, then $a^2 + b^2 + c^2 \neq 1$

2) The direction cosines of a line can be its direction ratios but not vice-versa.

3) If (l, m, n) is one set of direction cosines, then $(-l, -m, -n)$ is also a valid set.

4) If (l_1, m_1, n_1) and (l_2, m_2, n_2) are direction cosines of perpendicular lines, then $l_1l_2 + m_1m_2 + n_1n_2 = 1$

(A) 1

(B) 2

(C) 3

(D) 4

Answer: (D) 4 · The council's preliminary key

Q387 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

If the line joining the points $(k, 3, 4)$, $(4, 7, 8)$ is parallel to the line joining the points $(-1, -2, 1)$, $(1, 2, l)$ then $k + l =$

(A) 2

(B) 5

(C) 7

(D) -3

Answer: (C) 7 · The council's preliminary key

Q388 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

Equation of the line passing through the intersection of the plane $x + 2y + 3z = 4$ and the line $\frac{x-1}{2} = \frac{y+1}{1} = \frac{z-1}{-1}$ and parallel to the vector $(2\hat{i} - 3\hat{j}) \times (\hat{i} + 2\hat{j} - \hat{k})$ is

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

Answer: (C) $\frac{x-5}{-3}=\frac{y-1}{-2}=\frac{z+1}{-7}$ · The council's preliminary key

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Q389 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

The equation of the plane through the intersection of the planes $x+2y+3z-4=0$ and $4x+3y+2z+1=0$ and passing through the origin is _____

(A) $17x+14y+11z=0$
(B) $7x+4y+z=0$
(C) $x+14y+11z=0$
(D) $17x+y+z=0$

Answer: (A) $17x+14y+11z=0$ · The council's preliminary key

Q390 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

If a line makes angles α,β,γ with the positive directions of x,y and z axes respectively, then the value of $\sin^2\alpha+\sin^2\beta+\sin^2\gamma=$

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

Answer: (B) 2 · The council's preliminary key

Q391 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

The direction cosines of the line which is perpendicular to the lines with direction cosines proportional to $\langle 1,-2,-2\rangle$ and $\langle 0,2,1\rangle$ is given by

(A) $\left\langle \frac{2}{3},\frac{1}{3},\frac{2}{3}\right\rangle$
(B) $\left\langle \frac{-2}{3},\frac{-1}{3},\frac{-2}{3}\right\rangle$
(C) $\left\langle \frac{2}{3},\frac{1}{3},\frac{-2}{3}\right\rangle$
(D) $\left\langle \frac{2}{3},\frac{-1}{3},\frac{2}{3}\right\rangle$

Answer: (D) $\left\langle \frac{2}{3},\frac{-1}{3},\frac{2}{3}\right\rangle$ · The council's preliminary key

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Q392 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

If a line makes angles $90^\circ, 135^\circ$ and 45° with the positive directions of x, y, z axes respectively, then its direction cosines are _____

(A) $\langle 0, \frac{-1}{\sqrt{2}}, \frac{1}{\sqrt{2}} \rangle$
(B) $\langle 0, \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}} \rangle$
(C) $\langle 0, \frac{-1}{\sqrt{2}}, \frac{-1}{\sqrt{2}} \rangle$
(D) $\langle 0, \frac{1}{\sqrt{2}}, \frac{-1}{\sqrt{2}} \rangle$

Answer: (A) $\langle 0, \frac{-1}{\sqrt{2}}, \frac{1}{\sqrt{2}} \rangle$ · The council's preliminary key

Q393 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

The distance of the plane $2x - y - 2z - 9 = 0$ from the origin is _____ units

(A) 3
(B) $\sqrt{3}$
(C) 1
(D) 9

Answer: (A) 3 · The council's preliminary key

Q394 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

If origin is the centroid of the triangle PQR with vertices $P(2a, 2, 6)$, $Q(-4, 3b, -10)$ and $R(8, 14, 2c)$, then the values of a, b, c respectively are

(A) $2,\ \frac{16}{3},\ -2$
(B) $-2,\ -\frac{16}{3},\ -2$
(C) $-2,\ -\frac{16}{3},\ 2$
(D) $-2,\ \frac{16}{3},\ -2$

Answer: (C) $-2,\ -\frac{16}{3},\ 2$ · The council's preliminary key

Q395 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

L_1 is a line passing through the points with position vectors $\bar{i} - 2\bar{j} - \bar{k}$ and $4\bar{i} - 3\bar{k}$. L_2 is a line passing through the points with position vectors $\bar{i} + 2\bar{j} - \bar{k}$ and $2\bar{i} - 4\bar{j} - 5\bar{k}$. Then the distance between L_1 and L_2 is

(A) 0
(B) $\frac{3}{4}$
(C) $\frac{4}{3}$
(D) $\frac{2}{3}$

Answer: (C) $\frac{4}{3}$ · Official TGCHE final key

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Q396 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

The quadrilateral formed by the points A $(1,2,5)$, B $(-1,6,1)$, C $(3,4,-3)$ and D $(5,0,1)$ is a

(A) Parallelogram
(B) Rectangle
(C) Square
(D) Rhombus

Answer: (C) Square · Official TGCHE final key

Q397 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

A line with direction cosines proportional to 2, 1, 2 meets the line L_1 passing through $(0,-1,0)$ with direction ratios 1, 1, 1 at A (x,y,z) and another line L_2 at B $(1,1,1)$ then $x+y+z=$

(A) 7
(B) 8
(C) 9
(D) 10

Answer: (B) 8 · Official TGCHE final key

Q398 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

If a plane π passes through the point $(-1,6,2)$ is perpendicular to the planes $x+2y+2z-5=0$ and $3x+3y+2z-8=0$, then, the perpendicular distance from the point $(1,-1,1)$ to the plane π is

(A) $\frac{20}{\sqrt{29}}$
(B) $\frac{21}{\sqrt{29}}$
(C) $\frac{27}{\sqrt{29}}$
(D) $\sqrt{29}$

Answer: (D) $\sqrt{29}$ · Official TGCHE final key

Q399 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

The shortest distance between the skew-lines $\bar{r}=(-\bar{i}+3\bar{k})+t(2\bar{i}+3\bar{j}+6\bar{k})$ and $\bar{r}=(3\bar{i}+\bar{j}-\bar{k})+s(2\bar{i}-\bar{j}+2\bar{k})$ is

(A) $\frac{10}{\sqrt{17}}$
(B) $\frac{22}{\sqrt{17}}$
(C) 9
(D) 8

Answer: (B) $\frac{22}{\sqrt{17}}$ · Official TGCHE final key

Q400 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

Π_1, Π_2, Π_3 are three planes which are respectively parallel to the YZ, ZX and XY planes at distances a, b and c forming a rectangular parallelepiped. d_1 is a diagonal of the face on XY- plane not passing through the origin and d_2 is a diagonal of the plane Π_2 coterminous with d_1. If none of the coordinates of the vertices of the parallelepiped are negative, then the angle between d_1 and d_2 is

(A) $\text{Cos}^{-1}\left(\frac{a^2}{\sqrt{a^2+b^2}\sqrt{a^2+c^2}}\right)$

(B) $\text{Cos}^{-1}\left(\frac{a}{a^2+b^2+c^2}\right)$

(C) $\frac{\pi}{2}$

(D) $\text{Sin}^{-1}\left(\frac{a^2}{\sqrt{a^2+b^2}\sqrt{b^2+c^2}}\right)$

Answer: (A) $\text{Cos}^{-1}\left(\frac{a^2}{\sqrt{a^2+b^2}\sqrt{a^2+c^2}}\right)$ · Official TGCHE final key

Q401 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

The obtuse angle between the lines whose direction ratios are determined by the equations $a+b+c=0$, $2ab+2ac-bc=0$ is

(A) $\frac{5\pi}{4}$

(B) $\frac{2\pi}{3}$

(C) $\frac{7\pi}{6}$

(D) $\frac{6\pi}{5}$

Answer: (B) $\frac{2\pi}{3}$ · Official TGCHE final key

Q402 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

A plane meets the coordinate axes at A, B, C respectively such that the centroid of the ΔABC is $(2,3,5)$. Then, the equation of that plane is

(A) $3x+3y+3z=10$

(B) $6x+9y+15z=1$

(C) $2x+3y+5z=1$

(D) $15x+10y+6z=90$

Answer: (D) $15x+10y+6z=90$ · Official TGCHE final key

Q403 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

If the point of intersection of the lines $\bar{r}=\bar{i}-6\bar{j}+(p\sec\alpha)\bar{k}+t(\bar{i}+2\bar{j}+\bar{k})$ and $\bar{r}=4\bar{j}+\bar{k}+\lambda(2\bar{i}+(p\tan\alpha)\bar{j}+2\bar{k})$ is $8\bar{i}+8\bar{j}+9\bar{k}$, (where $0<\alpha<\frac{\pi}{2}$), then $p=$

(A) $\sqrt{5}$
(B) $\sqrt{3}$
(C) $\sqrt{2}$
(D) 0

Answer: (B) $\sqrt{3}$ · Official TGCHE final key

Q404 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

$\bar{l}, \bar{m}, \bar{n}$ are three unit vectors in a right handed system and L is a line through the points A, B, C whose position vectors are $p\bar{l} + 7\bar{m} - 6\bar{n}$, $2\bar{l} + 5\bar{m} - 4\bar{n}$ and $\bar{l} + 4\bar{m} - 3\bar{n}$ respectively. If the equation of the plane containing L and the point $(-p, p, p+1)$ is $ax + by + cz = 1$, then $p(a+b+c) =$

(A) 0
(B) $\frac{-40}{19}$
(C) $\frac{40}{19}$
(D) -6

Answer: (B) $\frac{-40}{19}$ · Official TGCHE final key

Q405 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

$E(1,0,0)$, $F(0,2,0)$, $G(0,0,3)$ are respectively the mid points of the sides AB, BC, CA of ΔABC. If a_1, b_1, c_1 and a_2, b_2, c_2 are respectively the direction ratios of AF and BG, then $\frac{a_1^2 + b_1^2 + c_1^2}{a_2^2 + b_2^2 + c_2^2} =$

(A) $\frac{26}{41}$
(B) $\frac{13}{26}$
(C) $\frac{17}{43}$
(D) $\frac{13}{43}$

Answer: (A) $\frac{26}{41}$ · Official TGCHE final key

Q406 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

If the direction ratios a, b, c of a line L satisfy the relations $ab + bc + ca = 0$ and $6ab + 9bc + 8ca = 0$, then the direction cosines of the line L are

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(A) $\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}$
(B) $\frac{2}{\sqrt{7}}, \frac{1}{\sqrt{7}}, \frac{-2}{\sqrt{7}}$
(C) $\frac{-1}{\sqrt{6}}, \frac{\sqrt{3}}{\sqrt{6}}, \frac{\sqrt{2}}{\sqrt{6}}$
(D) $\frac{-3}{7}, \frac{2}{7}, \frac{-6}{7}$

Answer: (D) $\frac{-3}{7}, \frac{2}{7}, \frac{-6}{7}$ · Official TGCHE final key

Q407 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

The equation of the plane passing through the line of intersection of planes $\Pi_1 = 2x + 6y + 4z - 7 = 0$, $\Pi_2 = x - y - 2z - 2 = 0$ and perpendicular to the plane $x + y + 2z - 5 = 0$ is

(A) $3x + y - 2z = 0$
(B) $6x + 2y - 4z + 55 = 0$
(C) $6x + 2y - 4z - 15 = 0$
(D) $3x + y - 2z - 15 = 0$

Answer: (C) $6x + 2y - 4z - 15 = 0$ · Official TGCHE final key

Q408 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

If A (4, 7, 8), B (2, 3, 4) and C (2, 5, 7) are the vertices of Δ ABC, than (sic) the length of the internal bisector of the angle A is

(A) $\frac{1}{2}\sqrt{34}$
(B) $\frac{1}{3}\sqrt{34}$
(C) $\frac{2}{3}\sqrt{34}$
(D) $\frac{3}{8}\sqrt{17}$

Answer: (C) $\frac{2}{3}\sqrt{34}$ · Official TGCHE final key

Q409 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

For scalars λ, μ if the vector equation of a plane is $\bar{r} = (2 + 3\lambda - \mu)\bar{i} + (1 - 2\lambda + 3\mu)\bar{j} + (-2 + 2\lambda + \mu)\bar{k}$, then its Cartesian equation is

(A) $8x - 5y - 7z + 35 = 0$
(B) $8x - 5y + 7z - 35 = 0$
(C) $8x + 5y - 7z + 35 = 0$
(D) $8x + 5y - 7z - 35 = 0$

Answer: (D) $8x + 5y - 7z - 35 = 0$ · Official TGCHE final key

Q410 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

The equation of the plane in normal form passing through the point $A(\bar{a})$, parallel to a vector $\bar{b}$ and containing a vector $\bar{c}$ is

(A) $\bar{r} \cdot \dfrac{\bar{c} \times \bar{a}}{|\bar{c} \times \bar{a}|} = \dfrac{|\bar{a} \times \bar{b}|}{|\bar{a} \times \bar{c}|}$

(B) $\bar{r} \cdot \dfrac{\bar{a} \times \bar{b}}{|\bar{a} \times \bar{b}|} = \dfrac{[\bar{a}\,\bar{b}\,\bar{c}]}{|\bar{b} \times \bar{c}|}$

(C) $\bar{r} \cdot \dfrac{\bar{b} \times \bar{c}}{|\bar{b} \times \bar{c}|} = \dfrac{[\bar{a}\,\bar{b}\,\bar{c}]}{|\bar{b} \times \bar{c}|}$

(D) $\bar{r} \cdot [\bar{a}\,\bar{b}\,\bar{c}]\,\bar{a} = \dfrac{|\bar{b} \times \bar{c}|}{|\bar{a} \times \bar{c}|}$

Answer: (C) $\bar{r} \cdot \dfrac{\bar{b} \times \bar{c}}{|\bar{b} \times \bar{c}|} = \dfrac{[\bar{a}\,\bar{b}\,\bar{c}]}{|\bar{b} \times \bar{c}|}$ · Official TGCHE final key

Q411 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

The position vectors of the points A and B are respectively $\bar{i} + 2\bar{j}$ and $2\bar{i} + \bar{j} + \bar{k}$. If the points P and Q are respectively the orthogonal projections of A and B on the plane $x + y + z = 3$, then PQ =

(A) $\dfrac{2\sqrt{2}}{\sqrt{3}}$

(B) $\dfrac{\sqrt{3}}{2}$

(C) $\dfrac{\sqrt{5}}{7}$

(D) $\dfrac{\sqrt{7}}{2}$

Answer: (A) $\dfrac{2\sqrt{2}}{\sqrt{3}}$ · Official TGCHE final key

Q412 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

If A (4, 3, 2), B (5, 4, 6), C (–1, –1, 5) are the vertices of a triangle, then the coordinates of the point in which the bisector of the angle A meet the side BC is

(A) $\left(\dfrac{22}{8}, \dfrac{17}{8}, \dfrac{45}{8}\right)$

(B) $\left(\dfrac{17}{8}, \dfrac{22}{8}, \dfrac{45}{8}\right)$

(C) $\left(\dfrac{-22}{8}, \dfrac{-17}{8}, \dfrac{45}{8}\right)$

(D) $\left(\dfrac{-17}{8}, \dfrac{22}{8}, \dfrac{45}{8}\right)$

Answer: (A) $\left(\dfrac{22}{8}, \dfrac{17}{8}, \dfrac{45}{8}\right)$ · Official TGCHE final key

Q413 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

Assertion (A): The direction ratios of line L_1 are 2, 5, 7 and those of line L_2 are $\frac{4}{\sqrt{19}}, \frac{10}{\sqrt{19}}, \frac{14}{\sqrt{19}}$. The lines L_1, L_2 are parallel.
Reason (R): The direction ratios of a line L_1 are a_1, b_1, c_1 and those of another line L_2 are a_2, b_2, c_2. The lines L_1 and L_2 are parallel if $a_1a_2 + b_1b_2 + c_1c_2 = 0$
The correct option among the following is

(A) (A) is true, (R) is true and (R) is the correct explanation for (A)
(B) (A) is true, (R) is true but (R) is not the correct explanation for (A)
(C) (A) is true but (R) is false
(D) (A) is false but (R) is true

Answer: (C) (A) is true but (R) is false · Official TGCHE final key

Q414 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

If $\frac{x-4}{1} = \frac{y-2}{1} = \frac{z-7}{2}$ lies in the plane $ax + by + z = 7$, then $a + b =$

(A) -2
(B) 3
(C) 5
(D) 7

Answer: (A) -2 · Official TGCHE final key

Q415 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

The shortest distance between the line $\bar{r} = 2\bar{i} - 2\bar{j} + 3\bar{k} + \lambda(\bar{i} - \bar{j} + 4\bar{k})$ and the plane $\bar{r} \cdot (\bar{i} + 5\bar{j} + \bar{k}) = 5$ is

(A) $\frac{1}{3\sqrt{3}}$
(B) $\frac{5}{3\sqrt{3}}$
(C) $\frac{10}{3\sqrt{3}}$
(D) $\frac{11}{3\sqrt{3}}$

Answer: (C) $\frac{10}{3\sqrt{3}}$ · Official TGCHE final key

Q416 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

If the points A $(-1, 0, 7)$, B $(3, 2, t)$, C $(5, k, -2)$ are collinear, then the ratio in which the point P $(t, k - 2t, t + k)$ divides the line segment BC is

(A) $-2:3$
(B) $-1:2$
(C) $4:3$
(D) $1:1$

Answer: (B) $-1:2$ · Official TGCHE final key

Q417 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

The direction cosines l, m, n of two lines are satisfying $3l + m + 5n = 0$ and $6mn - 2nl + 5lm = 0$. If θ is the angle between those lines then $|\cos\theta| =$

(A) $\frac{1}{\sqrt{6}}$
(B) $\frac{1}{\sqrt{2}}$
(C) $\frac{1}{6}$
(D) $\frac{1}{\sqrt{3}}$

Answer: (C) $\frac{1}{6}$ · Official TGCHE final key

Q418 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

A tetrahedron has vertices O(0, 0, 0), A(1, 2, 1), B(2, 1, 3), C(-1, 1, 2). If θ is the angle between the faces OAB and ABC, then $\cos\theta =$

(A) $\frac{1}{\sqrt{2}}$
(B) $\frac{19}{35}$
(C) $\frac{\sqrt{3}}{2}$
(D) $\frac{17}{31}$

Answer: (B) $\frac{19}{35}$ · Official TGCHE final key

Q419 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

Let Π be a plane containing the points $(0, -5, -1)$, $(1, -2, 5)$, $(-3, 5, 0)$ and L be a line passing through the point $(0, -5, -1)$ and parallel to the vector $\bar{i} + 5\bar{j} - 6\bar{k}$. Then the length of the projection of the unit normal vector to the plane Π on the line L is

(A) $\frac{133\sqrt{2}}{\sqrt{31}}$
(B) $\frac{14}{\sqrt{682}}$
(C) $\frac{133}{\sqrt{31}}$
(D) $\frac{268}{2\sqrt{32}}$

Answer: (B) $\frac{14}{\sqrt{682}}$ · Official TGCHE final key

Q420 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

For non-coplanar vectors $\bar{a}$, $\bar{b}$ and $\bar{c}$, if the point of intersection of the line $\bar{r} = \bar{a} + t(\bar{b} - \bar{c})$ and the plane $\bar{r} = \bar{b} + \bar{c} + x(\bar{a} - \bar{b}) + y(\bar{c} + \bar{a})$ is $l\bar{a} + m\bar{b} + n\bar{c}$, then $3l + 4m + 2n =$

(A) 0
(B) $\frac{1}{2}$
(C) 2
(D) 1

Answer: (C) 2 · Official TGCHE final key

Q421 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

If the line passing through the points $(a, 2, -4)$ and $(5, 3, b)$ crosses the ZX-plane at the point $(-a + 2b, 0, a + b)$, then $14a + 7b =$

(A) 35
(B) 73
(C) -35
(D) -23

Answer: (D) -23 · Official TGCHE final key

Q422 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

The direction cosines of the normal to the plane containing the lines having direction ratios $1, 2, 1$ and $4, 5, -3$ are

(A) $\frac{-11}{\sqrt{179}}, \frac{7}{\sqrt{179}}, \frac{-3}{\sqrt{179}}$
(B) $\frac{1}{\sqrt{2}}, 0, \frac{-1}{\sqrt{2}}$
(C) $\frac{5}{\sqrt{41}}, \frac{-4}{\sqrt{41}}, 0$
(D) $\frac{2}{\sqrt{5}}, \frac{-1}{\sqrt{5}}, 0$

Answer: (A) $\frac{-11}{\sqrt{179}}, \frac{7}{\sqrt{179}}, \frac{-3}{\sqrt{179}}$ · Official TGCHE final key

Q423 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

The foot of the perpendicular drawn from the point $(1, 1, 1)$ to the plane π_1 is $(1, 3, 5)$. If $(2, 2, -1)$, $(3, 4, 2)$, $(3, 3, 0)$ are three points on the plane π_2, then the angle between the planes π_1 and π_2 is

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(A) $\frac{\pi}{2}$
(B) $\cos^{-1}\left(\frac{1}{3}\right)$
(C) $\frac{\pi}{6}$
(D) $\cos^{-1}\left(\frac{2}{5}\right)$

Answer: (A) $\frac{\pi}{2}$ · Official TGCHE final key

Q424 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

A $(2,3,-4)$, B $(-3,3,-2)$, C $(-1,4,2)$ and D $(3,5,1)$ are the vertices of a tetrahedron. If E, F, G are the centroids of its faces containing the point A, then the centroid of the triangle EFG is

(A) $\left(\frac{1}{9},\frac{15}{9},\frac{-3}{9}\right)$
(B) $\left(\frac{1}{4},\frac{15}{4},\frac{-3}{4}\right)$
(C) $\left(\frac{4}{9},\frac{11}{3},\frac{-10}{9}\right)$
(D) $\left(\frac{-1}{9},\frac{12}{9},\frac{1}{9}\right)$

Answer: (C) $\left(\frac{4}{9},\frac{11}{3},\frac{-10}{9}\right)$ · Official TGCHE final key

Q425 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

If l,m,n are the direction cosines of a line which makes angles α,β and γ with the coordinate axes X, Y, Z respectively, then $lm+mn+nl$ takes the maximum value when

(A) α,β,γ are in Arithmetic progression
(B) $\alpha=\beta=\gamma$
(C) any two of α,β,γ are the same
(D) one of α,β,γ is zero and the remaining two are non-zero and unequal.

Answer: (B) $\alpha=\beta=\gamma$ · Official TGCHE final key

Q426 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

The combined equation for a pair of planes is $S\equiv 2x^2-6y^2-12z^2+18yz+2zx+xy=0$. If one of the planes is parallel to $x+2y-2z=5$, then the acute angle between the planes $S=0$ is

(A) $\mathrm{Cos}^{-1}\left(\frac{16}{21}\right)$
(B) $\frac{\pi}{2}$
(C) $\frac{2\pi}{3}$
(D) $\mathrm{Sin}^{-1}\left(\frac{7}{15}\right)$

Answer: (A) $\mathrm{Cos}^{-1}\left(\frac{16}{21}\right)$ · Official TGCHE final key

Q427 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

If the shortest distance between the lines $\bar{r}=(3\bar{i}+4\bar{j}-2\bar{k})+t(-\bar{i}+2\bar{j}+\bar{k})$ and $\bar{r}=(\bar{i}-7\bar{j}-2\bar{k})+s(\bar{i}+3\bar{j}+2\bar{k})$ is equivalent to projection of $\bar{P}=-2\bar{i}+11\bar{j}$ on $\bar{Q}$, then a possible vector $\bar{Q}$ is

(A) $\bar{i}+5\bar{j}-3\bar{k}$
(B) $5\bar{i}-\bar{j}+3\bar{k}$
(C) $-\bar{i}+3\bar{j}+5\bar{k}$
(D) $3\bar{i}+5\bar{j}-\bar{k}$

Answer: (C) $-\bar{i}+3\bar{j}+5\bar{k}$ · Checked by our team

Q428 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

The vector equation of the plane containing the lines $\bar{r}=(\bar{i}+\bar{j})+t(\bar{i}+2\bar{j}-\bar{k})$ and $\bar{r}=(\bar{i}+\bar{j})+s(-\bar{i}+\bar{j}-2\bar{k})$ is

(A) $\bar{r}\cdot\bar{n}=3$, where $\bar{n}=\bar{i}-3\bar{j}-2\bar{k}$
(B) $\bar{r}\cdot\bar{n}=1$, where $\bar{n}=\bar{i}-\bar{j}+2\bar{k}$
(C) $\bar{r}\cdot\bar{n}=0$, where $\bar{n}=\bar{i}-\bar{j}-\bar{k}$
(D) $\bar{r}\cdot\bar{n}=2$, where $\bar{n}=\bar{i}-\bar{j}-\bar{k}$

Answer: (C) $\bar{r}\cdot\bar{n}=0$, where $\bar{n}=\bar{i}-\bar{j}-\bar{k}$ · Official TGCHE final key

Q429 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

The shortest distance between the skew lines $\frac{x-2}{1}=\frac{y-3}{-2}=\frac{z+5}{1}$ and $\frac{x-1}{-1}=\frac{y+2}{3}=\frac{z-4}{2}$ is

(A) $\frac{22}{\sqrt{59}}$
(B) $\frac{21}{\sqrt{59}}$
(C) $\frac{31}{\sqrt{59}}$
(D) $31\sqrt{59}$

Answer: (C) $\frac{31}{\sqrt{59}}$ · Official TGCHE final key

Q430 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

Let ABCD be a tetrahedron in which the coordinates of each of its vertices are in arithmetic progression. If the centroid G of the tetrahedron is $(2,3,k)$ then the distance of G from the origin is

(A) $\sqrt{38}$
(B) 7
(C) $\sqrt{22}$
(D) $\sqrt{29}$

Answer: (D) $\sqrt{29}$ · Official TGCHE final key

Q431 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

The angle between the lines whose direction ratios satisfy the equations $l+m+n=0$ and $l^2=m^2+n^2$ is

(A) $\frac{\pi}{2}$
(B) $\frac{\pi}{3}$
(C) $\frac{\pi}{4}$
(D) $\frac{\pi}{6}$

Answer: (B) $\frac{\pi}{3}$ · Official TGCHE final key

Q432 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

A plane Π is passing through the points $A=(0,0,2)$, $B=(1,0,1)$ and $C=(3,1,1)$. If the plane Π makes angles α and β with the XY- and XZ- coordinate planes respectively, then $\sin^2\alpha+\sin^2\beta=$

(A) $\frac{7}{6}$
(B) $\frac{5}{6}$
(C) 0
(D) 1

Answer: (A) $\frac{7}{6}$ · Official TGCHE final key

Q433 TS EAMCET 2019 · 6 May · Shift 1 MCQ

If the plane passing through the points $\bar{i}+\bar{j}+\bar{k}$, $2\bar{i}-\bar{k}$ and the origin meets the line passing through the points $\bar{i}+3\bar{j}-2\bar{k}$ and $\bar{i}-\bar{j}+3\bar{k}$ at the point A, then A =

(A) $\frac{1}{9}(9\bar{i}+8\bar{j}+7\bar{k})$
(B) $\frac{1}{11}(11\bar{i}+9\bar{j}+8\bar{k})$
(C) $\frac{1}{11}(11\bar{i}-9\bar{j}+8\bar{k})$
(D) $\frac{1}{11}(-11\bar{i}+9\bar{j}-8\bar{k})$

Answer: (B) $\frac{1}{11}(11\bar{i}+9\bar{j}+8\bar{k})$ · Official TGCHE final key

Q434 TS EAMCET 2019 · 6 May · Shift 1 MCQ

The distance of the origin from the plane $\bar{r}\cdot(3\bar{i}+4\bar{j}-12\bar{k})=7$ measured parallel to the line $\bar{r}=(\bar{i}+2\bar{j}+3\bar{k})+t(6\bar{i}+2\bar{j}+3\bar{k})$, is

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(A) $\frac{45}{8}$
(B) $\frac{49}{10}$
(C) $\frac{7}{10}$
(D) $\frac{3}{5}$

Answer: (B) $\frac{49}{10}$ · Official TGCHE final key

Q435 TS EAMCET 2019 · 6 May · Shift 1 MCQ

The volume of the tetrahedron (in cubic units) formed by the plane $2x + y + z = K$ and the co-ordinate planes is $\frac{2V^3}{3}$, then $K : V =$

(A) $1 : 2$
(B) $1 : 6$
(C) $4 : 3$
(D) $2 : 1$

Answer: (D) $2 : 1$ · Official TGCHE final key

Q436 TS EAMCET 2019 · 6 May · Shift 1 MCQ

The direction ratios of a bisector of the angle between two lines whose direction ratios are $1, 1, 2$ and $\sqrt{3}, -\sqrt{3}, 0$ are

(A) $1 + \sqrt{3}, 1 - \sqrt{3}, 2$
(B) $1 - \sqrt{18}, 1 + \sqrt{18}, 2$
(C) $1 - \sqrt{3}, 1 - \sqrt{3}, -2$
(D) $1, 1, 1$

Answer: (A) $1 + \sqrt{3}, 1 - \sqrt{3}, 2$ · Official TGCHE final key

Q437 TS EAMCET 2019 · 6 May · Shift 1 MCQ

Let P(1, -2, 5) be the foot of the perpendicular drawn from the origin to the plane π_1 and the same P be the foot of the perpendicular from (1, 2, -1) to the plane π_2. Then the acute angle between the planes π_1 and π_2 is

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(A) $\text{Cos}^{-1}\left(\frac{19}{\sqrt{390}}\right)$
(B) $\text{Cos}^{-1}\left(\frac{19}{\sqrt{340}}\right)$
(C) $\text{Cos}^{-1}\left(\frac{19}{\sqrt{370}}\right)$
(D) $\text{Cos}^{-1}\left(\frac{19}{\sqrt{350}}\right)$

Answer: (A) $\text{Cos}^{-1}\left(\frac{19}{\sqrt{390}}\right)$ · Official TGCHE final key

Q438 TS EAMCET 2019 · 4 May · Shift 1 MCQ

If L_1 is a line through the point $5\bar{i}+8\bar{j}+11\bar{k}$ and parallel to the vector $2\bar{i}+3\bar{j}+4\bar{k}$ and L_2 is a line through the point $4\bar{i}+6\bar{j}+8\bar{k}$ and parallel to the vector $3\bar{i}+4\bar{j}+5\bar{k}$, then the point of intersection of L_1 and L_2 is

(A) $\bar{i}+\bar{j}+\bar{k}$
(B) $\bar{i}+2\bar{j}+3\bar{k}$
(C) $2\bar{i}+3\bar{j}+\bar{k}$
(D) $\bar{i}-2\bar{j}+2\bar{k}$

Answer: (B) $\bar{i}+2\bar{j}+3\bar{k}$ · Official TGCHE final key

Q439 TS EAMCET 2019 · 4 May · Shift 1 MCQ

The shortest distance between the lines $\bar{r}=(-2\bar{i}+\bar{j}-\bar{k})+t(2\bar{i}+3\bar{j}-\bar{k})$ and $\bar{r}=(\bar{i}-\bar{j}+2\bar{k})+k(-\bar{i}+2\bar{j}+4\bar{k})$ is

(A) 0
(B) $\frac{10}{\sqrt{6}}$
(C) $\frac{11}{\sqrt{6}}$
(D) $\frac{13}{\sqrt{6}}$

Answer: (C) $\frac{11}{\sqrt{6}}$ · Official TGCHE final key

Q440 TS EAMCET 2019 · 4 May · Shift 1 MCQ

If a triangle ABC with two vertices A$(5,4,6)$ and B$(1,-1,3)$ has its centroid at $\left(\frac{10}{3},2,\frac{11}{3}\right)$, then the third vertex C is

(A) $(4,2,3)$
(B) $(-4,-3,2)$
(C) $(4,3,2)$
(D) $(2,4,3)$

Answer: (C) $(4,3,2)$ · Official TGCHE final key

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Q441 TS EAMCET 2019 · 4 May · Shift 1 MCQ

Let ABC be a triangle with A$(\alpha, 5, \beta)$, B$(-2, 1, 6)$ and C$(1, 0, -3)$ as its vertices. If the median through B is equally inclined to the coordinate axes, then $\alpha + \beta =$

(A) 10
(B) 12
(C) 14
(D) 16

Answer: (D) 16 · Official TGCHE final key

Q442 TS EAMCET 2019 · 4 May · Shift 1 MCQ

The equation of the plane in cartesian form, which is at a distance of $\frac{6}{\sqrt{29}}$ from the origin and its normal vector drawn from the origin being $2\hat{i} - 3\hat{j} + 4\hat{k}$, is

(A) $2x - 3y + 4z = 6$
(B) $2x + 3y - 4z = 6$
(C) $-2x - 3y + 4z = 6$
(D) $2x + 3y + 4z = -6$

Answer: (A) $2x - 3y + 4z = 6$ · Official TGCHE final key

Q443 TS EAMCET 2019 · 4 May · Shift 2 MCQ

If the orthocentre and the centroid of a triangle are at $(5, 2, -6)$ and $(9, 6, -4)$ respectively, then its circumcentre is

(A) $(11, 8, -3)$
(B) $(8, 8, -3)$
(C) $(11, 8, 3)$
(D) $(11, -8, -3)$

Answer: (A) $(11, 8, -3)$ · Official TGCHE final key

Q444 TS EAMCET 2019 · 4 May · Shift 2 MCQ

If the direction ratios of two lines are given by $a + 2b + c = 0$ and $11bc + 6ca - 14ab = 0$, then the angle between these lines is

(A) $\frac{\pi}{3}$
(B) $\cos^{-1}\left(\frac{1}{3}\right)$
(C) $\cos^{-1}\left(\frac{2}{3}\right)$
(D) $\frac{\pi}{2}$

Answer: (D) $\frac{\pi}{2}$ · Official TGCHE final key

Q445 TS EAMCET 2019 · 4 May · Shift 2 MCQ

If a plane cuts the coordinate axes at A, B and C respectively such that the centroid of the triangle ABC is (6, 6, 3), then the equation of that plane is

(A) $x+y+z=18$
(B) $x+2y+z=18$
(C) $x+y+2z=18$
(D) $2x+y+z=18$

Answer: (C) $x+y+2z=18$ · Official TGCHE final key

Q446 TS EAMCET 2019 · 3 May · Shift 1 MCQ

The angle between the line of intersection of the two planes $\overline{r}.(2\overline{i}+2\overline{j}-3\overline{k})=5$, $\overline{r}.(3\overline{i}+3\overline{j}-5\overline{k})=3$ and the line $\overline{r}=3\overline{i}+2\overline{j}+\overline{k}+t(5\overline{i}+5\overline{j}-7\overline{k})$ is

(A) $\text{Cos}^{-1}\left(\frac{-1}{\sqrt{28}}\right)$
(B) $\text{Cos}^{-1}\left(\frac{41}{\sqrt{17}\sqrt{99}}\right)$
(C) $\frac{\pi}{2}$
(D) $\frac{\pi}{3}$

Answer: (C) $\frac{\pi}{2}$ · Official TGCHE final key

Q447 TS EAMCET 2019 · 3 May · Shift 1 MCQ

The acute angle between $\overline{r}=(-\overline{i}+3\overline{k})+\lambda(2\overline{i}+3\overline{j}+6\overline{k})$ and $\overline{r}.(10\overline{i}+2\overline{j}-11\overline{k})=3$ is

(A) $\text{Sin}^{-1}\left(\frac{8}{21}\right)$
(B) $\text{Cos}^{-1}\left(\frac{8}{21}\right)$
(C) $\text{Sin}^{-1}\left(\frac{5}{21}\right)$
(D) $\text{Cos}^{-1}\left(\frac{5}{21}\right)$

Answer: (A) $\text{Sin}^{-1}\left(\frac{8}{21}\right)$ · Official TGCHE final key

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Q448 TS EAMCET 2019 · 3 May · Shift 1 MCQ

If $(1,0,3)$, $(2,1,5)$, $(-2,3,6)$ are the midpoints of the sides of a triangle, then the centroid of the triangle is

(A) $\left(\frac{1}{3},\frac{4}{3},-\frac{14}{3}\right)$
(B) $\left(\frac{1}{3},\frac{4}{3},\frac{14}{3}\right)$
(C) $\left(\frac{1}{3},-\frac{4}{3},\frac{14}{3}\right)$
(D) $\left(-\frac{1}{3},\frac{4}{3},\frac{14}{3}\right)$

Answer: (B) $\left(\frac{1}{3},\frac{4}{3},\frac{14}{3}\right)$ · Official TGCHE final key

Q449 TS EAMCET 2019 · 3 May · Shift 1 MCQ

If a plane P passes through the points $(1,0,0)$, $(0,1,0)$ and makes an angle $\frac{\pi}{4}$ with the plane $x+y=3$, then the direction ratios of a normal to that plane P is

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

Answer: (B) $1,1,\sqrt{2}$ · Official TGCHE final key

Q450 TS EAMCET 2019 · 3 May · Shift 1 MCQ

A variable plane is at a distance of 6 units from the origin. If it meets the coordinate axes in A, B and C, then the equation of the locus of the centroid of the Δ ABC is

(A) $\frac{1}{x^2}+\frac{1}{y^2}+\frac{1}{z^2}=\frac{1}{4}$
(B) $x^2+y^2+z^2=4$
(C) $\frac{1}{x^2}+\frac{1}{y^2}+\frac{1}{z^2}=1$
(D) $\frac{1}{x^2}+\frac{1}{y^2}-\frac{1}{z^2}=\frac{1}{4}$

Answer: (A) $\frac{1}{x^2}+\frac{1}{y^2}+\frac{1}{z^2}=\frac{1}{4}$ · Official TGCHE final key

Q451 TS EAMCET 2019 · 3 May · Shift 2 MCQ

If $\bar{r}=\bar{i}+\bar{j}+t(2\bar{i}-\bar{j}+\bar{k})$ and $\bar{r}=2\bar{i}+\bar{j}-\bar{k}+s(3\bar{i}-5\bar{j}+2\bar{k})$ are the vector equations of two lines L_1 and L_2, then the shortest distance between them is

(A) $\frac{9}{\sqrt{59}}$
(B) $\frac{10}{\sqrt{59}}$
(C) $\frac{11}{\sqrt{59}}$
(D) 0

Answer: (B) $\frac{10}{\sqrt{59}}$ · Official TGCHE final key

Q452 TS EAMCET 2019 · 3 May · Shift 2 MCQ

The length of the projection of the line segment joining the points $(3,4,5)$ and $(4,6,3)$ on the line joining the points $(-1,2,4)$ and $(1,0,5)$ is

(A) $\frac{4}{3}$
(B) $\frac{5}{4}$
(C) $\frac{2}{3}$
(D) 1

Answer: (A) $\frac{4}{3}$ · Official TGCHE final key

Q453 TS EAMCET 2019 · 3 May · Shift 2 MCQ

π_1 is a plane passing through the point $(1,2,3)$ and perpendicular to the planes $x+2y+3z-6=0$, $x+2y+2z-5=0$. If $(-1,2,-3)$ is the foot of the perpendicular drawn from the point $(1,3,2)$ on to a plane π_2, then the angle between the planes π_1 and π_2 is

(A) $\text{Cos}^{-1}\left(\frac{9}{\sqrt{255}}\right)$
(B) $\frac{\pi}{4}$
(C) $\text{Cos}^{-1}\left(\frac{\sqrt{6}}{10}\right)$
(D) $\frac{\pi}{2}$

Answer: (C) $\text{Cos}^{-1}\left(\frac{\sqrt{6}}{10}\right)$ · Official TGCHE final key

Q454 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

The distance between the orthocentre and circumcentre of the triangle formed by the points $(1,2,3)$, $(3,-1,5)$ and $(4,0,-3)$ is

(A) $\sqrt{\frac{33}{2}}$

(B) $\sqrt{\frac{31}{2}}$

(C) $\sqrt{\frac{27}{2}}$

(D) $\sqrt{\frac{23}{2}}$

Answer: (A) $\sqrt{\frac{33}{2}}$ · Official APSCHE final key

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Q455 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

The direction cosines of the normal drawn to the plane passing through the points $(2,-1,5),\ (1,-3,4),\ (5,2,1)$ are

(A) $\frac{11}{\sqrt{179}}, \frac{-7}{\sqrt{179}}, \frac{3}{\sqrt{179}}$

(B) $\frac{9}{\sqrt{134}}, \frac{-7}{\sqrt{134}}, \frac{2}{\sqrt{134}}$

(C) $\frac{11}{\sqrt{179}}, \frac{7}{\sqrt{179}}, \frac{-3}{\sqrt{179}}$

(D) $\frac{9}{\sqrt{134}}, \frac{7}{\sqrt{134}}, \frac{-2}{\sqrt{134}}$

Answer: (A) $\frac{11}{\sqrt{179}}, \frac{-7}{\sqrt{179}}, \frac{3}{\sqrt{179}}$ · Official APSCHE final key

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Q456 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

The equation of the plane π through the line of intersection of the planes $\pi_1 \equiv x+3y-6=0$, and $\pi_2 \equiv 3x-y+4z=0$ is $\pi_1+\lambda\pi_2=0$. If the plane π is at unit distance from the origin, then an equation of the plane π is

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

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

(C) $2x+y+2z+3=0$

(D) $x+2y+2z+3=0$

Answer: (A) $2x+y+2z-3=0$ · Official APSCHE final key

Q457 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

The points A(2, -1, 4), B(1, 0, -1), C(1, 2, 3) and D(2, 1, 8) form a

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(A) Rectangle
(B) Square
(C) Rhombus
(D) Parallelogram

Answer: (D) Parallelogram · Official APSCHE final key

Q458 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

If l_1, m_1, n_1 and l_2, m_2, n_2 are direction cosines of $\overline{OA}$ and $\overline{OB}$ such that $\angle AOB = \theta$, where O is the origin, then the direction cosines of the internal angular bisector of $\angle AOB$ are

(A) $\frac{l_1+l_2}{2\sin\frac{\theta}{2}}, \frac{m_1+m_2}{2\sin\frac{\theta}{2}}, \frac{n_1+n_2}{2\sin\frac{\theta}{2}}$
(B) $\frac{l_1-l_2}{2\cos\frac{\theta}{2}}, \frac{m_1-m_2}{2\cos\frac{\theta}{2}}, \frac{n_1-n_2}{2\cos\frac{\theta}{2}}$
(C) $\frac{l_1-l_2}{2\sin\frac{\theta}{2}}, \frac{m_1-m_2}{2\sin\frac{\theta}{2}}, \frac{n_1-n_2}{2\sin\frac{\theta}{2}}$
(D) $\frac{l_1+l_2}{2\cos\frac{\theta}{2}}, \frac{m_1+m_2}{2\cos\frac{\theta}{2}}, \frac{n_1+n_2}{2\cos\frac{\theta}{2}}$

Answer: (D) $\frac{l_1+l_2}{2\cos\frac{\theta}{2}}, \frac{m_1+m_2}{2\cos\frac{\theta}{2}}, \frac{n_1+n_2}{2\cos\frac{\theta}{2}}$ · Official APSCHE final key

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Q459 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

The distance of the plane $3x + 4y + 5z + 19 = 0$ from the point $(1, -1, 1)$ measured along a line parallel to the line with direction ratios 2, 3, 1 is

(A) $\frac{23}{5\sqrt{2}}$
(B) $\frac{\sqrt{71}}{5\sqrt{2}}$
(C) $\sqrt{14}$
(D) $\sqrt{23}$

Answer: (C) $\sqrt{14}$ · Official APSCHE final key

Q460 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

Let π be the plane passing through the points $\bar{i}, \bar{j}, \bar{i} + \bar{j} + \bar{k}$ and L be the line passing through the point $\bar{i} + 2\bar{j} + 3\bar{k}$ and parallel to the vector $\bar{i} - \bar{j} + \bar{k}$. If $P(\alpha, \beta, \gamma)$ is the point of intersection of the plane π and line L, then, $\sqrt{(\alpha^2 + \beta^2)\gamma^2} =$

(A) 0
(B) 1
(C) 6
(D) $\sqrt{14}$

Answer: (C) 6 · Official APSCHE final key

Q461 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

The direction cosines of the line which is perpendicular to the lines with direction cosines proportional to $(1, -2, -2)$ and $(0, 2, 1)$ are

(A) $\frac{2}{3}, \frac{-2}{3}, \frac{1}{3}$
(B) $\frac{2}{3}, \frac{-1}{3}, \frac{-2}{3}$
(C) $\frac{2}{3}, \frac{-1}{3}, \frac{2}{3}$
(D) $\frac{2}{3}, \frac{2}{3}, \frac{-1}{3}$

Answer: (C) $\frac{2}{3}, \frac{-1}{3}, \frac{2}{3}$ · Official APSCHE final key

Q462 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

The number of lines passing through $(0, 0, 0)$ and making an angle of 45° with each of the three co-ordinate axes is

(A) 0
(B) 2
(C) 4
(D) 8

Answer: (A) 0 · Official APSCHE final key

Q463 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

The equation of the plane which passes through the point $(2, 5, -8)$ and perpendicular to each of the planes $2x - 3y + 4z + 1 = 0$ and $4x + y - 2z + 6 = 0$ is

(A) $x + 10y + 7z + 4 = 0$
(B) $x + 2y + 2z + 4 = 0$
(C) $3x + 2y + 2z = 0$
(D) $x + 10y + 7z - 4 = 0$

Answer: (A) $x + 10y + 7z + 4 = 0$ · Official APSCHE final key

Q464 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

The shortest distance between the skew lines $\bar{r} = (6\bar{i} + 2\bar{j} + 2\bar{k}) + t(\bar{i} - 2\bar{j} + 2\bar{k})$ and $\bar{r} = (-4\bar{i} - \bar{k}) + s(3\bar{i} - 2\bar{j} - 2\bar{k})$ is

(A) 9
(B) $\frac{40}{7}$
(C) 108
(D) 120

Answer: (A) 9 · Official APSCHE final key

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Q465 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

$A(3,2,-1)$, $B(4,1,1)$, $C(6,2,5)$ are three points. If D, E, F are three points which divide BC, CA, AB respectively in the same ratio 2:1, then the centroid of ΔDEF is

(A) $\left(\frac{13}{3},\frac{5}{3},\frac{5}{3}\right)$
(B) $(13,5,5)$
(C) $(4,2,1)$
(D) $\left(\frac{11}{3},\frac{4}{3},\frac{1}{3}\right)$

Answer: (A) $\left(\frac{13}{3},\frac{5}{3},\frac{5}{3}\right)$ · Official APSCHE final key

Q466 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

If $A=(1,8,4)$, $B=(2,-3,1)$, then the direction cosines of a normal to the plane AOB is

(A) $\frac{2}{\sqrt{78}},\frac{5}{\sqrt{78}},\frac{-7}{\sqrt{78}}$
(B) $\frac{2\sqrt{10}}{9},\frac{7\sqrt{10}}{90},\frac{-19\sqrt{10}}{90}$
(C) $\frac{4}{\sqrt{218}},\frac{9}{\sqrt{218}},\frac{-11}{\sqrt{218}}$
(D) $\frac{2}{11},\frac{6}{11},\frac{-9}{11}$

Answer: (B) $\frac{2\sqrt{10}}{9},\frac{7\sqrt{10}}{90},\frac{-19\sqrt{10}}{90}$ · Official APSCHE final key

Q467 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

If the two lines $\frac{x-1}{2}=\frac{y+1}{3}=\frac{z-1}{4}$ and $\frac{x-3}{1}=\frac{y-k}{2}=\frac{z}{1}$ have a point in common, then $k=$

(A) $\frac{2}{9}$
(B) $-\frac{2}{9}$
(C) $\frac{9}{2}$
(D) 0

Answer: (C) $\frac{9}{2}$ · Official APSCHE final key

Q468 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

The vector equation of the plane passing through the points $(1,-2,5)$, $(0,-5,-1)$ and $(-3,5,0)$ is

(A) $\bar{r}=(1-\lambda-4\mu)\bar{i}-(2+3\lambda-7\mu)\bar{j}+(5-6\lambda-5\mu)\bar{k}$
(B) $\bar{r}=(1+\lambda+4\mu)\bar{i}-(2-3\lambda+7\mu)\bar{j}+(5-6\lambda-5\mu)\bar{k}$
(C) $\bar{r}=(1-\lambda+4\mu)\bar{i}-(2+3\lambda+7\mu)\bar{j}+(5-6\lambda+5\mu)\bar{k}$
(D) $\bar{r}=(1+\lambda-4\mu)\bar{i}+(2+3\lambda-7\mu)\bar{j}+(5+6\lambda-5\mu)\bar{k}$

Answer: (A) $\bar{r}=(1-\lambda-4\mu)\bar{i}-(2+3\lambda-7\mu)\bar{j}+(5-6\lambda-5\mu)\bar{k}$ · Official APSCHE final key

Q469 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

The angle made by the vector $2\bar{i}-\bar{j}+\bar{k}$ with the plane represented by $\bar{r}\cdot\left(\bar{i}+\bar{j}+2\bar{k}\right)=7$ is

(A) 30°
(B) 60°
(C) 45°
(D) 75°

Answer: (A) 30° · Official APSCHE final key

Q470 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

In a triangle ABC, if the mid points of sides AB, BC, CA are $(3,0,0)$, $(0,4,0)$, $(0,0,5)$ respectively, then $AB^2+BC^2+CA^2=$

(A) 50
(B) 200
(C) 300
(D) 400

Answer: (D) 400 · Official APSCHE final key

Q471 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

The angle between a line with direction ratios $2,2,1$ and the line joining the points $(3,1,4)$ and $(7,2,12)$ is

(A) $\text{Cos}^{-1}\left(\frac{2}{3}\right)$
(B) $\text{Cos}^{-1}\left(\frac{3}{4}\right)$
(C) $\text{Tan}^{-1}\left(\frac{-2}{3}\right)$
(D) $\text{Cos}^{-1}\left(\frac{1}{3}\right)$

Answer: (A) $\text{Cos}^{-1}\left(\frac{2}{3}\right)$ · Official APSCHE final key

Q472 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

The equation of the plane in normal form which passes through the points $(-2,1,3)$, $(1,1,1)$ and $(2,3,4)$ is

(A) $\left(\frac{2}{3}\right)x+\left(-\frac{2}{3}\right)y+\left(\frac{1}{3}\right)z=\frac{1}{3}$
(B) $\left(-\frac{2}{3}\right)x+\left(\frac{2}{3}\right)y+\left(-\frac{1}{3}\right)z=\frac{1}{3}$
(C) $\left(\frac{-4}{\sqrt{173}}\right)x+\left(\frac{11}{\sqrt{173}}\right)y+\left(\frac{-6}{\sqrt{173}}\right)z=\frac{1}{\sqrt{173}}$
(D) $\left(\frac{4}{\sqrt{173}}\right)x+\left(\frac{-11}{\sqrt{173}}\right)y+\left(\frac{6}{\sqrt{173}}\right)z=\frac{1}{\sqrt{173}}$

Answer: (C) $\left(\frac{-4}{\sqrt{173}}\right)x+\left(\frac{11}{\sqrt{173}}\right)y+\left(\frac{-6}{\sqrt{173}}\right)z=\frac{1}{\sqrt{173}}$ · Official APSCHE final key

Q473 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

The equation of the plane passing through the point $\bar{i}+2\bar{j}-\bar{k}$ and perpendicular to the line of intersection of the planes $\bar{r}\cdot(3\bar{i}-\bar{j}+\bar{k})=1$ and $\bar{r}\cdot(\bar{i}+4\bar{j}-2\bar{k})=2$, is

(A) $\bar{r} \cdot (-2\bar{i} - 5\bar{j} + \bar{k}) = 0$
(B) $\bar{r} \cdot (\bar{i} + 7\bar{j} + 4\bar{k}) = 0$
(C) $\bar{r} \cdot (2\bar{i} - 7\bar{j} - 13\bar{k}) = 1$
(D) $\bar{r} \cdot (-2\bar{i} + 7\bar{j} + 13\bar{k}) = 0$

Answer: (C) $\bar{r} \cdot (2\bar{i} - 7\bar{j} - 13\bar{k}) = 1$ · Official APSCHE final key

Q474 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

If P(0, 7, 10), Q(-1, 6, 6) and R(-4, 9, 6) are three points in the space, then PQR is

(A) Right angled isosceles triangle
(B) Equilateral triangle
(C) Isosceles but not right angled triangle
(D) Scalene triangle

Answer: (A) Right angled isosceles triangle · Official APSCHE final key

Q475 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

A(2, 3, 5), B(α, 3, 3) and C(7, 5, β) are the vertices of a triangle. If the median through A is equally inclined with the co-ordinate axes then $\text{Cos}^{-1}\left(\frac{\alpha}{\beta}\right) =$

(A) $\text{Cos}^{-1}\left(\frac{-1}{9}\right)$
(B) $\frac{\pi}{2}$
(C) $\frac{\pi}{3}$
(D) $\text{Cos}^{-1}\left(\frac{2}{5}\right)$

Answer: (A) $\text{Cos}^{-1}\left(\frac{-1}{9}\right)$ · Official APSCHE final key

Q476 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

The plane $3x + 4y + 6z + 7 = 0$ is rotated about the line $\bar{r} = (\bar{i} + 2\bar{j} - 3\bar{k}) + t(2\bar{i} - 3\bar{j} + \bar{k})$ until the plane passes through origin. The equation of the plane in the new position is

(A) $x + y + z = 0$
(B) $6x + 3y - 4z = 0$
(C) $4x - 5y - 2z = 0$
(D) $x + 2y + 4z = 0$

Answer: (A) $x + y + z = 0$ · Official APSCHE final key

Q477 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

The point of intersection of the lines represented by $\bar{r} = (\bar{i} + 2\bar{j} - \bar{k}) + \lambda(2\bar{i} + 3\bar{j} + 4\bar{k})$ and $\bar{r} = (-\bar{i} - 3\bar{j} + 7\bar{k}) + \mu(\bar{i} + 2\bar{j} - \bar{k})$ is

(A) $3\bar{i} + 5\bar{j} + 3\bar{k}$
(B) $5\bar{i} + 8\bar{j} + 7\bar{k}$
(C) $-\bar{i} - \bar{j} - 5\bar{k}$
(D) $-3\bar{i} - 4\bar{j} - 9\bar{k}$

Answer: (A) $3\bar{i} + 5\bar{j} + 3\bar{k}$ · Official APSCHE final key

Q478 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

If $A(2, 4, -1)$, $B(3, 6, -1)$ and $C(4, 5, 1)$ are three consecutive vertices of a parallelogram, then its fourth vertex is

(A) $(1, 3, 3)$
(B) $(1, 3, -3)$
(C) $(3, 3, -1)$
(D) $(3, 3, 1)$

Answer: (D) $(3, 3, 1)$ · Official APSCHE final key

Q479 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

If the line joining the points $A(2, 3, -1)$ and $B(3, 5, -3)$ is perpendicular to the line joining $C(1, 2, 3)$ and $D(3, y, 7)$, then $y =$

(A) 1
(B) 3
(C) 5
(D) 7

Answer: (C) 5 · Official APSCHE final key

Q480 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

A plane is making intercepts 2, 3, 4 on X, Y and Z-axes respectively. Another plane is passing through the point $(-1, 6, 2)$ and is perpendicular to the line joining the points $(1, 2, 3)$ and $(-2, 3, 4)$. Then angle between the two planes is

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(A) 90°
(B) $\text{Cos}^{-1}\sqrt{\frac{12}{61}}$
(C) $\text{Cos}^{-1}\sqrt{\frac{11}{61}}$
(D) $\text{Cos}^{-1}\sqrt{\frac{5}{6}}$

Answer: (C) $\text{Cos}^{-1}\sqrt{\frac{11}{61}}$ · Official APSCHE final key

Q481 TS EAMCET 2018 · 7 May · Shift 1 MCQ

A line L passes through the points $\bar{i}+2\bar{j}+\bar{k}$ and $-2\bar{i}+3\bar{k}$. A plane P passes through the origin and the points $4\bar{k}, 2\bar{i}+\bar{j}$. The point where the line L meets the plane P is

(A) $-\bar{i}-\bar{j}+3\bar{k}$
(B) $-8\bar{i}-4\bar{j}+7\bar{k}$
(C) $8\bar{i}+4\bar{j}+\bar{k}$
(D) $3\bar{i}+\bar{j}+2\bar{k}$

Answer: (B) $-8\bar{i}-4\bar{j}+7\bar{k}$ · The council's preliminary key

Q482 TS EAMCET 2018 · 7 May · Shift 1 MCQ

The shortest distance between the lines $\bar{r}=(3t-4)\bar{i}-2t\bar{j}-(1+2t)\bar{k}$ and $\bar{r}=(6+s)\bar{i}+(2-2s)\bar{j}+2(1+s)\bar{k}$ is

(A) 3
(B) 6
(C) 9
(D) 12

Answer: (C) 9 · The council's preliminary key

Q483 TS EAMCET 2018 · 7 May · Shift 1 MCQ

If the line segment joining the points P(2, 4, 1) and Q(3, 8, 1) is divided by the plane $3x-ky-6z=0$ externally in the ratio $4:5$ then $k=$

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

Answer: (B) 1 · The council's preliminary key

Q484 TS EAMCET 2018 · 7 May · Shift 1 MCQ

If the direction cosines of two lines satisfy the equations $l+m+n=0$ and $2lm+2ln-mn=0$, then the acute angle between those two lines is

(A) $\frac{\pi}{4}$
(B) $\frac{\pi}{3}$
(C) $\frac{\pi}{6}$
(D) $\frac{2\pi}{5}$

Answer: (B) $\frac{\pi}{3}$ · The council's preliminary key

Q485 TS EAMCET 2018 · 7 May · Shift 1 MCQ

The perpendicular distance of the point $(1, -1, 2)$ from the plane $x + 2y + z = 4$, is

(A) $\sqrt{17}$
(B) $\sqrt{6}$
(C) $\sqrt{\frac{3}{2}}$
(D) $\sqrt{\frac{2}{3}}$

Answer: (C) $\sqrt{\frac{3}{2}}$ · The council's preliminary key

Q486 TS EAMCET 2018 · 5 May · Shift 1 MCQ

Let A (3, 2, -4) and B (9, 8, -10) be two points. Let P_1 divide AB in the ratio 1 : 2 and P_2 divide AB in the ratio 2:1. If the point P (α, β, γ) divides P_1P_2 in the ratio 1 : 1, then $\alpha + 2\beta + 2\gamma =$

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

Answer: (B) 2 · The council's preliminary key

Q487 TS EAMCET 2018 · 5 May · Shift 1 MCQ

If the direction cosines of the two lines satisfy the equations $l + m + n = 0,\ 2lm + 2ln - mn = 0$ then the acute angle between these lines is

(A) $\text{Cos}^{-1}\left(\frac{1}{3}\right)$
(B) 30°
(C) $\text{Cos}^{-1}\left(\frac{2}{3}\right)$
(D) 60°

Answer: (D) 60° · The council's preliminary key

Q488 TS EAMCET 2018 · 5 May · Shift 1 MCQ

If the equation of the plane passing through the point $(2,-1,3)$ and perpendicular to the planes $3x-2y+z=9$ and $x+y+z=9$ is $x+by+cz+d=0$ then $d=$

(A) $\frac{11}{3}$
(B) 0
(C) 3
(D) $\frac{1}{3}$

Answer: (A) $\frac{11}{3}$ · The council's preliminary key

Q489 TS EAMCET 2018 · 5 May · Shift 2 MCQ

If the direction cosines of two lines are given by $l+3m+5n=0$ and $5lm-2mn+6ln=0$ then the angle between the lines is

(A) $\text{Cos}^{-1}\left(\frac{1}{6}\right)$
(B) $\text{Cos}^{-1}\left(\frac{1}{3}\right)$
(C) $\text{Cos}^{-1}\left(\frac{1}{5}\right)$
(D) $\text{Sin}^{-1}\left(\frac{1}{6}\right)$

Answer: (A) $\text{Cos}^{-1}\left(\frac{1}{6}\right)$ · The council's preliminary key

Q490 TS EAMCET 2018 · 5 May · Shift 2 MCQ

If the distance between two points A and B is d, and the lengths of the projections of AB on the coordinate planes are d_1, d_2, d_3 then

(A) $2d^2=d_1^2+d_2^2+d_3^2$
(B) $d_1+d_2+d_3=0$
(C) $d_1^2+d_2^2+d_3^2=d^2$
(D) $d_1+d_2+d_3=d$

Answer: (A) $2d^2=d_1^2+d_2^2+d_3^2$ · The council's preliminary key

Q491 TS EAMCET 2018 · 5 May · Shift 2 MCQ

L is a line passing through the point $A(1,0,-3)$ and parallel to a line having direction ratios $0,1,-2$. P is a point on the line L which is at a minimum distance from the plane $2x+3y+5z=1$. Then the equation of the plane through P and perpendicular to AP is

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(A) $y + 2z = 12$
(B) $y - 2z + 4 = 0$
(C) $x + y - 2z = 12$
(D) $2y - z = 16$

Answer: (B) $y - 2z + 4 = 0$ · The council's preliminary key

Q492 TS EAMCET 2018 · 5 May · Shift 2 MCQ

Let π_1 be the plane passing through the points $(0, 1, 2), (1, 0, -2), (-2, 1, 0)$ and π_2 be the plane passing through the point $(1, 2, 3)$ and perpendicular to the planes $x + y + z = 1$ and $2x - 3y + z = 5$. If θ is the acute angle between the planes π_1 and π_2 then $\cos\theta =$

(A) $\frac{\sqrt{14}}{9}$
(B) $\frac{\pi}{3}$
(C) $\frac{13}{3\sqrt{22}}$
(D) $\frac{\pi}{4}$

Answer: (A) $\frac{\sqrt{14}}{9}$ · The council's preliminary key

Q493 TS EAMCET 2018 · 4 May · Shift 1 MCQ

A line L is passing through the point A whose position vector is $\bar{i} + 2\bar{j} - 3\bar{k}$ and parallel to the vector $2\bar{i} + \bar{j} + 2\bar{k}$. A plane π is passing through the points $\bar{i} + \bar{j} + \bar{k}$, $\bar{i} - \bar{j} - \bar{k}$ and parallel to the vector $\bar{i} - 2\bar{j}$. Then the point where this plane π meets the line L is

(A) $\frac{1}{3}(-7\bar{i} + \bar{j} - 19\bar{k})$
(B) $7\bar{i} + \bar{j} - 19\bar{k}$
(C) $3\bar{i} + 3\bar{j} - \bar{k}$
(D) $2\bar{i} - \bar{j} + \bar{k}$

Answer: (A) $\frac{1}{3}(-7\bar{i} + \bar{j} - 19\bar{k})$ · The council's preliminary key

Q494 TS EAMCET 2018 · 4 May · Shift 1 MCQ

Assertion (A): If $(-1, 3, 2)$ and $(5, 3, 2)$ are respectively the orthocentre and circumcentr[e] of a triangle, then $(3, 3, 2)$ is its centroid.
Reason (R): Centroid of the triangle divides the line segment joining the orthocentr[e] and the circumcentre in the ratio $1 : 2$
Which one of the following is true?

(A) (A) and (R) are true and (R) is the correct explanation to (A)
(B) (A) and (R) are true but (R) is not the correct explanation to (A)
(C) (A) is true, (R) is false
(D) (A) is false, (R) is true

Answer: (C) (A) is true, (R) is false · The council's preliminary key

Q495 TS EAMCET 2018 · 4 May · Shift 1 MCQ

The lines whose direction cosines are given by the relations $al + bm + cn = 0$ and $mn + nl + lm =$[0] are

(A) perpendicular if $\frac{1}{a} + \frac{1}{b} + \frac{1}{c} = 0$
(B) perpendicular if $\sqrt{a} + \sqrt{b} + \sqrt{c} = 0$
(C) parallel if $\frac{1}{a} + \frac{1}{b} + \frac{1}{c} = 0$
(D) parallel if $a + b + c = 0$

Answer: (A) perpendicular if $\frac{1}{a} + \frac{1}{b} + \frac{1}{c} = 0$ · The council's preliminary key

Q496 TS EAMCET 2018 · 4 May · Shift 1 MCQ

If the plane passing through the points $(1, 2, 3)$, $(2, 3, 1)$ and $(3, 1, 2)$ is $ax + by + cz = 1$[] then $a + 2b + 3c =$

(A) 0
(B) 1
(C) 6
(D) 18

Answer: (B) 1 · The council's preliminary key

Q497 TS EAMCET 2018 · 4 May · Shift 2 MCQ

A point lying on the plane that passes through the points $\bar{i} - \bar{j} + \bar{k}$, $\bar{i} - 2\bar{j} + 3\bar{k}$ and $\bar{i} + 2\bar{j} - 3\bar{k}$ is

(A) $-\bar{i} + 2\bar{j} - 3\bar{k}$
(B) $-\bar{i} + \bar{j} - \bar{k}$
(C) $\bar{i} + \bar{j} - \bar{k}$
(D) $4\bar{i} + 2\bar{j} + 3\bar{k}$

Answer: (C) $\bar{i} + \bar{j} - \bar{k}$ · The council's preliminary key

Q498 TS EAMCET 2018 · 4 May · Shift 2 MCQ

A non zero vector $\bar{a}$ is parallel to the line of intersection of the plane determined by the vectors $\bar{i}$, $\bar{i} + \bar{j}$ and the plane determined by vectors $\bar{i} - \bar{j}$, $\bar{i} + \bar{k}$. The angle between $\bar{a}$ and $(\bar{i} - 2\bar{j} + 2\bar{k})$ is

(A) $\frac{\pi}{6}$
(B) $\frac{\pi}{4}$
(C) $\frac{\pi}{3}$
(D) $\frac{2\pi}{5}$

Answer: (B) $\frac{\pi}{4}$ · The council's preliminary key

Q499 TS EAMCET 2018 · 4 May · Shift 2 MCQ

The equation of the plane passing through the points with position vectors $A(-2\bar{i}+6\bar{j}-6\bar{k})$, $B(-3\bar{i}+10\bar{j}-9\bar{k})$ and $C(-5\bar{i}-6\bar{k})$ is

(A) $\bar{r}\cdot(2i-j-2k)=2$
(B) $\bar{r}\cdot(i-2j-k)=1$
(C) $\bar{r}\cdot(2i+j-2k)=3$
(D) $\bar{r}\cdot(i+2j-2k)=3$

Answer: (A) $\bar{r}\cdot(2i-j-2k)=2$ · The council's preliminary key

Q500 TS EAMCET 2018 · 4 May · Shift 2 MCQ

Let A, B, C be three points on $\overrightarrow{OX}$, $\overrightarrow{OY}$, $\overrightarrow{OZ}$ respectively at the distances 3, 6, 9 from origin. Let Q be the point $(2,5,8)$ and P be the point equidistant from O, A, B, C. Then the coordinates of the point R which divides PQ in the ratio $3:2$ is

(A) $\left(\frac{17}{10},\frac{29}{5},\frac{43}{10}\right)$
(B) $\left(\frac{7}{5},\frac{16}{5},5\right)$
(C) $\left(\frac{9}{5},\frac{21}{5},\frac{33}{5}\right)$
(D) $\left(\frac{8}{5},\frac{19}{5},6\right)$

Answer: (C) $\left(\frac{9}{5},\frac{21}{5},\frac{33}{5}\right)$ · The council's preliminary key

Q501 TS EAMCET 2018 · 4 May · Shift 2 MCQ

If the direction cosines of two lines are such that $l+m+n=0,\ l^2+m^2-n^2=0$ then the angle between them is

(A) $\frac{\pi}{6}$
(B) $\frac{\pi}{4}$
(C) $\frac{\pi}{3}$
(D) $\frac{\pi}{2}$

Answer: (C) $\frac{\pi}{3}$ · The council's preliminary key

Q502 TS EAMCET 2018 · 4 May · Shift 2 MCQ

If the line joining the points A $(1,0,0)$ and B $(0,0,1)$ is a normal to the plane π which passes through the point A, then the angle between the planes π and $x+y+z=6$ is

(A) $\frac{\pi}{6}$
(B) $\frac{\pi}{4}$
(C) $\frac{\pi}{3}$
(D) $\frac{\pi}{2}$

Answer: (D) $\frac{\pi}{2}$ · The council's preliminary key

Q503 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

If $\bar{n} = 2\bar{i} - 3\bar{j} + 4\bar{k}$, $\bar{m} = \bar{i} - \bar{j}$, $\bar{l} = 2\bar{i} - \bar{j} + \bar{k}$, then the Cartesian equation of the plane passing through the line of intersection of two planes $\bar{r} \cdot \bar{n} = 1$ and $\bar{r} \cdot \bar{m} = -4$ and perpendicular to the plane $\bar{r} \cdot \bar{l} = -8$ is

(A) $5x - 20y - 12z - 44 = 0$
(B) $x - 2y - 12z - 45 = 0$
(C) $5x - 20y - 12z - 47 = 0$
(D) $5x - 2y - 12z + 47 = 0$

Answer: (D) $5x - 2y - 12z + 47 = 0$ · The council's preliminary key

Q504 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

If the mid points of the sides AB, BC, CA of a triangle are $(1, 5, -1)$, $(0, 4, -2)$, $(2, 3, 4)$ respectively, then the length of the median drawn from C to AB is

(A) $\sqrt{29}$
(B) $\sqrt{27}$
(C) $\sqrt{5}$
(D) 5

Answer: (D) 5 · The council's preliminary key

Q505 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

If a line makes angles $\frac{\pi}{4}$ and $\frac{\pi}{3}$ with Y-axis and Z-axis respectively, then the obtuse angle made by that line with X-axis is

(A) $\frac{\pi}{3}$
(B) $\frac{2\pi}{3}$
(C) $\frac{\pi}{6}$
(D) $\frac{5\pi}{6}$

Answer: (B) $\frac{2\pi}{3}$ · The council's preliminary key

Q506 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

The equation of the plane bisecting the line segment joining the points $(2, 0, 6)$ and $(-6, 2, 4)$ and perpendicular to it, is

(A) $2x - y + 4z - 15 = 0$
(B) $4x - y + 3z - 6 = 0$
(C) $4x - y + z + 4 = 0$
(D) $x - 2y + 3z - 11 = 0$

Answer: (C) $4x - y + z + 4 = 0$ · The council's preliminary key

Q507 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

Let l_1 be the line passing through the point $3\bar{i} + 4\bar{j} - 2\bar{k}$ and parallel to the vector $-\bar{i} + 2\bar{j} + \bar{k}$. Let l_2 be another line passing through the point $\bar{i} - 7\bar{j} - 2\bar{k}$ and parallel to the vector $\bar{i} + 3\bar{j} + 2\bar{k}$. Then the shortest distance between the lines l_1 and l_2 is

(A) $\sqrt{35}$
(B) 9
(C) $\sqrt{6}$
(D) $\sqrt{29}$

Answer: (A) $\sqrt{35}$ · The council's preliminary key

Q508 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

For $a \neq 0$, if the sum of the distances of a point from the points (a, 0, 0) and $(-a, 0, 0)$ is a constant 2k, then the locus of that point is

(A) $x^2 + k^2\left(y^2 + z^2\right) = k^2$
(B) $\frac{x^2}{k^2} + \frac{y^2+z^2}{k^2-a^2} = 1$
(C) $\frac{x^2}{k^2-a^2} + \frac{y^2+z^2}{k^2} = 1$
(D) $x^2 + y^2 + z^2 = \frac{1}{k^2+1}$

Answer: (B) $\frac{x^2}{k^2} + \frac{y^2+z^2}{k^2-a^2} = 1$ · The council's preliminary key

Q509 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

If P = (2, -3, 4), Q = $(-1, -4, 0)$, R = (2, 1, 0) are three points and S is the foot of the perpendicular drawn from R to PQ, then the X-coordinate of S is

(A) $\frac{-45}{13}$
(B) $\frac{28}{13}$
(C) $\frac{6}{7}$
(D) $\frac{8}{13}$

Answer: (D) $\frac{8}{13}$ · The council's preliminary key

Q510 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

π is a plane passing through the origin and containing two lines whose direction ratios are 1, -2, 2 and 2, 3, -1 then direction ratios of the line of intersection of the planes $x - y - z + 1 = 0$ and π are

(A) 2, 1, 1
(B) 2, 3, -1
(C) 1, -2, 2
(D) -1, -1, 0

Answer: (B) 2, 3, -1 · The council's preliminary key

Q511 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

If a line makes angles $\mathrm{Tan}^{-1}\sqrt{7}$, $\mathrm{Tan}^{-1}\frac{\sqrt{5}}{\sqrt{3}}$ with X-axis, Y-axis respectively, then the angle made by it with Z-axis is

(A) $\frac{\pi}{2}$
(B) $\frac{\pi}{6}$ or $\frac{5\pi}{6}$
(C) $\frac{\pi}{3}$ or $\frac{2\pi}{3}$
(D) $\frac{\pi}{4}$ or $\frac{3\pi}{4}$

Answer: (D) $\frac{\pi}{4}$ or $\frac{3\pi}{4}$ · The council's preliminary key

Q512 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

A plane passes through the point $(3, 5, 7)$. If the direction ratios of its normal are equal to the intercepts made by the plane $x + 3y + 2z = 9$ with the coordinate axes, then the equation of that plane is

(A) $x + y + z = 5$
(B) $6x + 2y + 3z = 105$
(C) $12x + 4y + 6z = 49$
(D) $6x + 2y + 3z = 49$

Answer: (D) $6x + 2y + 3z = 49$ · The council's preliminary key

Q513 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

If the line joining the points $\bar{i} + \bar{j}$ and $3\bar{i} + \bar{j} - \bar{k}$ meets the plane that passes through the point $2\bar{i} + 4\bar{j}$ and parallel to the vectors $3\bar{j} + 5\bar{k}$ and $3\bar{i} - \bar{k}$ at P, then the position vector of the point P is

(A) $-27\bar{i} + \bar{j} + 14\bar{k}$
(B) $29\bar{i} + \bar{j} - 14\bar{k}$
(C) $-14\bar{i} + 89\bar{j} + 3\bar{k}$
(D) $2\bar{i} + 5\bar{j} - 7\bar{k}$

Answer: (B) $29\bar{i} + \bar{j} - 14\bar{k}$ · The council's preliminary key

Q514 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

The harmonic conjugate of P$(-9, 12, -15)$ with respect to the line segment AB, where A$= (1, -2, 3)$ and B$= (-4, 5, -6)$ is

(A) $\left(-\frac{2}{3}, \frac{1}{3}, 0\right)$
(B) $(6, -9, 12)$
(C) $\left(-\frac{7}{3}, \frac{8}{3}, -3\right)$
(D) $\left(\frac{7}{3}, -\frac{8}{3}, \frac{9}{3}\right)$

Answer: (C) $\left(-\frac{7}{3}, \frac{8}{3}, -3\right)$ · The council's preliminary key

Q515 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

If the direction ratios of the lines L_1 and L_2 are $2, -1, 1$ and $3, -3, 4$ respectively, then the direction cosines of a line that is perpendicular to both L_1 and L_2 are

(A) $\pm\frac{2}{\sqrt{6}}, \pm\frac{1}{\sqrt{6}}, \pm\frac{1}{\sqrt{6}}$
(B) $\pm\frac{1}{\sqrt{35}}, \pm\frac{5}{\sqrt{35}}, \pm\frac{3}{\sqrt{35}}$
(C) $\pm\frac{3}{\sqrt{34}}, \pm\frac{3}{\sqrt{34}}, \pm\frac{4}{\sqrt{34}}$
(D) $\pm\frac{1}{\sqrt{14}}, \pm\frac{2}{\sqrt{14}}, \pm\frac{3}{\sqrt{14}}$

Answer: (B) $\pm\frac{1}{\sqrt{35}}, \pm\frac{5}{\sqrt{35}}, \pm\frac{3}{\sqrt{35}}$ · The council's preliminary key

Q516 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

If the equation of the plane bisecting the line segment joining the points P$(3, 2, 4)$ and Q$(-1, 0, -2)$ and perpendicular to PQ is $ax + by + cz + d = 0$ then $ac + bd =$

(A) 0
(B) 12
(C) 6
(D) 1

Answer: (A) 0 · The council's preliminary key

Q517 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

If the orthocentre and the centroid of a triangle are $(-3, 5, 2)$ and $(3, 3, 4)$ respectively, then its circumcentre is

(A) $(6, 2, 5)$
(B) $(6, 2, -5)$
(C) $(6, -2, 5)$
(D) $(6, -2, -5)$

Answer: (A) $(6, 2, 5)$ · The council's preliminary key

Q518 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

A Plane cuts the coordinate axes X, Y, Z at A, B, C respectively such that the centroid of the ΔABC is $(6, 6, 3)$. Then the equation of that plane is

(A) $x+y+z-6=0$
(B) $x+2y+z-18=0$
(C) $2x+y+z-18=0$
(D) $x+y+2z-18=0$

Answer: (D) $x+y+2z-18=0$ · The council's preliminary key

Q519 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

If the foot of the perpendicular drawn from the origin to a plane is $(1,2,3)$, then a point on that plane is

(A) $(3,2,1)$
(B) $(7,2,1)$
(C) $(7,3,-1)$
(D) $(6,-3,4)$

Answer: (B) $(7,2,1)$ · The council's preliminary key

Q520 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

P and Q are points on the straight line passing through the point $A(3\bar{i}+\bar{j}-\bar{k})$ and parallel to the vector $2\bar{i}-\bar{j}+2\bar{k}$. If $AP=AQ=3$, then the vector equation of the plane OPQ is

(A) $\bar{r}=(s+5t)\bar{i}+2s\bar{j}+(t-3s)\bar{k}$
(B) $\bar{r}=(3\bar{i}+\bar{j}-\bar{k})+s(2\bar{i}-\bar{j}+2\bar{k})+t(5\bar{i}+\bar{k})$
(C) $\bar{r}=(s+5t)\bar{i}+2s\bar{j}+(5s+t)\bar{k}$
(D) $\bar{r}=(3t-s)\bar{i}+2s\bar{j}+(t-3s)\bar{k}$

Answer: (A) $\bar{r}=(s+5t)\bar{i}+2s\bar{j}+(t-3s)\bar{k}$ · The council's preliminary key

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Q521 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

$A(3,2,-1)$, $B(4,1,1)$, $C(6,2,5)$ and $D(3,3,3)$ are four points. G_1, G_2, G_3 and G_4 respectively are the centroids of the triangles BCD, CDA, DAB and ABC. The point of concurrence of the lines AG_1, BG_2, CG_3 and DG_4 is

(A) $(4,2,2)$
(B) $(2,4,2)$
(C) $(2,2,4)$
(D) $(2,2,2)$

Answer: (A) $(4,2,2)$ · The council's preliminary key

Q522 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

The acute angle between the lines whose direction cosines are given by the equations $l+m+n=0$ and $2lm+2ln-mn=0$ is

(A) $\frac{\pi}{6}$
(B) $\frac{\pi}{4}$
(C) $\frac{\pi}{3}$
(D) $\frac{2\pi}{5}$

Answer: (C) $\frac{\pi}{3}$ · The council's preliminary key

Q523 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

A variable plane passes through a fixed point (α, β, γ) and meets the coordinate axes in A, B and C. Let P_1, P_2 and P_3 be the planes passing through A, B, C and parallel to the coordinate planes YZ, ZX, XY respectively. Then the locus of the point of intersection of the planes P_1, P_2 and P_3 is

(A) $\alpha x + \beta y + \gamma z = 1$
(B) $\frac{\alpha}{x} + \frac{\beta}{y} + \frac{\gamma}{z} = 1$
(C) $\alpha x^2 + \beta y^2 + \gamma z^2 = 1$
(D) $\alpha\beta x + \beta\gamma y + \alpha\gamma z = 1$

Answer: (B) $\frac{\alpha}{x} + \frac{\beta}{y} + \frac{\gamma}{z} = 1$ · The council's preliminary key

Q524 TS EAMCET 2017 · 12 May · Offline MCQ

A point on the plane that passes through the points $(1, -1, 6)$, $(0, 0, 7)$ and perpendicular to the plane $x - 2y + z = 6$ is

(A) $(1, -1, 2)$
(B) $(1, 1, 2)$
(C) $(-1, 1, 2)$
(D) $(1, 1, -2)$

Answer: (B) $(1, 1, 2)$ · The council's preliminary key

Q525 TS EAMCET 2017 · 12 May · Offline MCQ

A parallelogram has vertices $A(4, 4, -1)$, $B(5, 6, -1)$, $C(6, 5, 1)$ and $D(x, y, z)$. Then the vertex D is

(A) $(5, 1, 0)$
(B) $(-5, 0, 1)$
(C) $(5, 3, 1)$
(D) $(5, 1, 3)$

Answer: (C) $(5, 3, 1)$ · The council's preliminary key

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Q526 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

The circumcentre of the triangle formed by the points $(1,2,3);\ (3,-1,5);\ (4,0,-3)$ is

(A) $(2,2,2)$
(B) $(1,1,1)$
(C) $(3,3,3)$
(D) $\left(\frac{7}{2},\frac{-1}{2},1\right)$

Answer: (D) $\left(\frac{7}{2},\frac{-1}{2},1\right)$ · The council's preliminary key

Q527 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

$\triangle ABC$ is formed by A$(1,8,4)$, B$(0,-11,4)$ and C$(2,-3,1)$. If D is the foot of the perpendicular from A to BC, then the coordinates of D are

(A) $(4,5,-2)$
(B) $(4,-5,2)$
(C) $(-4,5,2)$
(D) $(4,-5,-2)$

Answer: (A) $(4,5,-2)$ · The council's preliminary key

Q528 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

The equation of the plane through $(4,4,0)$ and perpendicular to the planes $2x+y+2z+3=0$ and $3x+3y+2z-8=0$ is

(A) $4x+3y+3z=28$
(B) $4x-2y-3z=8$
(C) $4x+2y+3z=24$
(D) $4x+2y-3z=24$

Answer: (B) $4x-2y-3z=8$ · The council's preliminary key

Q529 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

If the direction cosines of a line L are (pq,q,q) and the angle between the line L with the positive direction of the X-axis is $\frac{\pi}{3}$, then $p^2:q^2=$

(A) 2:3
(B) 3:4
(C) 8:9
(D) 16:9

Answer: (D) 16:9 · The council's preliminary key

Q530 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

The circumcentre of the triangle formed by the points $(3,4,5)$, $(2,3,1)$ and $(-1,6,1)$ is

(A) $\left(\frac{1}{2},\frac{9}{2},1\right)$

(B) $(2,3,1)$

(C) $(1,5,3)$

(D) $\left(\frac{4}{3},\frac{13}{3},\frac{7}{3}\right)$

Answer: (C) $(1,5,3)$ · The council's preliminary key

Q531 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

The equation of the plane which is bisecting the line segment joining the points A(2, 3, 4) and B(-4, 1, -2) and is perpendicular to it, is

(A) $6x+2y+6z-3=0$

(B) $3x-y-3z+6=0$

(C) $3x+y+3z-21=0$

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

Answer: (D) $3x+y+3z-2=0$ · The council's preliminary key

Q532 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

The coordinates of the point at which XZ-plane divides the line joining A$(-2,3,4)$ and B$(1,2,3)$ is

(A) $(7,0,-1)$

(B) $(7,0,1)$

(C) $(-7,0,1)$

(D) $(-7,0,-1)$

Answer: (B) $(7,0,1)$ · The council's preliminary key

Q533 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

Direction ratios of normal to a plane passing through $(1,0,0)$ and $(0,1,0)$ which makes an angle of $\frac{\pi}{4}$ with the plane $x+y-3=0$ are

(A) $(\sqrt{2},1,1)$

(B) $(1,\sqrt{2},1)$

(C) $(1,1,\sqrt{2})$

(D) $(1,1,2)$

Answer: (C) $(1,1,\sqrt{2})$ · The council's preliminary key

Q534 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

A plane π is passing through $(2, 0, 1)$ and $(3, -3, 4)$ and is perpendicular to $x - 2y + z = 6$. Among the following, the plane that is perpendicular to the plane π is

(A) $3x + 2y + z = 7$
(B) $3x - 2y + z = 7$
(C) $x - y - z + 1 = 0$
(D) $3x - 2y - z = 7$

Answer: (C) $x - y - z + 1 = 0$ · The council's preliminary key

Q535 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The points $(2, 3, 5)$, $(-1, 5, -1)$ and $(4, -3, 2)$ form

(A) a right angled but not an isosceles triangle
(B) an isosceles but not a right angled triangle
(C) an equilateral triangle
(D) an isosceles right angled triangle

Answer: (D) an isosceles right angled triangle · The council's preliminary key

Q536 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

If the direction cosines l, m, n of two lines are satisfying the relations $l + m + n = 0$, $lm = 0$, then the angle between those two lines is

(A) 0
(B) $\frac{\pi}{2}$
(C) $\frac{\pi}{4}$
(D) $\frac{\pi}{3}$

Answer: (D) $\frac{\pi}{3}$ · The council's preliminary key

Q537 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

If $(2, -3, 6)$ is the foot of the perpendicular drawn from the origin to a plane, then the equation of that plane is

(A) $2x + 4y - 3z - 29 = 0$
(B) $2x - 5y + 8z + 98 = 0$
(C) $2x + 4y + 3z + 29 = 0$
(D) $2x - 3y + 6z - 49 = 0$

Answer: (D) $2x - 3y + 6z - 49 = 0$ · The council's preliminary key

Q538 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

If A(4, 7, 8), B(2, 3, 4) and C(2, 5, 7) are the position vectors of the vertices of a triangle ABC and if the internal bisector of $\angle A$ meets BC at D then AD $=$

(A) $\frac{3}{2}\sqrt{34}$
(B) $\frac{2}{3}\sqrt{34}$
(C) $\frac{1}{2}\sqrt{34}$
(D) $\frac{1}{6}\sqrt{34}$

Answer: (B) $\frac{2}{3}\sqrt{34}$ · The council's preliminary key

Q539 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

In the triangle with vertices A(3, 2, 0), B(5, 3, 2) and C(-9, 6, -3), the bisector of $\angle BAC$ meets BC at D. The coordinates of D are

(A) $\left(\frac{57}{16}, \frac{38}{16}, \frac{17}{16}\right)$
(B) $\left(\frac{38}{16}, \frac{57}{16}, \frac{17}{16}\right)$
(C) $\left(\frac{38}{16}, \frac{17}{16}, \frac{57}{16}\right)$
(D) $\left(\frac{17}{16}, \frac{38}{16}, \frac{57}{16}\right)$

Answer: (B) $\left(\frac{38}{16}, \frac{57}{16}, \frac{17}{16}\right)$ · The council's preliminary key

Q540 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

If the direction cosines of two lines are such that $2l + m + 2n = 0$ and $3l^2 + 5m^2 - 11n^2 = 0$ then the angle between the two lines is

(A) $\frac{\pi}{4}$
(B) $\frac{\pi}{3}$
(C) $\frac{\pi}{6}$
(D) $\frac{\pi}{2}$

Answer: (D) $\frac{\pi}{2}$ · The council's preliminary key

Q541 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

A plane passing through the points (2, 3, 5) and (-3, -5, -7) is perpendicular to the plane $x - y + z = 1$. A point that lies on the plane, among the following is

(A) $(1, 1, 1)$
(B) $(2, -3, 4)$
(C) $(1, 4, 4)$
(D) $(3, -5, 4)$

Answer: (C) $(1, 4, 4)$ · The council's preliminary key

Q542 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

If M is the foot of the perpendicular drawn from $P(1,2,-1)$ to the plane passing through the point $A(3,-2,1)$ and perpendicular to the vector $4\bar{i}+7\bar{j}-4\bar{k}$, then the length of PM, in proper units, is

(A) $\frac{24}{9}$
(B) $\frac{26}{9}$
(C) $\frac{28}{9}$
(D) $\frac{32}{9}$

Answer: (C) $\frac{28}{9}$ · The council's preliminary key

Q543 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

The Cartesian equation of the line passing through the point $\bar{i}-2\bar{j}+\bar{k}$ and parallel to the vector $\bar{i}+\bar{j}+3\bar{k}$ is

(A) $(x-1)=(y+2)=(z-1)$
(B) $\frac{x-1}{3}=\frac{y+2}{1}=\frac{z-1}{2}$
(C) $\frac{x-1}{1}=\frac{y+2}{1}=\frac{z-1}{3}$
(D) $\frac{x+1}{1}=\frac{y-2}{1}=\frac{z+1}{3}$

Answer: (C) $\frac{x-1}{1}=\frac{y+2}{1}=\frac{z-1}{3}$ · The council's preliminary key

Q544 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

The shortest distance between the line passing through the point $\bar{i}+2\bar{j}+3\bar{k}$ and parallel to the vector $2\bar{i}+3\bar{j}+4\bar{k}$ and the line passing through the point $2\bar{i}+4\bar{j}+5\bar{k}$ and parallel to the vector $3\bar{i}+4\bar{j}+5\bar{k}$, is

(A) 9
(B) $\frac{1}{\sqrt{6}}$
(C) 1
(D) $\sqrt{6}$

Answer: (B) $\frac{1}{\sqrt{6}}$ · The council's preliminary key

Q545 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

If $A=(5,4,2)$, $B=(6,2,-1)$, $C=(8,-2,-7)$, then the harmonic conjugate of A with respect to B and C is

(A) $(7, 0, -3)$
(B) $\left(\frac{13}{2}, -1, \frac{-5}{2}\right)$
(C) $\left(\frac{13}{2}, 1, \frac{-5}{2}\right)$
(D) $\left(\frac{11}{2}, 3, \frac{1}{2}\right)$

Answer: (C) $\left(\frac{13}{2}, 1, \frac{-5}{2}\right)$ · The council's preliminary key

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Q546 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

If the line joining $(2, 3, -1)$ and $(3, 5, -3)$ is perpendicular to the line joining $A(1, 2, 3)$ and $B(\alpha, \beta, \gamma)$ then a possible point for B is

(A) $(-3, 5, 7)$
(B) $(3, -5, 7)$
(C) $(3, 5, -7)$
(D) $(3, 5, 7)$

Answer: (D) $(3, 5, 7)$ · The council's preliminary key

Q547 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

If a plane passes through $(1, -2, 1)$ and is perpendicular to the planes $2x - 2y + z = 0$ and $x - y + 2z = 4$, then the distance of that plane from the point $(1, 2, 2)$ is

(A) $\sqrt{2}$
(B) 2
(C) $2\sqrt{2}$
(D) 4

Answer: (C) $2\sqrt{2}$ · The council's preliminary key

Q548 TS EAMCET 2016 · 15 May · Offline MCQ

Points $A(3, 2, 4)$, $B\left(\frac{33}{5}, \frac{28}{5}, \frac{38}{5}\right)$, and $C(9, 8, 10)$ are given. The ratio in which B divides $\overline{AC}$ is

(A) $5 : 3$
(B) $2 : 1$
(C) $1 : 3$
(D) $3 : 2$

Answer: (D) $3 : 2$ · Official TGCHE final key

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Q549 TS EAMCET 2016 · 15 May · Offline MCQ

If the angle between the lines whose direction cosines are $\left(-\frac{2}{\sqrt{21}}, \frac{C}{\sqrt{21}}, \frac{1}{\sqrt{21}}\right)$ and $\left(\frac{3}{\sqrt{54}}, \frac{3}{\sqrt{54}}, -\frac{6}{\sqrt{54}}\right)$ is $\frac{\pi}{2}$, then the value of C is

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

Answer: (B) 4 · Official TGCHE final key

Q550 TS EAMCET 2016 · 15 May · Offline MCQ

The image of the point $(5, 2, 6)$ with respect to the plane $x + y + z = 9$ is

(A) $(3, -5, 2)$
(B) $\left(\frac{7}{2}, -1, 5\right)$
(C) $\left(\frac{7}{3}, -\frac{2}{3}, \frac{10}{3}\right)$
(D) $\left(\frac{7}{3}, \frac{2}{3}, -\frac{5}{3}\right)$

Answer: (C) $\left(\frac{7}{3}, -\frac{2}{3}, \frac{10}{3}\right)$ · Official TGCHE final key

Q551 AP EAMCET 2016 · 29 Apr · Offline MCQ

The cartesian equation of the plane whose vector equation is $\overline{\gamma} = (1 + \lambda - \mu)\overline{i} + (2 - \lambda)\overline{j} + (3 - 2\lambda + 2\mu)\overline{k}$, where λ, μ are scalars, is

(A) $2x + y = 5$
(B) $2x - y = 5$
(C) $2x - z = 5$
(D) $2x + z = 5$

Answer: (D) $2x + z = 5$ · The council's preliminary key

Q552 AP EAMCET 2016 · 29 Apr · Offline MCQ

The harmonic conjugate of $(2, 3, 4)$ with respect to the points $(3, -2, 2)$, $(6, -17, -4)$ is

(A) $\left(\frac{1}{2}, \frac{1}{3}, \frac{1}{4}\right)$
(B) $\left(\frac{18}{5}, -5, \frac{4}{5}\right)$
(C) $\left(\frac{-18}{5}, \frac{5}{4}, \frac{4}{5}\right)$
(D) $\left(\frac{18}{5}, -5, \frac{-4}{5}\right)$

Answer: (B) $\left(\frac{18}{5}, -5, \frac{4}{5}\right)$ · The council's preliminary key

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Q553 AP EAMCET 2016 · 29 Apr · Offline MCQ

If a line makes angles α, β, γ and δ with the four diagonals of a cube, then the value of $\sin^2\alpha + \sin^2\beta + \sin^2\gamma + \sin^2\delta$ is

(A) $\frac{4}{3}$
(B) $\frac{8}{3}$
(C) $\frac{7}{3}$
(D) $\frac{5}{3}$

Answer: (B) $\frac{8}{3}$ · The council's preliminary key

Q554 AP EAMCET 2016 · 29 Apr · Offline MCQ

If the plane $56x + 4y + 9z = 2016$ meets the coordinate axes in A, B, C then the centroid of the triangle ABC is

(A) $(12, 168, 224)$
(B) $(12, 168, 112)$
(C) $(12, 168, \frac{224}{3})$
(D) $(12, -168, \frac{224}{3})$

Answer: (C) $(12, 168, \frac{224}{3})$ · The council's preliminary key

Q555 AP EAMCET 2014 · 22 May · Offline MCQ

If the line joining $A(1, 3, 4)$ and B is divided by the point $(-2, 3, 5)$ in the ratio $1 : 3$, then B is

(A) $(-11, 3, 8)$
(B) $(-11, 3, -8)$
(C) $(-8, 12, 20)$
(D) $(13, 6, -13)$

Answer: (A) $(-11, 3, 8)$ · The council's preliminary key

Q556 AP EAMCET 2014 · 22 May · Offline MCQ

If the direction cosines of two lines are given by $l + m + n = 0$ and $l^2 - 5m^2 + n^2 = 0$ then the angle between them is

(A) $\frac{\pi}{2}$
(B) $\frac{\pi}{6}$
(C) $\frac{\pi}{4}$
(D) $\frac{\pi}{3}$

Answer: (D) $\frac{\pi}{3}$ · The council's preliminary key

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Q557 AP EAMCET 2014 · 22 May · Offline MCQ

If $A(3,4,5)$, $B(4,6,3)$, $C(-1,2,4)$ and $D(1,0,5)$ are such that the angle between the lines $\overleftrightarrow{DC}$ and $\overleftrightarrow{AB}$ is θ then $\cos\theta =$

(A) $\frac{7}{9}$
(B) $\frac{2}{9}$
(C) $\frac{4}{9}$
(D) $\frac{5}{9}$

Answer: (C) $\frac{4}{9}$ · The council's preliminary key

Q558 AP EAMCET 2014 · 22 May · Offline MCQ

The shortest distance between the skew lines $\vec{r} = (\vec{i} + 2\vec{j} + 3\vec{k}) + t(\vec{i} + 3\vec{j} + 2\vec{k})$ and $\vec{r} = (4\vec{i} + 5\vec{j} + 6\vec{k}) + t(2\vec{i} + 3\vec{j} + \vec{k})$ is

(A) $\sqrt{6}$
(B) 3
(C) $2\sqrt{3}$
(D) $\sqrt{3}$

Answer: (D) $\sqrt{3}$ · The council's preliminary key

Q559 AP EAMCET 2014 · 22 May · Offline MCQ

The angle between the lines $\vec{r} = (2\vec{i} - 3\vec{j} + \vec{k}) + \lambda(\vec{i} + 4\vec{j} + 3\vec{k})$ and $\vec{r} = (\vec{i} - \vec{j} + 2\vec{k}) + \mu(\vec{i} + 2\vec{j} - 3\vec{k})$ is

(A) $\frac{\pi}{2}$
(B) $\cos^{-1}\left(\frac{9}{\sqrt{91}}\right)$
(C) $\cos^{-1}\left(\frac{7}{\sqrt{84}}\right)$
(D) $\frac{\pi}{3}$

Answer: (A) $\frac{\pi}{2}$ · The council's preliminary key

Q560 AP EAMCET 2013 · 10 May · Offline MCQ

P, Q, R and S are four points with the position vectors $3\vec{i} - 4\vec{j} + 5\vec{k}$, $4\vec{k}$, $-4\vec{i} + 5\vec{j} + \vec{k}$ and $-3\vec{i} + 4\vec{j} + 3\vec{k}$ respectively. Then the line PQ meets the line RS at the point

(A) $3\vec{i} + 4\vec{j} + 3\vec{k}$
(B) $-3\vec{i} + 4\vec{j} + 3\vec{k}$
(C) $-\vec{i} + 4\vec{j} + \vec{k}$
(D) $\vec{i} + \vec{j} + \vec{k}$

Answer: (B) $-3\vec{i} + 4\vec{j} + 3\vec{k}$ · The council's preliminary key

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Q561 AP EAMCET 2013 · 10 May · Offline MCQ

The shortest distance between the lines $\vec{r} = 3\vec{i} + 5\vec{j} + 7\vec{k} + \lambda(\vec{i} + 2\vec{j} + \vec{k})$ and $\vec{r} = -\vec{i} - \vec{j} - \vec{k} + \mu(7\vec{i} - 6\vec{j} + \vec{k})$ is

(A) $\frac{16}{5\sqrt{5}}$
(B) $\frac{26}{5\sqrt{5}}$
(C) $\frac{36}{5\sqrt{5}}$
(D) $\frac{46}{5\sqrt{5}}$

Answer: (D) $\frac{46}{5\sqrt{5}}$ · The council's preliminary key

Q562 AP EAMCET 2013 · 10 May · Offline MCQ

$D(2,1,0)$, $E(2,0,0)$, $F(0,1,0)$ are mid-points of the sides BC, CA, AB of ΔABC respectively. Then, the centroid of ΔABC is

(A) $\left(\frac{1}{3}, \frac{1}{3}, \frac{1}{3}\right)$
(B) $\left(\frac{4}{3}, \frac{2}{3}, 0\right)$
(C) $\left(-\frac{1}{3}, \frac{1}{3}, \frac{1}{3}\right)$
(D) $\left(\frac{2}{3}, \frac{1}{3}, \frac{1}{3}\right)$

Answer: (B) $\left(\frac{4}{3}, \frac{2}{3}, 0\right)$ · The council's preliminary key

Q563 AP EAMCET 2013 · 10 May · Offline MCQ

The direction ratios of two lines AB, AC are $1, -1, -1$ and $2, -1, 1$. The direction ratios of the normal to the plane ABC are

(A) $2, 3, -1$
(B) $2, 2, 1$
(C) $3, 2, -1$
(D) $-1, 2, 3$

Answer: (A) $2, 3, -1$ · The council's preliminary key

Q564 AP EAMCET 2013 · 10 May · Offline MCQ

A plane passing through $(-1, 2, 3)$ and whose normal makes equal angles with the coordinate axes is

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

Answer: (C) $x+y+z-4=0$ · The council's preliminary key

Q565 AP EAMCET 2013 · 10 May · Offline MCQ

A variable plane passes through a fixed point $(1,2,3)$. Then the foot of the perpendicular from the origin to the plane lies on

(A) a circle
(B) a sphere
(C) an ellipse
(D) a parabola

Answer: (B) a sphere · The council's preliminary key

Q566 AP EAMCET 2012 · 12 May · Offline MCQ

The point of intersection of the lines
$\ell_1 : \vec{r}(t) = (\vec{i} - 6\vec{j} + 2\vec{k}) + t(\vec{i} + 2\vec{j} + \vec{k})$
$\ell_2 : \vec{R}(u) = (4\vec{j} + \vec{k}) + u(2\vec{i} + \vec{j} + 2\vec{k})$
is

(A) $(4,4,5)$
(B) $(6,4,7)$
(C) $(8,8,9)$
(D) $(10,12,11)$

Answer: (C) $(8,8,9)$ · Official APSCHE final key

Q567 AP EAMCET 2012 · 12 May · Offline MCQ

If x-coordinate of a point P on the line joining the points Q(2, 2, 1) and R(5, 1, -2) is 4, then the z-coordinate of P is

(A) -2
(B) -1
(C) 1
(D) 2

Answer: (B) -1 · Official APSCHE final key

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Q568 AP EAMCET 2012 · 12 May · Offline MCQ

A straight line is equally inclined to all the three coordinate axes. Then an angle made by the line with the y-axis is

(A) $\cos^{-1}\left(\frac{1}{3}\right)$
(B) $\cos^{-1}\left(\frac{1}{\sqrt{3}}\right)$
(C) $\cos^{-1}\left(\frac{2}{\sqrt{3}}\right)$
(D) $\frac{\pi}{4}$

Answer: (B) $\cos^{-1}\left(\frac{1}{\sqrt{3}}\right)$ · Official APSCHE final key

Q569 AP EAMCET 2012 · 12 May · Offline MCQ

If the foot of the perpendicular from (0, 0, 0) to a plane is (1, 2, 3), then the equation of the plane is

(A) $2x + y + 3z = 14$
(B) $x + 2y + 3z = 14$
(C) $x + 2y + 3z + 14 = 0$
(D) $x + 2y - 3z = 14$

Answer: (B) $x + 2y + 3z = 14$ · Official APSCHE final key

Q570 AP EAMCET 2012 · 12 May · Offline MCQ

The equation of the sphere through the points (1, 0, 0), (0, 1, 0) and (1, 1, 1) and having the smallest radius is

(A) $3(x^2 + y^2 + z^2) - 4x - 4y - 2z + 1 = 0$
(B) $2(x^2 + y^2 + z^2) - 3x - 3y - z + 1 = 0$
(C) $x^2 + y^2 + z^2 - x - y + z + 1 = 0$
(D) $x^2 + y^2 + z^2 - 2x - 2y + 4z + 1 = 0$

Answer: (A) $3(x^2 + y^2 + z^2) - 4x - 4y - 2z + 1 = 0$ · Official APSCHE final key

Q571 AP EAMCET 2011 · 8 May · Offline MCQ

The ratio in which the line joining $(2, -4, 3)$ and $(-4, 5, -6)$ is divided by the plane $3x + 2y + z - 4 = 0$ is

(A) $2 : 1$
(B) $4 : 3$
(C) $-1 : 4$
(D) $2 : 3$

Answer: (C) $-1 : 4$ · The council's preliminary key

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Q572 AP EAMCET 2011 · 8 May · Offline MCQ

If the angles made by a straight line with the coordinate axes are α, $\frac{\pi}{2}-\alpha$, β then $\beta=$

(A) 0
(B) $\frac{\pi}{6}$
(C) $\frac{\pi}{2}$
(D) π

Answer: (C) $\frac{\pi}{2}$ · The council's preliminary key

Q573 AP EAMCET 2011 · 8 May · Offline MCQ

A plane passes through $(2,3,-1)$ and is perpendicular to the line having direction ratios $3,-4,7$. The perpendicular distance from the origin to this plane is

(A) $\frac{3}{\sqrt{74}}$
(B) $\frac{5}{\sqrt{74}}$
(C) $\frac{6}{\sqrt{74}}$
(D) $\frac{13}{\sqrt{74}}$

Answer: (D) $\frac{13}{\sqrt{74}}$ · The council's preliminary key

Q574 AP EAMCET 2011 · 8 May · Offline MCQ

The radius of the circle given by $x^2+y^2+z^2+2x-2y-4z-19=0=x+2y+2z+7$, is

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

Answer: (B) 3 · The council's preliminary key

Q575 AP EAMCET 2010 · 30 May · Offline MCQ

The point dividing the join of $(3,-2,1)$ and $(-2,3,11)$ in the ratio $2:3$ is :

(A) $(1,1,4)$
(B) $(1,0,5)$
(C) $(2,3,5)$
(D) $(0,6,-1)$

Answer: (B) $(1,0,5)$ · Official APSCHE final key

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Q576 AP EAMCET 2010 · 30 May · Offline MCQ

A plane meets the coordinate axes at A, B, C so that the centroid of the triangle ABC is $(1, 2, 4)$. Then the equation of the plane is :

(A) $x + 2y + 4z = 12$
(B) $4x + 2y + z = 12$
(C) $x + 2y + 4z = 3$
(D) $4x + 2y + z = 3$

Answer: (B) $4x + 2y + z = 12$ · Official APSCHE final key

Q577 AP EAMCET 2010 · 30 May · Offline MCQ

If $(2, 3, -3)$ is one end of a diameter of the sphere $x^2 + y^2 + z^2 - 6x - 12y - 2z + 20 = 0$, then the other end of the diameter is :

(A) $(4, 9, -1)$
(B) $(4, 9, 5)$
(C) $(-8, -15, 1)$
(D) $(8, 15, 5)$

Answer: (B) $(4, 9, 5)$ · Official APSCHE final key

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