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MATHEMATICS · EAPCET (EAMCET)

Ellipse

Previous Year Questions with answers

240 questions · **145** papers · **2011–2026** · newest paper first

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What is in this PDF: every Ellipse 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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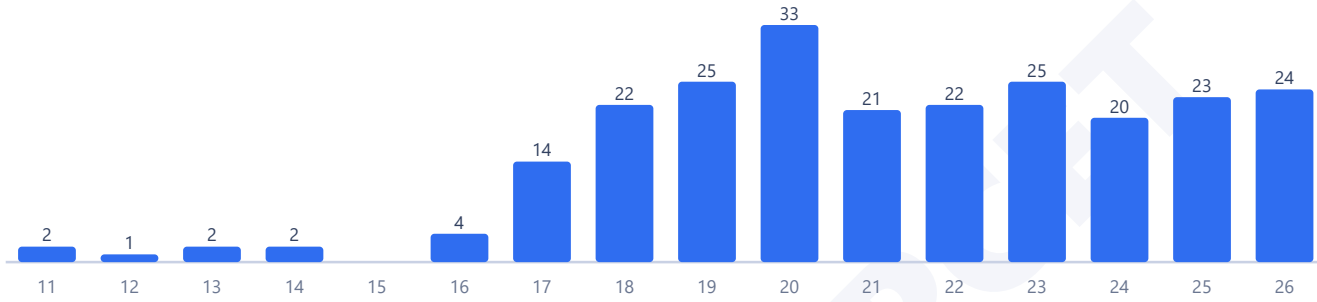
Chapter at a glance

1.9%	240	76 of 77	240 / 0
of Mathematics questions, 2022–2026	questions, 2011–2026	papers asked it, 2022–2026	MCQ / numerical, 2011–2026

Trend. Steady: 1.5 questions per paper in 2024–2026 against 1.5 in 2022–2023.

Questions per year



Counts are the questions we hold: 240 in 145 papers. 7 questions in this chapter came back in more than one paper.

Most-asked topics in this chapter (2011–2026)

Standard Forms	126
Tangents, Normals & Chords	114

How often it comes up

Ellipse functions as an important conic section unit that provides steady, structured coordinate geometry questions. Spanning the entire testing archive from 2010 through 2026, Ellipse contributed 240 questions across 149 evaluated exam papers, appearing in 145 sittings to record an average of 1.6 questions per paper and a 2.0 percent subject share. In contemporary examination testing between 2022 and 2026, the chapter yielded 114 questions across 77 sittings, with questions appearing in 76 papers to maintain an average of 1.5 questions per paper and a 1.9 percent subject share. This positions Ellipse at rank 21 among the 29 mathematics chapters.

The chapter has appeared in every single examination year, missing only one paper out of 77 in the recent testing window. Over the three most recent testing years from 2024 to 2026, candidates answered 67 questions across 46 papers (present in all 46 papers, averaging 1.5 questions per test and a 1.8 percent share). During the earlier examination epoch from 2010 through 2021, the chapter provided 126 questions across 72 sittings (appearing in 69 papers, averaging 1.8 per test and a 2.2 percent share). Evaluating temporal stability, comparing early testing with the last three years shows the share is about the same, and comparing recent testing with the last three years also shows the share is about the same. At the regional level from 2022 to 2026, Andhra Pradesh sittings provided 52 questions across 48 papers (47 papers with questions, 1.1 per test, 1.4 percent share), while Telangana sittings delivered 62 questions across 29 papers (present in all 29 papers, 2.1 per test, 2.7 percent share).

Most-asked topics

Questions in this unit fall into two balanced conic geometry sections:

- **Standard Forms**: Delivering 126 total questions, with 58 appearing in recent testing (tested through 2026). Key concepts encompass standard equations (x squared over a squared plus y squared over b squared equals one), horizontal versus vertical orientations, eccentricity formula (b squared equals a squared times one minus e squared), coordinates of foci (plus or minus a e, zero), directrices (x equals plus or minus a over e), length of latus rectum (two b squared over a), focal distances, and auxiliary circle.

- **Tangents, Normals & Chords**: Supplying 114 total questions, with 56 set in modern examinations (tested through 2026). Coverage includes tangent in slope form (y equals m x plus or minus square root of a squared m squared plus b squared), director circle (x squared plus y squared equals a squared plus b squared), parametric tangents, normal equations, chord of contact, and tangents at the extremities of latera recta.

What the questions look like

Examiners test geometric relationships between foci, eccentricity calculations, and tangent properties.

A classic question presents an ellipse where the angle subtended by the foci at an end of the minor axis equals a designated angle, such as one hundred twenty degrees; candidates apply trigonometry to relate semi-minor axis b and focal distance a e to deduce the eccentricity. Another common problem requires calculating the area of the quadrilateral formed by tangents drawn at the ends of the latera recta, which evaluates cleanly to two a squared divided by e. Questions on tangents frequently ask for the condition that line y equals m x plus c touches the ellipse, or require students to determine the locus of the point of intersection of mutually perpendicular tangents, which traces the director circle.

How to practise it

Master the distinction between horizontal ellipses (a greater than b) and vertical ellipses (b greater than a). For a horizontal ellipse, the foci lie on the x-axis at (plus or minus a e, zero), the directrices are x equals plus or minus a over e, and the latus rectum length is two b squared over a. For a vertical ellipse, the roles of a and b swap: foci lie on the y-axis at (zero, plus or minus b e), directrices are y equals plus or minus b over e, and latus rectum length is two a squared over b.

Memorize the condition of tangency: straight line y equals m x plus c touches the ellipse if and only if c squared equals a squared m squared plus b squared. The director circle, which is the locus of points from which mutually perpendicular tangents can be drawn to the ellipse, is x squared plus y squared equals a squared plus b squared. Remember the focal property: the sum of focal distances from any point on the ellipse to both foci is constant and equals the major axis length two a.

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

Area of the quadrilateral formed by joining the extremities of major axis and minor axis of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ is $8\sqrt{3}$. If the distance between its foci is $4\sqrt{2}$, then the eccentricity of the ellipse is

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

(B) $\frac{1}{3}$

(C) $\frac{2}{3}$

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

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

Q2 AP EAPCET 2026 · 18 May · Shift 2 MCQ

If the distance of a point P on an ellipse from its focus $(1,2)$ is half of the distance of P from its corresponding directrix $x+y=0$, then the point of intersection of the given directrix and its major axis, is

(A) $(2,-2)$

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

(C) $(-1,1)$

(D) $\left(\frac{1}{3},-\frac{1}{3}\right)$

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

Q3 AP EAPCET 2026 · 15 May · Shift 1 MCQ

$X-$ axis is the major axis and origin is the centre of an ellipse. If the distance between its directrices is $\frac{18}{\sqrt{5}}$ and the ratio between the distances from the centre of this ellipse to its focus and its corresponding directrices is $5:9$, then the length of its latus rectum is

(A) $\frac{8}{5}$

(B) $\frac{9}{5}$

(C) $\frac{8}{3}$

(D) $\frac{16}{3}$

Answer: (C) $\frac{8}{3}$ · The council's preliminary key

Q4 AP EAPCET 2026 · 15 May · Shift 2 MCQ

If the ends of the major axis A' and A of the ellipse $\frac{(x-2)^2}{a^2}+\frac{(y-3)^2}{b^2}=1$ are respectively at distances of 9 and 3 units from a directrix L, then the foci of the ellipse are

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(A) $\left(2 \pm \frac{3}{4}, 3\right)$
(B) $\left(2 \pm \frac{3}{2}, 3\right)$
(C) $\left(\pm\frac{3}{2}, 3\right)$
(D) $\left(\pm\frac{3}{4}, 3\right)$

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

Q5 AP EAPCET 2026 · 14 May · Shift 1 MCQ

The tangents drawn at the points P_1 and P_2 lying on the ellipse $\frac{x^2}{4} + y^2 = 1$ are parallel to the chord joining the points $(0, 1)$ and $(2, 0)$, then the distance between P_1 and P_2 is

(A) $2\sqrt{2}$
(B) $\sqrt{5}$
(C) $2\sqrt{3}$
(D) $\sqrt{10}$

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

Q6 AP EAPCET 2026 · 14 May · Shift 1 MCQ

An ellipse intersects the hyperbola $2x^2 - 2y^2 = 1$ orthogonally. The eccentricity of the ellipse is reciprocal to that of the hyperbola. If the axes of the ellipse are along the coordinate axes, then the equation of that ellipse is

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

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

Q7 AP EAPCET 2026 · 14 May · Shift 2 MCQ

If the distance between the foci of an ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is 6 and the distance between its directrices is 10, then the equation of one of the tangents of the ellipse drawn parallel to the line $y = \sqrt{2}x + 5$ is

(A) $y = \sqrt{2}x + \sqrt{66}$
(B) $y = \sqrt{2}x + 12$
(C) $y = \sqrt{2}x + \sqrt{44}$
(D) $y = \sqrt{2}x + 6$

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

Q8 AP EAPCET 2026 · 13 May · Shift 1 MCQ

If the major axis of an ellipse subtends an angle of 120° at one end of its minor axis and the length of its semi latus rectum is $\frac{4}{\sqrt{3}}$, then the sum of the lengths of its axes is

(A) 12
(B) 24
(C) $8(\sqrt{3}+1)$
(D) $4(\sqrt{3}+1)$

Answer: (C) $8(\sqrt{3}+1)$ · The council's preliminary key

Q9 AP EAPCET 2026 · 13 May · Shift 2 MCQ

The area (in square units) of the quadrilateral formed by the tangents drawn to the ellipse $\frac{x^2}{9}+\frac{y^2}{5}=1$ at the ends of latus recta is

(A) 27
(B) $\frac{27}{2}$
(C) $\frac{27}{4}$
(D) $\frac{27}{8}$

Answer: (A) 27 · The council's preliminary key

Q10 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If e is the eccentricity and LL' is the length of the latus rectum of an ellipse $9x^2+4y^2-36x-8y+4=0$ then $e^2LL'=$

(A) $\frac{40}{81}$
(B) 9
(C) 5
(D) $\frac{40}{27}$

Answer: (D) $\frac{40}{27}$ · The council's preliminary key

Q11 AP EAPCET 2026 · 12 May · Shift 2 MCQ

If the area of a triangle formed by the coordinate axes and the tangent drawn to the ellipse $\frac{x^2}{16}+\frac{y^2}{9}=1$ at a point θ is $8\sqrt{3}$, then sum of all such values of θ is

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

Options (1) or (4) were accepted. More than one answer was accepted. · The council's preliminary key

Q12 TS EAPCET 2026 · 11 May · Shift 1 MCQ

If the eccentricity of an ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1\ (a>b)$ is $e=\frac{\sqrt{3}}{2}$ and the equation of one of its directrices is $\sqrt{3}x-4=0$, then $ab=$

(A) a
(B) b
(C) a^2-b^2
(D) $\frac{e}{a}$

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

Q13 TS EAPCET 2026 · 11 May · Shift 1 MCQ

Area of the quadrilateral formed by the common tangents drawn to the circle $x^2+y^2=16$ and the ellipse $7x^2+25y^2=175$ is

(A) 64
(B) 32
(C) $5\sqrt{2}$
(D) $16\sqrt{2}$

Answer: (A) 64 · The council's preliminary key

Q14 TS EAPCET 2026 · 11 May · Shift 2 MCQ

If the latus rectum of the ellipse $\frac{x^2}{16}+\frac{y^2}{b^2}=1$ subtends an angle $\frac{\pi}{3}$ at the centre of the ellipse, then $b^2=$

(A) 9
(B) $\frac{9}{4}(\sqrt{13}-1)$
(C) $\frac{8}{3}(\sqrt{13}-1)$
(D) 7

Answer: (C) $\frac{8}{3}(\sqrt{13}-1)$ · The council's preliminary key

Q15 TS EAPCET 2026 · 11 May · Shift 2 MCQ

If the length of minor axis of an ellipse is $\frac{1}{3}$ times the sum of the distances of any point on the ellipse from its foci, then eccentricity of the ellipse is

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

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

Q16 TS EAPCET 2026 · 10 May · Shift 1 MCQ

If the major axis of an ellipse is parallel to X-axis and the ratio of the lengths of its latus rectum and minor axis is $2:3$, then the ratio of distances from its centre to its focus and directrix is

(A) $5:9$
(B) $4:5$
(C) $3:5$
(D) $5:8$

Answer: (A) $5:9$ · The council's preliminary key

Q17 TS EAPCET 2026 · 10 May · Shift 1 MCQ

For the ellipse $\frac{x^2}{36}+\frac{y^2}{25}=1$, the straight line $2x+y-5=0$ is

(A) a tangent
(B) a normal
(C) a focal chord
(D) a chord not passing through its foci

Answer: (D) a chord not passing through its foci · The council's preliminary key

Q18 TS EAPCET 2026 · 10 May · Shift 1 MCQ

If the parabola $y^2=9x$ cuts the ellipse $\frac{x^2}{9}+\frac{y^2}{b}=1$ orthogonally, then the length of the latus rectum of the given parabola is

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

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

Q19 TS EAPCET 2026 · 10 May · Shift 2 MCQ

The major and minor axes of an ellipse are parallel to X, Y-axes respectively. If the distance between its center and a focus is $\sqrt{7}$ and the length of its semi latus rectum is $\frac{9}{4}$, then the area of the triangle formed by its foci and one end of its minor axis is

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

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

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Q20 TS EAPCET 2026 · 10 May · Shift 2 MCQ

Let L_1 be a focal chord of the ellipse $9x^2 + 25y^2 = 225$ which makes equal intercepts on the coordinate axes. If L_2 is the tangent drawn at one end of a latus rectum that lies in the first quadrant, then the point of intersection of L_1 and L_2 lies

(A) in the 1st quadrant
(B) in the 2nd quadrant
(C) on X-axis
(D) on Y-axis

Answer: (B) in the 2nd quadrant · The council's preliminary key

Q21 TS EAPCET 2026 · 9 May · Shift 1 MCQ

The area of the rectangle formed by the tangents drawn at the ends of both major and minor axes of an ellipse is 24. If the eccentricity of the ellipse is $\frac{1}{4}$, then the equation of the ellipse is

(A) $\frac{x^2}{48} + \frac{y^2}{45} = 1$
(B) $\frac{x^2}{16} + \frac{y^2}{15} = 1$
(C) $\frac{x^2}{24} + \frac{y^2}{45} = \frac{1}{\sqrt{5}}$
(D) $\frac{x^2}{8\sqrt{3}} + \frac{2y^2}{15\sqrt{3}} = \frac{1}{\sqrt{5}}$

Answer: (D) $\frac{x^2}{8\sqrt{3}} + \frac{2y^2}{15\sqrt{3}} = \frac{1}{\sqrt{5}}$ · The council's preliminary key

Q22 TS EAPCET 2026 · 9 May · Shift 1 MCQ

The centre of the ellipse lies on the lines $2x + 3y = 5$ and $x + 3y = 4$. If the eccentricity of the ellipse is $\frac{2}{3}$, length of its major axis is 4 and its minor axis is parallel to Y-axis, then the equation of the ellipse is

(A) $5(x-1)^2 + 9(y-1)^2 = 20$
(B) $5(x+1)^2 + 9(y+1)^2 = 20$
(C) $9(x-1)^2 + 5(y-1)^2 = 20$
(D) $9(x+1)^2 + 5(y+1)^2 = 20$

Answer: (A) $5(x-1)^2 + 9(y-1)^2 = 20$ · The council's preliminary key

Q23 TS EAPCET 2026 · 9 May · Shift 2 MCQ

Let S, S' be the foci and B be one end of the minor axis of an ellipse. If $\angle SBS' = 120^\circ$ and the area of triangle SBS' is $\sqrt{3}$ then the length of its latus rectum is

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

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

Q24 TS EAPCET 2026 · 9 May · Shift 2 MCQ

If θ is the acute angle between the tangents drawn from the point $(3, 4)$ to the ellipse $\frac{x^2}{25} + \frac{y^2}{9} = 1$, then $\theta =$

(A) $\mathrm{Tan}^{-1}\left(\frac{16}{9}\right)$
(B) $\mathrm{Tan}^{-1}\left(\frac{32}{9}\right)$
(C) $\mathrm{Tan}^{-1}\left(\frac{9}{25}\right)$
(D) $\mathrm{Tan}^{-1}\left(\frac{16}{25}\right)$

Answer: (B) $\mathrm{Tan}^{-1}\left(\frac{32}{9}\right)$ · The council's preliminary key

Q25 AP EAPCET 2025 · 27 May · Shift 1 MCQ

Assertion (A) : The length of the latus rectum of an ellipse is 4. The focus and its corresponding directrix are respectively $(1, -2)$ and $3x + 4y - 15 = 0$. Then its eccentricity is $\frac{1}{2}$.

Reason (R) : Length of the perpendicular drawn from focus of an ellipse to its corresponding directrix is $\frac{a(1-e^2)}{e}$.

Then which one of the following is correct ?

(A) (A) and (R) are true, and (R) is the correct explanation to (A)
(B) (A) and (R) are 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: (A) (A) and (R) are true, and (R) is the correct explanation to (A) · The council's preliminary key

Q26 AP EAPCET 2025 · 26 May · Shift 1 MCQ

If the normal drawn at the point $P\left(\frac{\pi}{4}\right)$ on the ellipse $x^2 + 4y^2 - 4 = 0$ meets the ellipse again at $Q(\alpha, \beta)$, then $\alpha =$

(A) $\sqrt{2}$
(B) $\frac{-23}{17\sqrt{2}}$
(C) $\frac{7\sqrt{2}}{17}$
(D) $\frac{1}{\sqrt{2}}$

Answer: (C) $\frac{7\sqrt{2}}{17}$ · The council's preliminary key

Q27 AP EAPCET 2025 · 26 May · Shift 2 MCQ

If a tangent having slope $\frac{1}{3}$ to the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1\ (a>b)$ is a normal to the circle $(x+1)^2+(y+1)^2=1$, then a^2 lies in the interval

(A) $\left(\frac{\sqrt{2}}{\sqrt{5}},2\right)$
(B) $\left(\frac{2}{5},4\right)$
(C) $\left(1,\frac{10}{9}\right)$
(D) $(3,5)$

Answer: (B) $\left(\frac{2}{5},4\right)$ · The council's preliminary key

Q28 AP EAPCET 2025 · 24 May · Shift 1 MCQ

The area (in sq. units) of the triangle formed by the tangent and normal to the ellipse $9x^2+4y^2=72$ at the point (2, 3) with the X-axis is

(A) $\frac{25}{2}$
(B) $\frac{39}{4}$
(C) $\frac{35}{4}$
(D) $\frac{45}{4}$

Answer: (B) $\frac{39}{4}$ · The council's preliminary key

Q29 AP EAPCET 2025 · 23 May · Shift 1 MCQ

If the tangents drawn from a point P to the ellipse $4x^2+9y^2-16x+54y+61=0$ are perpendicular, then the locus of P is

(A) $x^2+y^2-4x+6y+4=0$
(B) $x^2+y^2-4x+6y=0$
(C) $x^2+y^2-6x+4y+9=0$
(D) $x^2+y^2-6x+4y=0$

Answer: (B) $x^2+y^2-4x+6y=0$ · The council's preliminary key

Q30 AP EAPCET 2025 · 23 May · Shift 2 MCQ

The equation of the normal drawn at the point $(\sqrt{2}+1,-1)$ to the ellipse $x^2+2y^2-2x+8y+5=0$ is

(A) $x+y=\sqrt{2}$
(B) $x-2y=3+\sqrt{2}$
(C) $\sqrt{2}x-y=3+\sqrt{2}$
(D) $2x+y=2\sqrt{2}+1$

Answer: (C) $\sqrt{2}x-y=3+\sqrt{2}$ · The council's preliminary key

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Q31 AP EAPCET 2025 · 22 May · Shift 1 MCQ

The angle between the tangents drawn from a point $(-3, 2)$ to the ellipse $4x^2 + 9y^2 - 36 = 0$ is

(A) 45°
(B) $\text{Tan}^{-1}\left(\frac{2}{3}\right)$
(C) $\text{Tan}^{-1}\left(\frac{3}{2}\right)$
(D) 90°

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

Q32 AP EAPCET 2025 · 22 May · Shift 2 MCQ

Let A_1 be the area of the given ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$. Let A_2 be the area of the region bounded by the curve which is the locus of mid point of the line segment joining the focus of the ellipse and a point P on the given ellipse, then $A_1 : A_2 =$

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

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

Q33 AP EAPCET 2025 · 21 May · Shift 1 MCQ

If tangents are drawn to the ellipse $x^2 + 2y^2 = 2$, then the locus of the midpoints of the intercepts made by the tangents between the coordinate axes is

(A) $\frac{x^2}{4} + \frac{y^2}{2} = 1$
(B) $\frac{x^2}{2} + \frac{y^2}{4} = 1$
(C) $\frac{1}{4x^2} + \frac{1}{2y^2} = 1$
(D) $\frac{1}{2x^2} + \frac{1}{4y^2} = 1$

Answer: (D) $\frac{1}{2x^2} + \frac{1}{4y^2} = 1$ · The council's preliminary key

Q34 AP EAPCET 2025 · 21 May · Shift 2 MCQ

The square of the slope of a common tangent drawn to the circle $4x^2 + 4y^2 = 25$ and the ellipse $4x^2 + 9y^2 = 36$ is

(A) 1
(B) $\frac{9}{11}$
(C) $\frac{2}{3}$
(D) 2

Answer: (B) $\frac{9}{11}$ · The council's preliminary key

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Q35 TS EAPCET 2025 · 4 May · Shift 1 MCQ

If P is any point on the ellipse $\frac{x^2}{25}+\frac{y^2}{9}=1$ and S, S' are its foci, then the maximum area (in sq. units) of $\Delta SPS'=$

(A) 15
(B) 12
(C) 6
(D) 25

Answer: (B) 12 · The council's preliminary key

Q36 TS EAPCET 2025 · 4 May · Shift 1 MCQ

Let e be the eccentricity of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$. If $a=5, b=4$ and the equation of the normal drawn at one end of the latus rectum that lies in the first quadrant is $lx+my=27$, then $l+m=$

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

Answer: (C) $\frac{6}{e}$ · The council's preliminary key

Q37 TS EAPCET 2025 · 4 May · Shift 2 MCQ

The circumcenter of the equilateral triangle having the three points $\theta_1, \theta_2, \theta_3$ lying on the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ as its vertices is (r, s). Then the average of $\cos(\theta_1-\theta_2)$, $\cos(\theta_2-\theta_3)$ and $\cos(\theta_3-\theta_1)$ is

(A) $\frac{1}{2}\left[\frac{3r^2}{a^2}+\frac{3s^2}{b^2}-1\right]$
(B) $\frac{3}{2}\left[\frac{r^2}{a^2}+\frac{s^2}{b^2}\right]$
(C) $\frac{1}{3}\left[\frac{r^2}{a^2}+\frac{s^2}{b^2}\right]$
(D) $\frac{1}{3}\left[\frac{r^2}{a^2}+\frac{s^2}{b^2}+\frac{rs}{ab}\right]$

Answer: (A) $\frac{1}{2}\left[\frac{3r^2}{a^2}+\frac{3s^2}{b^2}-1\right]$ · The council's preliminary key

Q38 TS EAPCET 2025 · 4 May · Shift 2 MCQ

$\frac{x^2}{a^2}+\frac{y^2}{b^2}=1\ (b>a)$ is an ellipse with eccentricity $\frac{1}{\sqrt{2}}$. If the angle of intersection between the ellipse and parabola $y^2=4ax$ is θ, then the coordinates of the point $\frac{2\theta}{3}$ on the ellipse is

(A) $\left(\frac{a}{2}, \frac{a}{2}\right)$
(B) $\left(\frac{a}{2}, \frac{3a}{2}\right)$
(C) $\left(\frac{\sqrt{3}a}{2}, \frac{3\sqrt{3}a}{\sqrt{2}}\right)$
(D) $\left(\frac{a}{2}, \frac{\sqrt{3}a}{\sqrt{2}}\right)$

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

Q39 TS EAPCET 2025 · 3 May · Shift 1 MCQ

Let P be a point on the ellipse $\frac{x^2}{9} + \frac{y^2}{4} = 1$ and let the perpendicular drawn through P to the major axis meet its auxiliary circle at Q. If the normals drawn at P and Q to the ellipse and the auxiliary circle respectively meet in R, then the equation of the locus of R is

(A) $x^2 + y^2 = 5$
(B) $x^2 + y^2 = 13$
(C) $x^2 + y^2 = 25$
(D) $x^2 + y^2 = 1$

Answer: (C) $x^2 + y^2 = 25$ · The council's preliminary key

Q40 TS EAPCET 2025 · 3 May · Shift 1 MCQ

The midpoint of the chord of the ellipse $x^2 + \frac{y^2}{4} = 1$ formed on the line $y = x + 1$ is

(A) $\left(\frac{4}{5}, \frac{9}{5}\right)$
(B) $\left(-\frac{1}{5}, \frac{4}{5}\right)$
(C) $\left(\frac{1}{5}, \frac{6}{5}\right)$
(D) $\left(-\frac{6}{5}, -\frac{1}{5}\right)$

Answer: (B) $\left(-\frac{1}{5}, \frac{4}{5}\right)$ · The council's preliminary key

Q41 TS EAPCET 2025 · 3 May · Shift 1 MCQ

If a normal is drawn at a variable point P(x, y) on the curve $9x^2 + 16y^2 - 144 = 0$, then the maximum distance from the centre of the curve to the normal is

(A) 1
(B) 7
(C) 12
(D) $\frac{3}{4}$

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

Q42 TS EAPCET 2025 · 3 May · Shift 2 MCQ

If the perpendicular distance from the focus of an ellipse $\frac{x^2}{9} + \frac{y^2}{b^2} = 1\,(b < 3)$ to its corresponding directrix is $\frac{4}{\sqrt{5}}$, then the slope of the tangent to this ellipse drawn at $\left(\frac{3}{\sqrt{2}}, \frac{b}{\sqrt{2}}\right)$ is

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

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

Q43 TS EAPCET 2025 · 3 May · Shift 2 MCQ

The length of the chord of the ellipse $\frac{x^2}{4}+y^2=1$ formed on the line $y=x+1$ is

(A) $2\sqrt{2}$
(B) $\frac{4}{5}\sqrt{2}$
(C) $4\sqrt{2}$
(D) $\frac{8}{5}\sqrt{2}$

Answer: (D) $\frac{8}{5}\sqrt{2}$ · The council's preliminary key

Q44 TS EAPCET 2025 · 2 May · Shift 1 MCQ

If S and S' are the foci of an ellipse $\frac{x^2}{169}+\frac{y^2}{144}=1$ and the point B lying on positive Y-axis is one end of its minor axis, then the incentre of the triangle SBS' is

(A) $\left(0,\frac{10}{3}\right)$
(B) $\left(\frac{13}{3},\frac{10}{3}\right)$
(C) $\left(\frac{10}{3},\frac{13}{3}\right)$
(D) $\left(0,\frac{13}{3}\right)$

Answer: (A) $\left(0,\frac{10}{3}\right)$ · The council's preliminary key

Q45 TS EAPCET 2025 · 2 May · Shift 1 MCQ

One of the foci of an ellipse is $(2,-3)$ and its corresponding directrix is $2x+y=5$. If the eccentricity of the ellipse is $\frac{\sqrt{5}}{3}$ then the coordinates of the other focus are

(A) $(18,5)$
(B) $(4,-2)$
(C) $(-2,-5)$
(D) $(-4,-6)$

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

Q46 TS EAPCET 2025 · 2 May · Shift 2 MCQ

The curve represented by $\frac{x^2}{12-\alpha}+\frac{y^2}{\alpha-10}=1$ is

(A) a hyperbola for some values of α in $(10, 12)$
(B) an ellipse for all values of α in $(10, 12)$
(C) a circle for some value of α in $(10, 12)$
(D) a hyperbola for all values of α in $(10, 12)$

Answer: (C) a circle for some value of α in $(10, 12)$ · The council's preliminary key

Q47 TS EAPCET 2025 · 2 May · Shift 2 MCQ

If any tangent drawn to the ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1$ touches one of the circles $x^2 + y^2 = \alpha^2$, then the range of α is

(A) $9 \leq \alpha \leq 16$
(B) $16 \leq \alpha \leq 25$
(C) $3 \leq \alpha \leq 4$
(D) $4 \leq \alpha \leq 6$

Answer: (C) $3 \leq \alpha \leq 4$ · The council's preliminary key

Q48 AP EAPCET 2024 · 23 May · Shift 1 MCQ

Let T_1 be the tangent drawn at a point $P(\sqrt{2}, \sqrt{3})$ on the ellipse $\frac{x^2}{4} + \frac{y^2}{6} = 1$. If (α, β) is the point where T_1 intersects another tangent T_2 to the ellipse perpendicularly, then $\alpha^2 + \beta^2 =$

(A) 10
(B) 52
(C) 26
(D) $5/12$

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

Q49 AP EAPCET 2024 · 22 May · Shift 1 MCQ

If the ellipse $4x^2 + 9y^2 = 36$ is confocal with a hyperbola whose length of the transverse axis is 2, then the points of intersection of the ellipse and hyperbola lie on the circle

(A) $x^2 + y^2 = 81$
(B) $x^2 + y^2 = 16$
(C) $x^2 + y^2 = 25$
(D) $x^2 + y^2 = 5$

Answer: (D) $x^2 + y^2 = 5$ · The council's preliminary key

Q50 AP EAPCET 2024 · 22 May · Shift 2 MCQ

The length of the latusrectum of $16x^2 + 25y^2 = 400$ is

(A) $\frac{25}{2}$
(B) $\frac{25}{4}$
(C) $\frac{16}{2}$
(D) $\frac{32}{5}$

Answer: (D) $\frac{32}{5}$ · The council's preliminary key

Q51 AP EAPCET 2024 · 21 May · Shift 1 MCQ

If A_1, A_2, A_3 are the areas of ellipse $x^2 + 4y^2 - 4 = 0$, its director circle and auxiliary circle respectively, then $A_2 + A_3 - A_1 =$

(A) 11π
(B) 3π
(C) 7π
(D) 9π

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

Q52 AP EAPCET 2024 · 21 May · Shift 2 MCQ

The product of perpendiculars from the two foci of the ellipse $\frac{x^2}{9} + \frac{y^2}{25} = 1$ on the tangent at any point on the ellipse is

(A) 6
(B) 7
(C) 8
(D) 9

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

Q53 AP EAPCET 2024 · 20 May · Shift 1 MCQ

Let F and F^1 be the foci of the ellipse $\frac{x^2}{4} + \frac{y^2}{b^2} = 1 (b < 2)$ and B is one end of the minor axis. If the area of the triangle FBF^1 is $\sqrt{3}$ sq.units, then the eccentricity of the ellipse is

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

Answer: (A) $\frac{\sqrt{3}}{2}$ or $\frac{1}{2}$ · The council's preliminary key

Q54 AP EAPCET 2024 · 20 May · Shift 2 MCQ

If the chord of the ellipse $\frac{x^2}{4} + \frac{y^2}{9} = 1$ having $(1, 1)$ as its middle point is $x + \alpha y = \beta$, then

(A) $\alpha + \beta = 1$
(B) $\alpha + 1 = \beta$
(C) $\alpha - 1 = \beta$
(D) $2\alpha - 1 = 3\beta$

Answer: (B) $\alpha + 1 = \beta$ · The council's preliminary key

Q55 AP EAPCET 2024 · 19 May · Shift 2 MCQ

If a tangent of slope 2 to the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ touches the circle $x^2 + y^2 = 4$, then maximum value of ab is

(A) 4
(B) 12
(C) 5
(D) 7

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

Q56 AP EAPCET 2024 · 19 May · Shift 2 MCQ

If the product of eccentricities of the ellipse $\frac{x^2}{16} + \frac{y^2}{b^2} = 1$ and the hyperbola $\frac{x^2}{9} - \frac{y^2}{16} = -1$ is 1, then $b^2 =$

(A) $\frac{12}{25}$
(B) 144
(C) 25
(D) $\frac{144}{25}$

Answer: (D) $\frac{144}{25}$ · The council's preliminary key

Q57 AP EAPCET 2024 · 18 May · Shift 1 MCQ

If $4x - 3y - 5 = 0$ is a normal to the ellipse $3x^2 + 8y^2 = k$, then the equation of the tangent drawn to this ellipse at the point $(-2, m)$ $(m > 0)$ is

(A) $3x + 4y - 14 = 0$
(B) $3x - 4y + 10 = 0$
(C) $3x - 4y + 1 = 0$
(D) $4x + 3y - 3 = 0$

Answer: (B) $3x - 4y + 10 = 0$ · The council's preliminary key

Q58 TS EAPCET 2024 · 11 May · Shift 1 MCQ

If the focus of an ellipse is $(-1, -1)$, equation of its directrix corresponding to this focus is $x + y + 1 = 0$ and its eccentricity is $\frac{1}{\sqrt{2}}$, then the length of its major axis is

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

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

Q59 TS EAPCET 2024 · 11 May · Shift 1 MCQ

If the normal drawn at the point $(2, -1)$ to the ellipse $x^2 + 4y^2 = 8$ meets the ellipse again at (a, b) then, $17a =$

(A) 23
(B) 14
(C) 37
(D) 9

Answer: (B) 14 · The council's preliminary key

Q60 TS EAPCET 2024 · 10 May · Shift 1 MCQ

The length of the latus rectum of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ $(a > b)$ is $\frac{8}{3}$. If the distance from the centre of the ellipse to its focus is $\sqrt{5}$, then $\sqrt{a^2 + 6ab + b^2} =$

(A) 7
(B) $12\sqrt{2}$
(C) $3\sqrt{5}$
(D) 11

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

Q61 TS EAPCET 2024 · 10 May · Shift 1 MCQ

S' is the focus of the ellipse $\frac{x^2}{25} + \frac{y^2}{b^2} = 1, (b < 5)$ lying on the negative X-axis and P(θ) is a point on this ellipse. If the distance between the foci of this ellipse is 8 and S'P $= 7$, then $\theta =$

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

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

Q62 TS EAPCET 2024 · 10 May · Shift 2 MCQ

$S = (-1, 1)$ is the focus, $2x - 3y + 1 = 0$ is the directrix corresponding to S and $\frac{1}{2}$ is the eccentricity of an ellipse. If (a, b) is the centre of the ellipse, then $3a + 2b =$

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(A) $\frac{30}{13}$
(B) $\frac{4}{13}$
(C) -1
(D) 0

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

Q63 TS EAPCET 2024 · 10 May · Shift 2 MCQ

a and b are the semi-major and semi-minor axes of an ellipse whose axes are along the coordinate axes. If its latus rectum is of length 4 units and the distance between its foci is $4\sqrt{2}$, then $a^2+b^2=$

(A) 24
(B) 18
(C) 16
(D) 12

Answer: (A) 24 · The council's preliminary key

Q64 TS EAPCET 2024 · 10 May · Shift 2 MCQ

If the extremities of the latus recta having positive ordinate of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1\ (a>b)$ lie on the parabola $x^2+2ay-4=0$, then the points (a,b) lie on the curve

(A) $xy=4$
(B) $x^2+y^2=4$
(C) $\frac{x^2}{4}+\frac{y^2}{1}=1$
(D) $\frac{x^2}{4}-\frac{y^2}{1}=1$

Answer: (B) $x^2+y^2=4$ · The council's preliminary key

Q65 TS EAPCET 2024 · 9 May · Shift 1 MCQ

If $6x-5y-20=0$ is a normal to the ellipse $x^2+3y^2=k$, then $k=$

(A) 9
(B) 17
(C) 25
(D) 37

Answer: (D) 37 · The council's preliminary key

Q66 TS EAPCET 2024 · 9 May · Shift 2 MCQ

The equations of the directrices of the ellipse $9x^2+4y^2-18x-16y-11=0$ are

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(A) $y = 2 \pm \frac{9}{\sqrt{5}}$

(B) $x = 1 \pm \frac{6}{\sqrt{5}}$

(C) $x = 2 \pm \frac{9}{\sqrt{5}}$

(D) $y = 1 \pm \frac{6}{\sqrt{5}}$

Answer: (A) $y = 2 \pm \frac{9}{\sqrt{5}}$ · The council's preliminary key

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Q67 TS EAPCET 2024 · 9 May · Shift 2 MCQ

L_1' is the end of a latus rectum of the ellipse $3x^2 + 4y^2 = 12$ which is lying in the third quadrant. If the normal drawn at L_1' to this ellipse intersects the ellipse again at the point $P(a, b)$ then $a =$

(A) $\frac{63}{38}$

(B) $\frac{11}{19}$

(C) $-\frac{11}{19}$

(D) $-\frac{63}{38}$

Answer: (B) $\frac{11}{19}$ · The council's preliminary key

Q68 AP EAPCET 2023 · 19 May · Shift 1 MCQ

Tangents are drawn from point $(1, 1)$ to the ellipse $S \equiv x^2 + 4y^2 - 2x + 8y + 1 = 0$. If m_1, m_2 $(m_1 > m_2)$ are the slopes of these tangents, then with respect to the given ellipse the point $P(m_1, m_2)$

(A) lies inside the ellipse $S = 0$

(B) lies outside the ellipse $S = 0$

(C) lies on the ellipse $S = 0$

(D) is the centre of the ellipse $S = 0$

Answer: (A) lies inside the ellipse $S = 0$ · The council's preliminary key

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Q69 AP EAPCET 2023 · 18 May · Shift 1 MCQ

If $A(2, 3)$ and $B(2, -3)$ are two points, then the equation of the locus of a point P such that $PA + PB = 8$ is

(A) $16x^2 + 7y^2 - 64x - 48 = 0$

(B) $16x^2 + 7y^2 - 64x + 48 = 0$

(C) $16x^2 - 7y^2 + 64x - 48 = 0$

(D) $16x^2 - 7y^2 + 64x + 48 = 0$

Answer: (A) $16x^2 + 7y^2 - 64x - 48 = 0$ · The council's preliminary key

Q70 AP EAPCET 2023 · 18 May · Shift 1 MCQ

Let A, A^1 be the end points of major axis, S, S^1 be the foci and B, B^1 be the end points of minor axis of an ellipse E. If $\angle BAB^1 = 60^\circ$, then $\angle SBS^1 =$

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

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

Q71 AP EAPCET 2023 · 18 May · Shift 2 MCQ

Let the eccentricity of the ellipse $2x^2 + ay^2 - 8x - 2ay + (8 - a) = 0$ be $\frac{1}{\sqrt{3}}$. If the major axis of this ellipse is parallel to Y-axis, then the equation of the tangent to this ellipse with slope 1 is

(A) $x - y - 1 \pm \sqrt{5} = 0$
(B) $x - y - 3 \pm \sqrt{5} = 0$
(C) $x - y - 3 \pm \sqrt{\frac{10}{3}} = 0$
(D) $x - y - 1 \pm \sqrt{\frac{10}{3}} = 0$

Answer: (D) $x - y - 1 \pm \sqrt{\frac{10}{3}} = 0$ · The council's preliminary key

Q72 AP EAPCET 2023 · 17 May · Shift 1 MCQ

Let E be an ellipse whose major axis is X-axis and minor axis is Y-axis. If the distance of a point $\left(\frac{5}{2}, 2\sqrt{3}\right)$ on E from its foci are $\frac{7}{2}$ and $\frac{13}{2}$, then the eccentricity of the ellipse E is

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

Answer: (A) $3/5$ · The council's preliminary key

Q73 AP EAPCET 2023 · 17 May · Shift 2 MCQ

Let the point L lying in the first quadrant be one end of a latus rectum of the ellipse $\frac{x^2}{4} + \frac{y^2}{3} = 1$. Let P and Q be the points where the normal drawn at L to this given ellipse meets the major axis and the minor axis. Then the distance between P and Q is

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

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

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Q74 AP EAPCET 2023 · 17 May · Shift 2 MCQ

If a normal drawn to the ellipse $\frac{x^2}{4}+\frac{y^2}{3}=1$ touches the hyperbola $\frac{x^2}{4}-\frac{y^2}{3}=1$, then the square of the slope of that normal is

(A) $\frac{1+\sqrt{17}}{4}$
(B) $\frac{-1+\sqrt{17}}{4}$
(C) $\frac{-1+\sqrt{37}}{4}$
(D) $\frac{1+\sqrt{37}}{4}$

Answer: (B) $\frac{-1+\sqrt{17}}{4}$ · The council's preliminary key

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Q75 AP EAPCET 2023 · 16 May · Shift 1 MCQ

Let $S(1,0)$ and $S^1(0,1)$ be the foci of an ellipse such that $SP+S^1P=2$ for any point P on the ellipse. If $A(x_1,y_1)$ and $A^1(x_2,y_2)$ are the end points of the major axis of this ellipse, then $x_1+x_2=$

(A) $-1/4$
(B) -1
(C) $1/4$
(D) 1

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

Q76 AP EAPCET 2023 · 16 May · Shift 2 MCQ

If a focal chord of the ellipse $\frac{x^2}{25}+\frac{y^2}{16}=1$ meets its minor axis at the point $(0,3)$, then the perpendicular distance from the centre of the ellipse to this focal chord is

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

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

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Q77 AP EAPCET 2023 · 15 May · Shift 1 MCQ

Let $x^2+y^2=20$ be the director circle of an ellipse E whose major axis is X-axis and minor axis is Y-axis. If the length of the latus rectum of E is 2, then the distance between its foci is

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

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

Q78 AP EAPCET 2023 · 15 May · Shift 2 MCQ

Let the length of the latus rectum of an ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ be equal to the length of its semi-major axis. If the radius of its director circle is $\sqrt{3}$ and e is its eccentricity, then the length of its latus rectum is

(A) $\frac{1}{a}$
(B) $\frac{1}{b}$
(C) $\frac{1}{e}$
(D) $\frac{1}{ab}$

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

Q79 TS EAMCET 2023 · 14 May · Shift 1 MCQ

If the line $x\cos\alpha+y\sin\alpha=2\sqrt{3}$ is a tangent to the ellipse $\frac{x^2}{16}+\frac{y^2}{8}=1$ and α is an acute angle then $\alpha=$

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

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

Q80 TS EAMCET 2023 · 14 May · Shift 1 MCQ

If $x+\sqrt{3}y=3$ is the tangent to the ellipse $2x^2+3y^2=k$ at a point P then the equation of the normal to this ellipse at P is

(A) $5x-2\sqrt{3}y=1$
(B) $x-\sqrt{3}y=2$
(C) $x-\sqrt{3}y+1=0$
(D) $3x-\sqrt{3}y=1$

Answer: (D) $3x-\sqrt{3}y=1$ · The council's preliminary key

Q81 TS EAMCET 2023 · 14 May · Shift 2 MCQ

If an ellipse with its axes as coordinate axes, 2a and 2b as the lengths of its major and minor axes respectively passes through the points $(2,2)$ and $(3,1)$, then $3a^2+5b^2=$

(A) 32
(B) 8
(C) 64
(D) 16

Answer: (C) 64 · The council's preliminary key

Q82 TS EAMCET 2023 · 14 May · Shift 2 MCQ

The values of c such that the line $y = 4x + c$ touches the ellipse $\frac{x^2}{4} + \frac{y^2}{1} = 1$ is

(A) ± 13
(B) ± 7
(C) $\pm\sqrt{65}$
(D) $\pm\sqrt{74}$

Answer: (C) $\pm\sqrt{65}$ · The council's preliminary key

Q83 TS EAMCET 2023 · 13 May · Shift 1 MCQ

Let A = (2, 0) and B = (0, - 2). Let P be any point such that the sum of the distances of P from A and B is 4. Then the equation of the locus of the point P is

(A) $3x^2 - 2xy + 3y^2 - 4x + 12y + 16 = 0$
(B) $3x^2 - 2xy + 3y^2 - 8x + 8y = 0$
(C) $3x^2 + 2xy + 3y^2 + 8x - 8y = 0$
(D) $3x^2 + 2xy + 3y^2 + 4x - 12y + 16 = 0$

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

Q84 TS EAMCET 2023 · 13 May · Shift 1 MCQ

Let S and S' be the foci of an ellipse E and B be one end of its minor axis. Let $\lfloor S'SB = \frac{\pi}{6}$ and $(2\sqrt{3}, 1)$ be a point on E. If X-axis is the major axis and Y-axis is the minor axis of the ellipse E, then the sum of the squares of the lengths of major axis and minor axis is

(A) 20
(B) 60
(C) 80
(D) 100

Answer: (C) 80 · The council's preliminary key

Q85 TS EAMCET 2023 · 13 May · Shift 1 MCQ

If $4x + 2y + n = 0$ is a normal to the ellipse $\frac{x^2}{36} + \frac{y^2}{16} = 1$, then $n =$

(A) $\pm\frac{9}{4}$
(B) $\pm\frac{9}{\sqrt{10}}$
(C) $\pm\frac{5}{4}$
(D) ± 8

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

Q86 TS EAMCET 2023 · 13 May · Shift 2 MCQ

In an ellipse, the distance from one of the foci to its corresponding end of the major axis is $4-\sqrt{7}$ and the distance from same focus to one end of the minor axis is 4. Then the cosine of the angle subtended by the line segment joining its foci at one end of its minor axis is

(A) $\frac{1}{8}$
(B) $\frac{3}{4}$
(C) $\frac{\sqrt{7}}{3}$
(D) $\frac{1}{3\sqrt{7}}$

Answer: (A) $\frac{1}{8}$ · The council's preliminary key

Q87 TS EAMCET 2023 · 13 May · Shift 2 MCQ

If the equations $x=1+2\cos\theta,\ y=2+\sin\theta,\ 0\le\theta<2\pi$ represent an ellipse, then the point of intersection of the normal drawn at $P\left(\frac{\pi}{4}\right)$ to this ellipse and its major axis is

(A) $\left(\frac{4-\sqrt{3}}{4},0\right)$
(B) $\left(\frac{\sqrt{3}+1}{4},0\right)$
(C) $\left(\frac{8+\sqrt{3}}{2},0\right)$
(D) $\left(\frac{5}{2},0\right)$

Answer: (A) $\left(\frac{4-\sqrt{3}}{4},0\right)$ · The council's preliminary key

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Q88 TS EAMCET 2023 · 12 May · Shift 1 MCQ

A particle is travelling in clockwise direction on the ellipse $\frac{x^2}{100}+\frac{y^2}{25}=1$. If the particle leaves the ellipse at the point $(-8,3)$ on it and travels along the tangent to the ellipse at that point then the point where the particle crosses the Y-axis is

(A) $\left(0,\frac{7}{3}\right)$
(B) $\left(0,\frac{25}{3}\right)$
(C) $(0,9)$
(D) $\left(0,\frac{-25}{3}\right)$

Answer: (B) $\left(0,\frac{25}{3}\right)$ · The council's preliminary key

Q89 TS EAMCET 2023 · 12 May · Shift 1 MCQ

If an ellipse with foci at $(3, 3)$ and $(-4, 4)$ is passing through the origin, then the eccentricity of that ellipse is

(A) $\frac{5}{7}$
(B) $\frac{3}{7}$
(C) $\frac{1}{7}$
(D) $\frac{4}{7}$

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

Q90 TS EAMCET 2023 · 12 May · Shift 2 MCQ

The locus of the mid points of the intercepted portion of the tangents by the coordinate axes, which are drawn to the ellipse $x^2 + 2y^2 = 2$ is

(A) $\frac{1}{2x^2} + \frac{1}{4y^2} = 1$
(B) $\frac{1}{4x^2} + \frac{1}{2y^2} = 1$
(C) $\frac{x^2}{2} + \frac{y^2}{4} = 1$
(D) $\frac{x^2}{4} + \frac{y^2}{2} = 1$

Answer: (A) $\frac{1}{2x^2} + \frac{1}{4y^2} = 1$ · The council's preliminary key

Q91 TS EAMCET 2023 · 12 May · Shift 2 MCQ

The product of the lengths of the perpendiculars drawn from the two foci of the ellipse $\frac{x^2}{9} + \frac{y^2}{25} = 1$ to the tangent at any point on the ellipse is

(A) 6
(B) 7
(C) 8
(D) 9

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

Q92 TS EAMCET 2023 · 12 May · Shift 2 MCQ

Tangents are drawn to the ellipse $\frac{x^2}{9} + \frac{y^2}{5} = 1$ at all the ends of its latus recta. The area of the quadrilateral so formed (in sq. units) is

(A) 27
(B) 36
(C) 42
(D) 45

Answer: (A) 27 · The council's preliminary key

Q93 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

The length of the latus rectum of an ellipse is 6 units and the distance between a focus and its nearest vertex on the major axis is $\frac{5}{3}$ units. If e is the eccentricity of this ellipse, then e satisfies the equation

(A) $25x^2 - 40x + 16 = 0$
(B) $25x^2 + 40x - 16 = 0$
(C) $25x^2 - 40x - 16 = 0$
(D) $25x^2 + 40x - 32 = 0$

Answer: (A) $25x^2 - 40x + 16 = 0$ · The council's preliminary key

Q94 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

If the line $2x - 3y + 4 = 0$ cuts the ellipse $x = 3\cos\theta,\ y = 5\sin\theta$ in A and B and (α, β) is the midpoint of $\overline{AB}$, then $3\beta - 2\alpha =$

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

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

Q95 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

If m is the length of the latus rectum and n is the length of the major axis of the ellipse $25x^2 + 16y^2 - 150x - 64y - 111 = 0$, then the ordered pair $(m, n) =$

(A) $\left(\frac{16}{5}, 10\right)$
(B) $\left(\frac{32}{5}, 10\right)$
(C) $\left(\frac{25}{2}, 8\right)$
(D) $\left(\frac{25}{4}, 8\right)$

Answer: (B) $\left(\frac{32}{5}, 10\right)$ · The council's preliminary key

Q96 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

If $P(\theta)$ and $Q\left(\frac{\pi}{2} + \theta\right)$ are two points on the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ and the locus of midpoint of PQ is $\frac{x^2}{\alpha^2} + \frac{y^2}{\beta^2} = 1$ then $\frac{a+b}{\alpha+\beta} =$

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

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

Q97 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

If $ax^2 + by^2 = 15$ is the equation of the ellipse for which distance between its foci is 2 and distance between its directrices is 5, then $a + b =$

(A) 10
(B) 8
(C) 16
(D) 12

Answer: (C) 16 · The council's preliminary key

Q98 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

Assertion(A) : The image of $\frac{x^2}{25} + \frac{y^2}{16} = 1$ in the line $x + y = 10$ is $\frac{(x-10)^2}{16} + \frac{(y-10)^2}{25} = 1$.

Reason(R) : The image of a curve 'C' in a line L is the locus of the image of every point of C with respect to the line L.

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: (A) (A) is true, (R) is true and (R) is the correct explanation for (A) · The council's preliminary key

Q99 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

Statement I : The equation of the directrix of the ellipse $4x^2 + y^2 - 8x - 4y + 4 = 0$ is $3y = 6 - 4\sqrt{3}$
Statement II: The equation of the latus rectum of the ellipse $x^2 + 4y^2 - 4x - 8y + 4 = 0$ is $y = 2 + \sqrt{3}$
Which of the above statement(s) is(are) true?

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(A) Statement I is true, but Statement II is false
(B) Statement II is true, but Statement I is false
(C) Both Statement I and Statement II are true
(D) Both Statement I and Statement II are false

Answer: (A) Statement I is true, but Statement II is false · The council's preliminary key

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Q100 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

If S is the focus of the ellipse $\frac{x^2}{9}+\frac{y^2}{4}=1$ lying on the positive X-axis and $P(\theta)$ is a point on the ellipse such that $SP=1$, then $\cos\theta=$

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

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

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Q101 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

If the eccentricity and the length of the latus rectum of an ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ are $\frac{\sqrt{3}}{2}$ and 1 respectively, then the sum of the lengths of major axis and minor axis of the ellipse is

(A) 6
(B) 3
(C) 10
(D) 8

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

Q102 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

The parametric equations of the ellipse whose foci are $(-3,0),(9,0)$ and eccentricity is $\frac{1}{3}$, are

(A) $x=3+12\sqrt{2}\cos\theta,\ y=18\sin\theta$
(B) $x=3+18\cos\theta,\ y=12\sqrt{2}\sin\theta$
(C) $x=18\cos\theta,\ y=3+12\sqrt{2}\sin\theta$
(D) $x=3+4\sqrt{2}\cos\theta,\ y=18\sin\theta$

Answer: (B) $x=3+18\cos\theta,\ y=12\sqrt{2}\sin\theta$ · The council's preliminary key

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Q103 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

Let $S\equiv\frac{x^2}{a^2}+\frac{y^2}{b^2}-1=0,\ S'\equiv\frac{x^2}{\alpha^2}+\frac{y^2}{\beta^2}-1=0$ be two intersecting ellipses. If $p(a\cos\theta,b\sin\theta)$ and $Q\left(a\cos\left(\frac{\pi}{2}+\theta\right),b\sin\left(\frac{\pi}{2}+\theta\right)\right)$ are their points of intersection then $\frac{1}{2}\left(a^2\beta^2+b^2\alpha^2\right)=$

(A) a^2b^2
(B) $\alpha^2+\beta^2$
(C) a^2+b^2
(D) $\alpha^2\beta^2$

Answer: (D) $\alpha^2\beta^2$ · The council's preliminary key

Q104 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

$P(\theta_1)$ and $Q(\theta_2)$ are two points on the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ with eccentricity e. If PSQ is a focal chord and $\tan\left(\frac{\theta_1}{2}\right)\tan\left(\frac{\theta_2}{2}\right)=-(2\sqrt{2}+3)$, then e and S are

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

Answer: (D) $\frac{1}{\sqrt{2}}, \left(\frac{-a}{\sqrt{2}}, 0\right)$ · The council's preliminary key

Q105 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

Let $E_1=\frac{x^2}{9}+\frac{y^2}{4}=1$ and $E_2=\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ be two ellipses and R be a rectangle with sides parallel to the coordinate axes. Let E_1 be inscribed ellipse in R and E_2 be circumscribed ellipse on R. If E_2 passes through $(0,4)$ then

(A) $a=4,\ b=2\sqrt{3}$
(B) $a=12,\ b=16$
(C) $a=16,\ b=16$
(D) $a=2\sqrt{3},\ b=4$

Answer: (D) $a=2\sqrt{3},\ b=4$ · The council's preliminary key

Q106 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

For α belonging to an interval of length β, suppose $(\alpha,-\alpha)$ is an interior point of the ellipse $4x^2+5y^2=1$. Then $(6\beta-4)^{201}+201=$

(A) 202
(B) 0
(C) 402
(D) 201

Answer: (D) 201 · The council's preliminary key

Q107 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

The least intercept made by a tangent to the ellipse $\frac{x^2}{64}+\frac{y^2}{49}=1$ with coordinate axes is

(A) 40
(B) 10
(C) 15
(D) 100

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

Q108 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

An ellipse has 6 and 2 as lengths of major and minor axes respectively. If the centre is at $(5,6)$ and the major axis is along $x-y+1=0$, then the ellipse is

(A) $(x+y-11)^2+9(x-y+1)^2=18$
(B) $(x+y+11)^2+9(x+y-1)^2=18$
(C) $(x+y)^2+9(x-y)^2=18$
(D) $(x-y-11)^2+9(x+y+1)^2=18$

Answer: (A) $(x+y-11)^2+9(x-y+1)^2=18$ · The council's preliminary key

Q109 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

The foci of the ellipse $9x^2+25y^2=225$ are

(A) $(\pm 4,0)$
(B) $(\pm\frac{4}{5},0)$
(C) $(\pm\frac{12}{5},0)$
(D) $(\pm\frac{2}{5},0)$

Answer: (A) $(\pm 4,0)$ · The council's preliminary key

Q110 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

If the latus rectum of an ellipse is equal to half of minor axis, then its eccentricity is

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

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

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Q111 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

If the angle between the straight lines joining the foci and the ends of the minor axis of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ is 90^0, then its eccentricity is

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

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

Q112 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

The distance between the directrices of the ellipse $\frac{x^2}{36}+\frac{y^2}{20}=1$ is

(A) 9
(B) $6\sqrt{5}$
(C) 18
(D) $3\sqrt{5}$

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

Q113 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

The eccentric angle of a point on the ellipse $x^2+3y^2=6$ lying at a distance of 2 units from its centre is

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

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

Q114 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

The focal distances of the point $\left(\frac{4}{\sqrt{5}},\frac{3}{\sqrt{5}}\right)$ on the ellipse $\frac{x^2}{4}+\frac{y^2}{9}=1$ are

(A) $\frac{10}{3},\frac{2}{3}$
(B) $3,1$
(C) $\frac{13}{3},\frac{5}{3}$
(D) $4,2$

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

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Q115 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

Find the equation of an ellipse whose vertices are $(\pm 5, 0)$ and foci are $(\pm 4, 0)$.

(A) $9x^2 + 25y^2 = 225$
(B) $25x^2 + 9y^2 = 225$
(C) $3x^2 + 4y^2 = 192$
(D) $4x^2 + 3y^2 = 12$

Answer: (A) $9x^2 + 25y^2 = 225$ · The council's preliminary key

Q116 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

The center of ellipse $x^2 + 2y^2 - 4x + 12y + 14 = 0$ is _____

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

Answer: (C) $(2, -3)$ · The council's preliminary key

Q117 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

The equation of an ellipse in its standard form, given the distance between its foci is 2 units and the length of its latus rectum is $\frac{15}{2}$ units, is _____

(A) $15x^2 + 4y^2 = 15$
(B) $4x^2 + 15y^2 = 60$
(C) $15x^2 + 16y^2 = 240$
(D) $16x^2 + 15y^2 = 40$

Answer: (C) $15x^2 + 16y^2 = 240$ · The council's preliminary key

Q118 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

Find the equation of the ellipse which passes through the points $(-3, 1)$ and $(2, -2)$, whose center lies at $(0, 0)$ and major axis lies along the x-axis.

(A) $3x^2 + 5y^2 = 32$
(B) $5x^2 + 3y^2 = 32$
(C) $5x^2 - 3y^2 = 32$
(D) $3x^2 + 5y^2 = 132$

Answer: (A) $3x^2 + 5y^2 = 32$ · The council's preliminary key

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Q119 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

If the lines $2x - y + 3 = 0$ and $4x + ky + 3 = 0$ are conjugate with respect to the ellipse $5x^2 + 6y^2 - 15 = 0$, then 'k' equals _____

(A) 1
(B) 2
(C) 3
(D) 6

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

Q120 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

The point $(1, 3)$ with respect to the ellipse $4x^2 + 9y^2 - 16x - 54y + 61 = 0$ lies _____

(A) outside the ellipse
(B) on the ellipse
(C) on the minor axis
(D) on the major axis

Answer: (D) on the major axis · The council's preliminary key

Q121 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

If $\tan\theta_1, \tan\theta_2 = \dfrac{-a^2}{b^2}$, then the chord joining 2 points θ_1 and θ_2 one (sic) the ellipse $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1$ will subtend a right angle at _____

(A) Focus
(B) Center
(C) end of major axis
(D) end of minor axis

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

Q122 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

A point moves so that the sum of its distances from $(ae, 0)$ and $(-ae, 0)$ is $2a$, then the equaton (sic) to its locus where $b^2 = a^2(1 - e^2)$ is _____

(A) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$
(B) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$
(C) $\frac{x^2}{b^2} + \frac{y^2}{a^2} = 1$
(D) $\frac{y^2}{b^2} - \frac{x^2}{a^2} = 1$

Answer: (B) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ · The council's preliminary key

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Q123 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

If a point $P(x, y)$ moves along the ellipse $\frac{x^2}{25} + \frac{y^2}{16} = 1$ and if c is the center of the ellipse, then the sum of maximum and minimum values of CP is _____

(A) 25
(B) 9
(C) 4
(D) 5

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

Q124 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

In an ellipse, if the distance between the foci is 6 units and the length of its minor axis is 8 units, then its eccentricity is _____

(A) $\frac{1}{2}$
(B) $\frac{7}{5}$
(C) $\frac{1}{\sqrt{5}}$
(D) $\frac{3}{5}$

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

Q125 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

The ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ $(b > a)$ and the parabola $y^2 = 8ax$ cut at right angles. If e is the eccentricity of the ellipse, then $e^4 =$

(A) $\frac{1}{4}$
(B) $\frac{1}{16}$
(C) $\frac{1}{8}$
(D) $\frac{1}{64}$

Answer: (A) $\frac{1}{4}$ · The council's preliminary key

Q126 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

The coordinates of any point, in the parametric form, on the ellipse whose foci are $(-2, 0), (8, 0)$ and eccentricity $\frac{1}{\sqrt{2}}$, is

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(A) $(5\sqrt{2}\cos\theta, 5\sin\theta)$
(B) $(3+5\sqrt{2}\cos\theta, 5\sin\theta)$
(C) $(3+5\cos\theta, 5\sqrt{2}\sin\theta)$
(D) $(5\cos\theta, 3+5\sqrt{2}\sin\theta)$

Answer: (B) $(3+5\sqrt{2}\cos\theta, 5\sin\theta)$ · The council's preliminary key

Q127 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

The sum of the focal distances of the point $\left(\frac{4}{\sqrt{5}}, \frac{3}{\sqrt{5}}\right)$ on the ellipse $9x^2+4y^2=36$ is

(A) 12
(B) 4
(C) 9
(D) 6

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

Q128 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

If F_1 and F_2 are the foci of the ellipse $16x^2+25y^2=400$ and P is any point on it, then the value of the product $PF_1 \cdot PF_2$ lie in the interval

(A) $[16, 25]$
(B) $[0, 16]$
(C) $[25, 400]$
(D) $[0, 400]$

Answer: (A) $[16, 25]$ · The council's preliminary key

Q129 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

An ellipse has its major axis along y-axis and minor axis along x- axis. If its length of latus rectum is $\frac{2}{3}$ times of its minor axis, then the eccentricity of the ellipse is

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

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

Q130 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

If the length and breadth of a rectangle of maximum area that can be inscribed in an ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ are $8\sqrt{2}$ and $4\sqrt{2}$ respectively, then the eccentricity of that ellipse is

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

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

(C) $\frac{1}{4}$

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

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

Q131 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

If a circle $(x-1)^2+y^2=r^2$ touches the ellipse $x^2+4y^2=16$ internally, then $r=$

(A) $\sqrt{\frac{11}{3}}$

(B) $\frac{11}{3}$

(C) $\sqrt{\frac{15}{2}}$

(D) 2

Answer: (A) $\sqrt{\frac{11}{3}}$ · The council's preliminary key

Q132 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

A focus of an ellipse having eccentricity $\frac{1}{2}$ is at $(0,0)$ and a directrix is the line $x=4$. Then the equation of one such ellipse is

(A) $\frac{9x^2}{64}+\frac{3y^2}{16}=1$

(B) $\frac{(2x+1)^2}{32}+\frac{y^2}{16}=1$

(C) $\frac{(3x+4)^2}{64}+\frac{y^2}{32}=1$

(D) $(3x+4)^2+12y^2=64$

Answer: (D) $(3x+4)^2+12y^2=64$ · The council's preliminary key

Q133 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

The area (in square units) of the quadrilateral formed by joining the focii of the two ellipses $\frac{x^2}{9}+\frac{y^2}{5}=1$ and $\frac{x^2}{5}+\frac{y^2}{9}=1$ is

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

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

Q134 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

P is a point on the conic $a^2x^2 + b^2y^2 = a^2\left(a^2 + b^2 - y^2\right)$ and S is a focus of that conic. M is the foot of the perpendicular from P on to a directrix of that conic nearer to S. If $PM = KSP$, then $K =$

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

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

Q135 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

For the ellipse $4(x - 2y + 1)^2 + 9(2x + y + 2)^2 = 25$, which of the following is true?

(A) equation of major axis is $x - 2y + 1 = 0$
(B) eccentricity $\frac{\sqrt{5}}{3}$
(C) length of major axis is $\frac{1}{2}\sqrt{5}$
(D) centre is $(-1, 0)$

Options (2) or (4) were accepted. More than one answer was accepted. · Checked by our team

Q136 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

Let P, Q be the foci of an ellipse and let R be one end of its minor axis. If ΔPQR is an equilateral triangle, then the eccentricity of the ellipse is equal to _____

(A) $\frac{1}{2}$
(B) $\frac{1}{4}$
(C) $\frac{1}{8}$
(D) $\frac{1}{6}$

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

Q137 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

The eccentricity of the ellipse of minor-axis $2b$, if the line segment joining the foci subtend an angle 2α at the upper vertex is equal to _____

(A) $\cos\alpha$
(B) $\sin\alpha$
(C) $\tan\alpha$
(D) $\sec\alpha$

Answer: (B) $\sin\alpha$ · The council's preliminary key

Q138 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

If the line $y = 2x + c$ touches the curve $x^2 + 4y^2 = 4$, then $c^2 =$

(A) $\sqrt{65}$
(B) 17
(C) 63
(D) 8

Answer: (B) 17 · The council's preliminary key

Q139 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

The number of values of 'c' for which the line $y = 4x + c$ touches the ellipse $\frac{x^2}{4} + \frac{y^2}{1} = 1$ is

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

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

Q140 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

The equation of the tangent to the ellipse $x^2 + 16y^2 = 16$ which makes an angle 60° with the x-axis is _____

(A) $\sqrt{3}x - y + 7 = 0$
(B) $\sqrt{3}x - y - 7 = 0$
(C) $\sqrt{3}x + y - 7 = 0$
(D) $\sqrt{3}x - y = 0$

Options (1) or (2) were accepted. More than one answer was accepted. · The council's preliminary key

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Q141 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

A point on the curve $x = 3\cos\theta$, $y = 2\sin\theta$ at which the tangent is perpendicular to x-axis is

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

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

Q142 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

The equation $\sqrt{(x-2)^2 + y^2} + \sqrt{(x+2)^2 + y^2} = 4$, where $-2 < x < 2$, represents a _____

(A) Circle
(B) Pair of lines
(C) Parabola
(D) Line segment

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

Q143 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

The eccentricity of the ellipse $4x^2 + 25y^2 = 100$ is

(A) $\frac{\sqrt{21}}{5}$
(B) $\frac{\sqrt{21}}{2}$
(C) $\frac{\sqrt{21}}{4}$
(D) $\frac{\sqrt{21}}{25}$

Answer: (A) $\frac{\sqrt{21}}{5}$ · The council's preliminary key

Q144 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

Find the eccentricity of an ellipse, if the length of its latus rectum is 4 units and distance between its vertex and the nearest focus is 3/2 units.

(A) $\frac{1}{3}$
(B) $\frac{2}{3}$
(C) $\frac{1}{9}$
(D) $\frac{3}{4}$

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

Q145 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

For the ellipse $\frac{x^2}{18} + \frac{y^2}{32} = 1$, if a tangent with slope $\frac{-4}{3}$ intersects the x-axis and y-axis at P and Q respectively, find P and Q

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(A) $P(6,0),\ Q(0,8)$
(B) $P(0,6),\ Q(8,0)$
(C) $P(3\sqrt{2},0),\ Q(0,4\sqrt{2})$
(D) $P(0,3\sqrt{2}),\ Q(4\sqrt{2},0)$

Answer: (A) $P(6,0),\ Q(0,8)$ · The council's preliminary key

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Q146 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

The line $x = m^2$ meets an ellipse $9x^2 + y^2 = 9$ in the real and distinct points if and only if

(A) $|m| > 1$
(B) $|m| < 1$
(C) $|m| > 2$
(D) $|m| < 2$

Answer: (B) $|m| < 1$ · The council's preliminary key

Q147 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

Find the condition for the line $ax + by + c = 0$ to be a normal to an ellipse $\frac{x^2}{4} + \frac{y^2}{36} = 1$

(A) $\frac{1}{a^2} + \frac{1}{b^2} = \frac{144}{c^2}$
(B) $\frac{1}{a^2} + \frac{1}{b^2} = \frac{128}{c^2}$
(C) $\frac{1}{a^2} + \frac{9}{b^2} = \frac{256}{c^2}$
(D) $\frac{1}{a^2} + \frac{9}{b^2} = \frac{32}{c^2}$

Answer: (C) $\frac{1}{a^2} + \frac{9}{b^2} = \frac{256}{c^2}$ · The council's preliminary key

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Q148 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

In an ellipse, two vertices are $(5,0)$ and $(0,-4)$. Then the equation of the ellipse is

(A) $\frac{x^2}{16} + \frac{y^2}{25} = 1$
(B) $\frac{x^2}{25} + \frac{y^2}{16} = 1$
(C) $\frac{x^2}{5} + \frac{y^2}{4} = 1$
(D) $x^2 + y^2 = 41$

Answer: (B) $\frac{x^2}{25} + \frac{y^2}{16} = 1$ · The council's preliminary key

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Q149 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

The equation of the ellipse with its focus at $(6,2)$ centre at $(1,2)$ and which passes through the point $(4,6)$ is

(A) $\frac{(x-1)^2}{25}+\frac{(y-2)^2}{16}=1$
(B) $\frac{(x-1)^2}{25}+\frac{(y-2)^2}{20}=1$
(C) $\frac{(x-1)^2}{45}+\frac{(y-1)^2}{16}=1$
(D) $\frac{(x-1)^2}{45}+\frac{(y-2)^2}{20}=1$

Answer: (D) $\frac{(x-1)^2}{45}+\frac{(y-2)^2}{20}=1$ · The council's preliminary key

Q150 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

The eccentricity of an ellipse, with its centre as origin, is 1/2. If one of the directrices is $x=4$, then the equation of the ellipse is given by _____

(A) $4x^2+y^2=12$
(B) $x^2+3y^2=12$
(C) $4x^2+3y^2=12$
(D) $3x^2+4y^2=12$

Answer: (D) $3x^2+4y^2=12$ · The council's preliminary key

Q151 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

Foci of the ellipse $2x^2+3y^2-4x-12y+13=0$ are _____

(A) $\left(1+\frac{1}{\sqrt{6}},2\right)$ & $\left(1-\frac{1}{\sqrt{6}},2\right)$
(B) $\left(\frac{1}{\sqrt{6}}+1,2\right)$ & $\left(\frac{1}{\sqrt{6}}-1,2\right)$
(C) $\left(2,1+\frac{1}{\sqrt{6}}\right)$ & $\left(2,1-\frac{1}{\sqrt{6}}\right)$
(D) $\left(2,\frac{1}{\sqrt{6}}+1\right)$ & $\left(2,\frac{1}{\sqrt{6}}-1\right)$

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

Q152 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

The value of 'k' so that the line $y=2x+k$ may touch the ellipse $3x^2+5y^2=15$ is

(A) $\pm\sqrt{23}$
(B) $\pm\sqrt{13}$
(C) $\pm\sqrt{33}$
(D) $\pm\sqrt{32}$

Answer: (A) $\pm\sqrt{23}$ · The council's preliminary key

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Q153 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

Equation of a common tangent to the circle $x^2 + y^2 = 4$ and to the ellipse $2x^2 + 25y^2 = 50$ is

(A) $\sqrt{2}x + \sqrt{21}y + \sqrt{23} = 0$
(B) $\sqrt{2}x - \sqrt{21}y + 2\sqrt{23} = 0$
(C) $\sqrt{19}x - \sqrt{2}y + 2\sqrt{21} = 0$
(D) $\sqrt{19}x - y + 2\sqrt{20} = 0$

Answer: (B) $\sqrt{2}x - \sqrt{21}y + 2\sqrt{23} = 0$ · Official TGCHE final key

Q154 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

The θ is the angle made by the common tangent to the circle $x^2 + y^2 = 16$ and the ellipse $\frac{x^2}{25} + \frac{y^2}{9} = 1$ with positive X-axis, then $\cos 2\theta =$

(A) $\frac{-2}{3}$
(B) $\frac{5}{6}$
(C) $\frac{-1}{8}$
(D) $\frac{1}{8}$

Answer: (D) $\frac{1}{8}$ · Official TGCHE final key

Q155 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

If tangents are drawn to the ellipse $x^2 + 2y^2 = 2$, then the locus of the mid points of the intercepts made by those tangents between the coordinate axes is

(A) $\frac{x^2}{2} + \frac{y^2}{4} = 1$
(B) $\frac{x^2}{4} + \frac{y^2}{2} = 1$
(C) $\frac{1}{2x^2} + \frac{1}{4y^2} = 1$
(D) $\frac{1}{4x^2} + \frac{1}{2y^2} = 1$

Answer: (C) $\frac{1}{2x^2} + \frac{1}{4y^2} = 1$ · Official TGCHE final key

Q156 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

The area (in sq. units) of the quadrilateral formed by the tangents drawn at the end points of the latus recta to the ellipse $S \equiv \frac{x^2}{16} + \frac{y^2}{12} = 1$ is

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(A) 96
(B) 16
(C) 128
(D) 64

Answer: (D) 64 · Official TGCHE final key

Q157 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

If $A = (1, 2)$, $B = (2, 1)$ and P is any point satisfying the condition $PA + PB = 3$, then the equation of the locus of P is

(A) $16x^2 + 7y^2 - 64x - 48 = 0$
(B) $x^2 + 10xy + 25y^2 - 34x - 170y = 0$
(C) $32x^2 + 8xy + 32y^2 - 108x - 108y + 99 = 0$
(D) $4x^2 + 12xy + 9y^2 - 20x - 30y = 0$

Answer: (C) $32x^2 + 8xy + 32y^2 - 108x - 108y + 99 = 0$ · Official TGCHE final key

Q158 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

If the sum of the distances from the foci to the centre $O(0, 0)$ of an ellipse is $8\sqrt{6}$ units and the area of the smallest rectangle in which that ellipse is inscribed is 80 sq. units, then the equation of such an ellipse is

(A) $\frac{x^2}{100} + \frac{y^2}{64} = 1$
(B) $\frac{x^2}{100} + \frac{y^2}{16} = 1$
(C) $\frac{x^2}{10} + \frac{y^2}{4} = 1$
(D) $\frac{x^2}{100} + \frac{y^2}{4} = 1$

Answer: (D) $\frac{x^2}{100} + \frac{y^2}{4} = 1$ · Official TGCHE final key

Q159 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

The equation of the ellipse with directrix $3x + 4y - 5 = 0$, focus $(1, 2)$ and eccentricity $\frac{1}{2}$, is

(A) $x^2 + 84y^2 - 24xy - 360y + 170x + 475 = 0$
(B) $91x^2 + 84y^2 - 24xy - 170x - 360y + 475 = 0$
(C) $91x^2 + 84y^2 - 24xy - 170x + 360y + 475 = 0$
(D) $91x^2 + 84y^2 - 24xy - 170x - 360y - 475 = 0$

Answer: (B) $91x^2 + 84y^2 - 24xy - 170x - 360y + 475 = 0$ · Official TGCHE final key

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Q160 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

If $\frac{\pi}{3}$, θ are the eccentric angles of the ends of a focal chord of the ellipse $\frac{x^2}{16}+\frac{y^2}{12}=1$, then $\tan\theta=$

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

Answer: (A) $-\sqrt{3}$ · Official TGCHE final key

Q161 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

If $x+2y+k=0$, $k>0$ is a tangent to the ellipse $2x^2+y^2=2$, then the equation of the normal to the given ellipse at $\left(\frac{1}{\sqrt{2}},\frac{k}{3}\right)$, is

(A) $\sqrt{2}x-2y+1=0$
(B) $3\sqrt{2}x-y-2=0$
(C) $2\sqrt{2}x-5y+3=0$
(D) $\sqrt{2}x+3y-4=0$

Answer: (A) $\sqrt{2}x-2y+1=0$ · Official TGCHE final key

Q162 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

The eccentricity of an ellipse passing through $(3\sqrt{2},\sqrt{10})$ with foci at $(-4,0)$ and $(4,0)$ is

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

Answer: (B) $\frac{2}{3}$ · Official TGCHE final key

Q163 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

If the product of the lengths of the perpendiculars drawn from the foci to the tangent $y=\frac{-3}{4}x+3\sqrt{2}$ of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ is 9, then the eccentricity of that ellipse is

(A) $\frac{\sqrt{2}}{3}$
(B) $\frac{\sqrt{5}}{6}$
(C) $\frac{1}{9}$
(D) $\frac{\sqrt{7}}{4}$

Answer: (D) $\frac{\sqrt{7}}{4}$ · Official TGCHE final key

Q164 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

The ellipse having its foci $(0, \pm 1)$ and major axis of length $\sqrt{5}$ is

(A) $20x^2 + 4y^2 = 5$
(B) $36x^2 + 20y^2 = 45$
(C) $4x^2 + 20y^2 = 5$
(D) $20x^2 + 36y^2 = 45$

Answer: (A) $20x^2 + 4y^2 = 5$ · Official TGCHE final key

Q165 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

An ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ with eccentricity $\frac{2\sqrt{2}}{3}$ is inscribed in a circle $x^2 + y^2 = 18$ such that the length of its major axis is equal to the diameter of this circle. The locus of the poles of all the tangents of the circle with respect to the ellipse is

(A) $x^2 + y^2 = \frac{8}{9}$
(B) $18x + \frac{2y}{9} = 1$
(C) $\frac{x^2}{18} + \frac{y^2}{9} = 1$
(D) $\frac{x^2}{18} + \frac{9y^2}{2} = 1$

Answer: (D) $\frac{x^2}{18} + \frac{9y^2}{2} = 1$ · Official TGCHE final key

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Q166 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

The equation of the ellipse in the standard form whose length of the latus rectum is 4 and whose distance between the foci is $4\sqrt{2}$, is

(A) $\frac{x^2}{2} + \frac{y^2}{3} = 1$
(B) $2x^2 + y^2 = 8$
(C) $x^2 + 2y^2 = 16$
(D) $x^2 + 5y^2 = 25$

Answer: (C) $x^2 + 2y^2 = 16$ · Official TGCHE final key

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Q167 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

For $k > 0$, the shortest distance from a point P $(1, k)$ on the ellipse $9x^2 + 4y^2 - 18x + 16y - 11 = 0$ to one of its directrix is

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

Answer: (C) $\frac{9}{\sqrt{5}} - 3$ · Official TGCHE final key

Q168 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

A tangent drawn at a point on the ellipse $\frac{x^2}{25} + \frac{y^2}{16} = 1$ cuts the X- axis at a point A. If A' be the image of A with respect to the line $y = x$, then the circle with AA' as its diameter passes through the fixed point

(A) $(0, -4)$
(B) $(0, 4)$
(C) $(0, 0)$
(D) $(1, 1)$

Answer: (C) $(0, 0)$ · Official TGCHE final key

Q169 TS EAMCET 2019 · 6 May · Shift 1 MCQ

The minimum length of the intercept between the coordinate axes made by a tangent of the ellipse $\frac{x^2}{64} + \frac{y^2}{4} = 1$ is

(A) 10
(B) $\frac{17}{2}$
(C) 8
(D) $\frac{15}{2}$

Answer: (A) 10 · Official TGCHE final key

Q170 TS EAMCET 2019 · 6 May · Shift 1 MCQ

An ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ $(a > b)$ is inscribed in a rectangle of dimensions $2a$ and $2b$ respectively. If the angle between the diagonals of the rectangle is $\mathrm{Tan}^{-1}(4\sqrt{3})$, then the eccentricity of that ellipse is

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

Answer: (B) $\frac{1}{2}$ · Official TGCHE final key

Q171 TS EAMCET 2019 · 4 May · Shift 1 MCQ

Assertion (A): If the tangent and normal to the ellipse $9x^2 + 16y^2 = 144$ at the point $P\left(\frac{\pi}{3}\right)$ on it meet the major axis in Q and R respectively, then $QR = \frac{57}{8}$
Reason (R): If the tangent and normal to the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ at the point $P(\theta)$ on it meet the major axis in Q and R respectively, then $QR = \left|\frac{a^2\sin^2\theta - b^2\cos^2\theta}{a\cos\theta}\right|$
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 but (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: (C) (A) is true but (R) is false. · Official TGCHE final key

Q172 TS EAMCET 2019 · 4 May · Shift 1 MCQ

If $x + y + n = 0$, $n > 0$ is a normal to the ellipse $x^2 + 3y^2 = 3$ and $x + my + 3 = 0$, $m < 0$ is a tangent to the ellipse $x^2 + 5y^2 = 5$, then the point of intersection of these two lines satisfy the equation

(A) $\frac{x^2}{64} - \frac{y^2}{25} = 1$
(B) $x - 5y + 5 = 0$
(C) $x^2 = \frac{2}{3}y + 1$
(D) $y^2 = -25x + 3$

Answer: (B) $x - 5y + 5 = 0$ · Official TGCHE final key

Q173 TS EAMCET 2019 · 4 May · Shift 2 MCQ

The normal drawn at the point $\left(\sqrt{9}\cos\frac{\pi}{4}, \sqrt{7}\sin\frac{\pi}{4}\right)$ to the ellipse $\frac{x^2}{9} + \frac{y^2}{7} = 1$ intersects its major axis at the point

(A) $\left(0, \sqrt{\frac{2}{7}}\right)$
(B) $\left(-\sqrt{\frac{2}{9}}, 0\right)$
(C) $\left(0, -\sqrt{\frac{2}{7}}\right)$
(D) $\left(\sqrt{\frac{2}{9}}, 0\right)$

Answer: (D) $\left(\sqrt{\frac{2}{9}}, 0\right)$ · Official TGCHE final key

Q174 TS EAMCET 2019 · 4 May · Shift 2 MCQ

If $(1, -2)$ is the focus and $x + y - 2 = 0$ is the directrix of the ellipse $17x^2 - 2xy + 17y^2 - 32x + 76y + 86 = 0$, then its eccentricity is

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

Answer: (C) $\frac{1}{3}$ · Official TGCHE final key

Q175 TS EAMCET 2019 · 3 May · Shift 1 MCQ

A tangent is drawn at $(3\sqrt{3}\cos\theta, \sin\theta)$ $\left(0 < \theta < \frac{\pi}{2}\right)$ to the ellipse $\frac{x^2}{27} + \frac{y^2}{1} = 1$. The value of θ for which the sum of the intercepts on the coordinate axes made by this tangent attains the minimum, is

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

Answer: (A) $\frac{\pi}{6}$ · Official TGCHE final key

Q176 TS EAMCET 2019 · 3 May · Shift 1 MCQ

A line perpendicular to the X-axis cuts the circle $x^2 + y^2 = 9$ at A and the ellipse $4x^2 + 9y^2 = 36$ at B such that A and B lie in the same quadrant. If θ is the greatest acute angle between the tangents drawn to the curves at A and B, then $\tan\theta =$

(A) $\frac{1}{12}$
(B) $\frac{1}{2\sqrt{6}}$
(C) $\frac{5}{24}$
(D) $\frac{5}{4\sqrt{6}}$

Answer: (B) $\frac{1}{2\sqrt{6}}$ · Official TGCHE final key

Q177 TS EAMCET 2019 · 3 May · Shift 2 MCQ

If OT is the semi-minor axis of an ellipse, A and B are its foci and $\angle ATB$ is a right angle, then the eccentricity of that ellipse

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

Answer: (C) $\frac{1}{\sqrt{2}}$ · Official TGCHE final key

Q178 TS EAMCET 2019 · 3 May · Shift 2 MCQ

The locus of the mid points of the portion of the tangents of the ellipse $\frac{x^2}{2}+\frac{y^2}{1}=1$ intercepted between the coordinate axes is

(A) $\frac{1}{4x^2}+\frac{1}{2y^2}=1$
(B) $2x^2+y^2=4$
(C) $\frac{1}{2x^2}+\frac{1}{4y^2}=1$
(D) $x^2+2y^2=4$

Answer: (C) $\frac{1}{2x^2}+\frac{1}{4y^2}=1$ · Official TGCHE final key

Q179 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

The ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1\ (b>a)$ and the parabola $y^2=4ax$ cut at right angles. If e is the eccentricity of the ellipse, then $2e^2=$

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(A) 1
(B) $\frac{1}{2}$
(C) $\frac{1}{8}$
(D) $\frac{1}{3}$

Answer: (A) 1 · Official APSCHE final key

Q180 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

Let a tangent drawn at any point on the ellipse $\frac{x^2}{25}+\frac{y^2}{16}=1$ cut the X-axis at Q. Let R be the image of Q with respect to $y=x$. If S is a circle with QR as its diameter, then the fixed point through which the circle S passes is

(A) $(5,4)$
(B) $(4,5)$
(C) $(0,0)$
(D) $(0,5)$

Answer: (C) $(0,0)$ · Official APSCHE final key

Q181 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

If (l,m) is the circumcentre of an equilateral triangle inscribed in the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ having vertices at points with eccentric angles $\theta_1,\theta_2,\theta_3$, then $\frac{2}{3}\left[\cos(\theta_1-\theta_2)+\cos(\theta_2-\theta_3)+\cos(\theta_3-\theta_1)\right]=$

(A) $\frac{9l^2}{2a^2}+\frac{9m^2}{b^2}-1$
(B) $\frac{l^2}{a^2}+\frac{m^2}{b^2}-3$
(C) $\frac{3l^2}{a^2}+\frac{3m^2}{b^2}-1$
(D) $\frac{3l^2}{a^2}+\frac{3m^2}{b^2}-\frac{3}{2}$

Answer: (C) $\frac{3l^2}{a^2}+\frac{3m^2}{b^2}-1$ · Official APSCHE final key

Q182 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

If l and b are respectively the length and breadth of the rectangle of greatest area that can be inscribed in the ellipse $x^2+4y^2=64$, then $(l,b)=$

(A) $(16\sqrt{2},4\sqrt{2})$
(B) $(8\sqrt{2},6\sqrt{2})$
(C) $(8\sqrt{2},4\sqrt{2})$
(D) $(6\sqrt{2},4\sqrt{2})$

Answer: (C) $(8\sqrt{2},4\sqrt{2})$ · Official APSCHE final key

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Q183 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

If the major axis of an ellipse lies on the Y-axis, its minor axis lies on the X-axis and the length of its latus rectum is equal to $\frac{2}{3}$ of its minor axis, then the eccentricity of that ellipse is

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

Answer: (D) $\frac{\sqrt{5}}{3}$ · Official APSCHE final key

Q184 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

If $y = x + c$ is a normal to the ellipse $\frac{x^2}{25} + \frac{y^2}{9} = 1$, then $c^2 =$

(A) $\frac{128}{17}$
(B) $\frac{17}{128}$
(C) 34
(D) 225

Answer: (A) $\frac{128}{17}$ · Official APSCHE final key

Q185 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

If a tangent to the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1 (a > b > 0)$ having slope $\frac{1}{3}$ is a normal to the circle $x^2 + y^2 + 2x + 2y + 1 = 0$, then the maximum value of ab is

(A) $\frac{2}{3}$
(B) 9
(C) $\frac{4}{9}$
(D) $\frac{1}{3}$

Answer: (A) $\frac{2}{3}$ · Official APSCHE final key

Q186 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

If the tangent drawn to the parabola $y^2 = 4x$ at $(t^2, 2t)$ is the normal to the ellipse $4x^2 + 5y^2 = 20$ at $(\sqrt{5}\cos\theta, 2\sin\theta)$, then

(A) $5t^4 + 4t^2 = 1$
(B) $\frac{5}{t^4} + \frac{100}{t^2} = 1$
(C) $t = \sin\theta$
(D) $\cos\theta = t + 1$

Answer: (A) $5t^4 + 4t^2 = 1$ · Official APSCHE final key

Q187 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

If the tangents drawn from a point P to the ellipse $4x^2 + 9y^2 - 24x + 36y = 0$ are perpendicular, then the locus of P is

(A) $x^2 + y^2 - 6x + 4y + 13 = 0$

(B) $x^2 + y^2 - 6x + 4y - 13 = 0$

(C) $x^2 + y^2 = 26$

(D) $x^2 + y^2 + 6x - 4y - 13 = 0$

Answer: (B) $x^2 + y^2 - 6x + 4y - 13 = 0$ · Official APSCHE final key

Q188 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

Let P be any point on the ellipse $7x^2 + 16y^2 = 112$, S be a focus, L be the corresponding directrix and PM be the perpendicular distance from P to directrix L. Then $\frac{SP}{PM} =$

(A) $\frac{1}{4}$

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

(C) $\frac{3}{4}$

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

Answer: (C) $\frac{3}{4}$ · Official APSCHE final key

Q189 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

If tangents are drawn to the ellipse $\frac{x^2}{9} + \frac{y^2}{5} = 1$ at the ends of latus recta, then the area of the quadrilateral thus formed is

(A) 27

(B) $\frac{15}{4}$

(C) $\frac{13}{2}$

(D) 45

Answer: (A) 27 · Official APSCHE final key

Q190 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

P is a variable point on the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ with foci F_1 and F_2. If A is the area of the triangle PF_1F_2, then the maximum value of A is

(A) $\frac{e}{ab}$
(B) $\frac{ae}{b}$
(C) aeb
(D) $\frac{ab}{e}$

Answer: (C) aeb · Official APSCHE final key

Q191 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

If the line joining the points $A(\alpha)$ and $B(\beta)$ on the ellipse $\frac{x^2}{25}+\frac{y^2}{9}=1$ is a focal chord, then one possible value of $\cot\frac{\alpha}{2}\cdot\cot\frac{\beta}{2}$ is

(A) -3
(B) 3
(C) -9
(D) 9

Answer: (C) -9 · Official APSCHE final key

Q192 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

The major and minor axes of an ellipse are along the X-axis and Y-axis respectively. If its latus rectum is of length 4 and the distance between the foci is $4\sqrt{2}$, then the equation of that ellipse is

(A) $2x^2+y^2=16$
(B) $x^2+2y^2=16$
(C) $\frac{x^2}{2}+\frac{y^2}{3}=1$
(D) $\frac{x^2}{3}+\frac{y^2}{2}=1$

Answer: (B) $x^2+2y^2=16$ · Official APSCHE final key

Q193 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

If $c\in\mathbb{R}$ be such that the line $4x-y+c=0$ touches the ellipse $x^2+4y^2=4$, then an equation having all such values of c among its roots is

(A) $x^2-\left(1+\sqrt{17}\right)x+\sqrt{17}=0$
(B) $x^2-\left(1-\sqrt{17}\right)x-\sqrt{17}=0$
(C) $x^3-x^2-17x+17=0$
(D) $x^3-x^2+17x-17=0$

Any attempt was accepted. Full marks for attempting. · Official APSCHE final key

Q194 TS EAMCET 2018 · 7 May · Shift 1 MCQ

For the ellipse $4x^2+y^2-8x+2y+1=0$, the focus and the equation of the directrix are respectively

(A) $\left(-1-\frac{4}{\sqrt{3}},1\right), y+\sqrt{3}+1=0$

(B) $(-1-\sqrt{3},1), \sqrt{3}y+\sqrt{3}+4=0$

(C) $\left(1,-1-\frac{4}{\sqrt{3}}\right), y+\sqrt{3}+1=0$

(D) $(1,-1-\sqrt{3}), \sqrt{3}y+\sqrt{3}+4=0$

Answer: (D) $(1,-1-\sqrt{3}), \sqrt{3}y+\sqrt{3}+4=0$ · The council's preliminary key

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Q195 TS EAMCET 2018 · 7 May · Shift 1 MCQ

If $4x+y+p=0\ (p>0)$ is a tangent to the ellipse $x^2+3y^2=3$ and $16x+qy+14=0\ (q>0)$ is a normal to the ellipse $x^2+8y^2=33$ then $p+q=$

(A) 8

(B) 5

(C) 9

(D) 6

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

Q196 TS EAMCET 2018 · 5 May · Shift 1 MCQ

Let A be a vertex of the ellipse $S\equiv\frac{x^2}{4}+\frac{y^2}{9}-1=0$ and F be a focus of the ellipse $S'\equiv\frac{x^2}{9}+\frac{y^2}{4}-1=0$. Let P be a point on the major axis of the ellipse $S'=0$, which divides $\overline{OF}$ in the ratio $2:1$ (O is the origin). If the length of the chord of the ellipse $S=0$ through A and P is $\frac{3\sqrt{101}}{k}$, then $k=$

(A) 5

(B) 4

(C) 7

(D) 8

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

Q197 TS EAMCET 2018 · 5 May · Shift 1 MCQ

Tangents are drawn to the ellipse $\frac{x^2}{25}+\frac{y^2}{16}=1$ at all the four ends of its latusrecta. Then the area (in square units) of the quadrilateral formed by these tangents is

(A) $\frac{125}{6}$

(B) $\frac{250}{3}$

(C) $\frac{80}{3}$

(D) $\frac{260}{3}$

Answer: (B) $\frac{250}{3}$ · The council's preliminary key

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Q198 TS EAMCET 2018 · 5 May · Shift 2 MCQ

If origin is the centre, X-axis is the major axis and $\sqrt{\frac{2}{5}}$ is the eccentricity of an ellipse which passes through $(-3, 1)$, then the equation of that ellipse is

(A) $3x^2 + 5y^2 = 32$
(B) $2x^2 + y^2 = 19$
(C) $x^2 + 23y^2 = 32$
(D) $x^2 + 2y^2 = 11$

Answer: (A) $3x^2 + 5y^2 = 32$ · The council's preliminary key

Q199 TS EAMCET 2018 · 5 May · Shift 2 MCQ

The slope of a common tangent to the ellipse $\frac{x^2}{49} + \frac{y^2}{4} = 1$ and the circle $x^2 + y^2 = 16$ is

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

Answer: (D) $\frac{2}{\sqrt{11}}$ · The council's preliminary key

Q200 TS EAMCET 2018 · 4 May · Shift 1 MCQ

If the normal drawn at one end of the latus rectum of the ellipse $b^2x^2 + a^2y^2 = a^2b^2$ wit[h] ecentricity 'e' passes through one end of the minor axis, then,

(A) $e^4 + e^2 = 2$
(B) $e^4 - e^2 = 1$
(C) $e^4 + e^2 = 1$
(D) $e^2 + e = 1$

Answer: (C) $e^4 + e^2 = 1$ · The council's preliminary key

Q201 TS EAMCET 2018 · 4 May · Shift 1 MCQ

A variable tangent to the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ makes intercepts on both the axes. The locus of the middle point of the portion of the tangent between the coordinate axes is

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(A) $\frac{x^2}{b^2}+\frac{y^2}{a^2}=1$
(B) $\frac{a^2}{x^2}+\frac{b^2}{y^2}=1$
(C) $b^2x^2+a^2y^2=4$
(D) $\frac{a^2}{x^2}+\frac{b^2}{y^2}=4$

Answer: (D) $\frac{a^2}{x^2}+\frac{b^2}{y^2}=4$ · The council's preliminary key

Q202 TS EAMCET 2018 · 4 May · Shift 1 MCQ

If the eccentricity of a conic satisfies the equation $2x^3+10x-13=0$, then that conic i[s]

(A) a circle
(B) a parabola
(C) an ellipse
(D) a hyperbola

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

Q203 TS EAMCET 2018 · 4 May · Shift 2 MCQ

If the straight line $8x+3\sqrt{2}y=36$ touches the ellipse $\frac{x^2}{9}+\frac{y^2}{4}=2$ at (a,b) then $a+\sqrt{2}b=$

(A) $\frac{36}{5\sqrt{2}}$
(B) $\frac{8}{3}$
(C) $\frac{12+2\sqrt{2}}{3}$
(D) $\frac{16}{3}$

Answer: (D) $\frac{16}{3}$ · The council's preliminary key

Q204 TS EAMCET 2018 · 4 May · Shift 2 MCQ

For an ellipse with eccentricity $\frac{1}{2}$, the centre is at the origin. If one of its directrices is $x=4$, then the equation of the ellipse is

(A) $3x^2+4y^2=12$
(B) $3x^2+4y^2=49$
(C) $3x^2+4y^2=1$
(D) $4x^2+3y^2=12$

Answer: (A) $3x^2+4y^2=12$ · The council's preliminary key

Q205 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

If the latus rectum of an ellipse subtends a right angle at the centre of that ellipse, then the eccentricity of that ellipse is

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(A) $\frac{\sqrt{5}+1}{4}$
(B) $\frac{\sqrt{5}-1}{2}$
(C) $\frac{\sqrt{10-2\sqrt{5}}}{5}$
(D) $\frac{\sqrt{10+2\sqrt{5}}}{5}$

Answer: (B) $\frac{\sqrt{5}-1}{2}$ · The council's preliminary key

Q206 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

If α, β are the eccentric angles of the extremities of a focal chord (other than the major axis) of the ellipse $x^2 + 4y^2 = 4$ then $\sqrt{3}\cos\frac{\alpha+\beta}{2} =$

(A) $2\cos\frac{\alpha-\beta}{2}$
(B) $2\sin\frac{\alpha-\beta}{2}$
(C) $2\sec\frac{\alpha+\beta}{2}$
(D) $2\sin\frac{\alpha+\beta}{2}$

Answer: (A) $2\cos\frac{\alpha-\beta}{2}$ · The council's preliminary key

Q207 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

The equations of the tangents to the ellipse $9x^2 + 16y^2 = 144$ which pass through the point (2, 3) are

(A) $x + y = 5,\ y = 3$
(B) $x + y + 5 = 0,\ y = 3$
(C) $x + y = 5,\ y + 3 = 0$
(D) $x + y + 5 = 0,\ y + 3 = 0$

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

Q208 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

If S and S' are the foci of an ellipse, B is one end of the minor axis and $\angle SBS' = 90^\circ$, then the eccentricity of that ellipse is

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

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

Q209 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

The points of intersection of the perpendicular tangents drawn to the ellipse $4x^2 + 9y^2 = 36$ lie on the curve

(A) $x^2 + y^2 = 13$
(B) $x^2 - y^2 = 5$
(C) $x + y = 5$
(D) $\frac{x^2}{9} + \frac{y^2}{4} = 1$

Answer: (A) $x^2 + y^2 = 13$ · The council's preliminary key

Q210 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

The equation of the ellipse having a vertex at $(6, 1)$, a focus at $(4, 1)$ and the eccentricity $\frac{3}{5}$ is

(A) $\frac{(x-1)^2}{16} + \frac{(y-1)^2}{25} = 1$
(B) $\frac{(x-1)^2}{25} + \frac{(y-1)^2}{16} = 1$
(C) $\frac{(x+1)^2}{25} + \frac{(y+1)^2}{16} = 1$
(D) $\frac{(x+1)^2}{16} + \frac{(y+1)^2}{25} = 1$

Answer: (B) $\frac{(x-1)^2}{25} + \frac{(y-1)^2}{16} = 1$ · The council's preliminary key

Q211 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

If the tangent at the point $\left(4\cos 2\theta, \frac{16}{\sqrt{11}}\sin 2\theta\right)$ on the ellipse $16x^2 + 11y^2 = 256$ touches the circle $x^2 + y^2 - 2x = 15$, then $\theta =$

(A) $\pm\frac{\pi}{3}$
(B) $\pm\frac{\pi}{6}$
(C) $\pm\frac{\pi}{4}$
(D) $\pm\frac{\pi}{8}$

Answer: (B) $\pm\frac{\pi}{6}$ · The council's preliminary key

Q212 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

An ellipse having the coordinate axes as its axes and its major axis along Y-axis, passes through the point $(-3, 1)$ and has eccentricity $\sqrt{\frac{2}{5}}$. Then its equation is

(A) $3x^2 + 5y^2 - 15 = 0$
(B) $5x^2 + 3y^2 - 32 = 0$
(C) $3x^2 + 5y^2 - 32 = 0$
(D) $5x^2 + 3y^2 - 48 = 0$

Answer: (D) $5x^2 + 3y^2 - 48 = 0$ · The council's preliminary key

Q213 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

The product of the perpendicular distances drawn from the points $(3, 0)$ and $(-3, 0)$ to the tangent of the ellipse $\frac{x^2}{36} + \frac{y^2}{27} = 1$ at $\left(3, \frac{9}{2}\right)$ is

(A) 36
(B) 27
(C) 9
(D) 63

Answer: (B) 27 · The council's preliminary key

Q214 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

The equations of the latus recta of the ellipse $9x^2 + 4y^2 - 18x - 8y - 23 = 0$ are

(A) $x = -1 \pm \sqrt{5}$
(B) $y = 1 \pm \sqrt{5}$
(C) $x = 1 \pm \frac{2\sqrt{5}}{3}$
(D) $y = 2 \pm \sqrt{5}$

Answer: (B) $y = 1 \pm \sqrt{5}$ · The council's preliminary key

Q215 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

The equation of the tangent to the ellipse $4x^2 + 9y^2 = 36$ at the end of the latus rectum lying in the second quadrant, is

(A) $\sqrt{5}x - 3y + 1 = 0$
(B) $x - 3y + \sqrt{5} = 0$
(C) $\sqrt{5}x - 3y + 3 = 0$
(D) $\sqrt{5}x - 3y + 9 = 0$

Answer: (D) $\sqrt{5}x - 3y + 9 = 0$ · The council's preliminary key

Q216 TS EAMCET 2017 · 12 May · Offline MCQ

Let S and S' be the foci of an ellipse and B be one end of its minor axis. If SBS' is an isosceles right angled triangle then the eccentricity of the ellipse is

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

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

Q217 TS EAMCET 2017 · 12 May · Offline MCQ

The foci of the ellipse $25x^2 + 4y^2 + 100x - 4y + 100 = 0$ are

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(A) $\left(\frac{5 \pm \sqrt{21}}{10}, -2\right)$

(B) $\left(-2, \frac{5 \pm \sqrt{21}}{10}\right)$

(C) $\left(\frac{2 \pm \sqrt{21}}{10}, -2\right)$

(D) $\left(-2, \frac{2 \pm \sqrt{21}}{10}\right)$

Answer: (B) $\left(-2, \frac{5 \pm \sqrt{21}}{10}\right)$ · The council's preliminary key

Q218 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

The lines $y = 2x + \sqrt{76}$ and $2y + x = 8$ touch the ellipse $\frac{x^2}{16} + \frac{y^2}{12} = 1$. If the point of intersection of these two lines lie on a circle, whose centre coincides with the centre of that ellipse, then the equation of that circle is

(A) $x^2 + y^2 = 16$

(B) $x^2 + y^2 = 12$

(C) $x^2 + y^2 = 28$

(D) $x^2 + y^2 = (4 + \sqrt{8})^2$

Answer: (C) $x^2 + y^2 = 28$ · The council's preliminary key

Q219 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

The angle between the tangents drawn from the point $(1, 2)$ to the ellipse $3x^2 + 2y^2 = 5$

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

(B) $\tan^{-1}\left(\frac{12\sqrt{5}}{5}\right)$

(C) $\tan^{-1}\left(\frac{12\sqrt{5}}{13}\right)$

(D) $\frac{\pi}{4}$

Answer: (B) $\tan^{-1}\left(\frac{12\sqrt{5}}{5}\right)$ · The council's preliminary key

Q220 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

The product of the lengths of the perpendiculars drawn from the foci of the ellipse $\frac{x^2}{9} + \frac{y^2}{25} = 1$ to the tangent at any point on the ellipse is

(A) 6
(B) 7
(C) 8
(D) 9

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

Q221 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

If the eccentric angles of the extremeties of a focal chord (other than the major axis) of the ellipse $\frac{x^2}{25}+\frac{y^2}{9}=1$ are α and β then $\frac{\cot\left(\frac{\alpha}{2}\right)}{\tan\left(\frac{\beta}{2}\right)}=$

(A) $\frac{4}{3}$
(B) -9
(C) 9
(D) $\frac{4}{5}$

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

Q222 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

The coordinates of a point, in the parametric form, on the ellipse whose foci are $(-1,0)$ and $(7,0)$ and eccentricity $\frac{1}{2}$, are

(A) $(8\cos\theta, 4\sqrt{3}\sin\theta)$
(B) $(3+8\cos\theta, 4\sqrt{3}\sin\theta)$
(C) $(3+4\sqrt{3}\cos\theta, 8\sin\theta)$
(D) $(3+4\cos\theta, 2\sqrt{3}\sin\theta)$

Answer: (B) $(3+8\cos\theta, 4\sqrt{3}\sin\theta)$ · The council's preliminary key

Q223 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

If the normal at one end of a latus rectum of the ellipse $\frac{x^2}{32}+\frac{y^2}{b^2}=1$ passes through one end of the minor axis, then $\frac{e^4}{1-e^2}=$ _____
(Here e is the eccentricity of the ellipse)

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

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

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Q224 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The equation $\frac{x^2}{2-r}+\frac{y^2}{r-5}+1=0$ represents an ellipse if

(A) $r>2$

(B) $r>5$

(C) $2<r<5$

(D) $r<2$ or $r>5$

Answer: (C) $2<r<5$ · The council's preliminary key

Q225 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The equation of the locus of the foot of the perpendicular drawn from the centre of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ to any tangent of the ellipse is

(A) $(x^2+y^2)^2=a^2x^2+b^2y^2$

(B) $(x^2-y^2)^2=a^2x^2+b^2y^2$

(C) $(x^2+y^2)^2=a^2x^2-b^2y^2$

(D) $(x^2-y^2)^2=a^2x^2-b^2y^2$

Answer: (A) $(x^2+y^2)^2=a^2x^2+b^2y^2$ · The council's preliminary key

Q226 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

The length of the latus rectum of $9x^2+25y^2-90x-150y+225=0$ is

(A) $\frac{50}{3}$

(B) $\frac{18}{5}$

(C) $\frac{18}{25}$

(D) $\frac{9}{25}$

Answer: (B) $\frac{18}{5}$ · The council's preliminary key

Q227 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

Let C be the centre of an ellipse and PQ be a chord of it with $\angle PCQ=90^\circ$. If R is the point of intersection of the tangents to the ellipse at P and Q then R lies on

(A) a straight line

(B) a parabola

(C) an ellipse

(D) a hyperbola

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

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Q228 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

The equation of a common tangent to the circle $x^2 + y^2 = 16$ and to the ellipse $\frac{x^2}{49} + \frac{y^2}{4} = 1$ is

(A) $y = x + \sqrt{45}$
(B) $y = x + \sqrt{53}$
(C) $\sqrt{11}y = 2x + 4$
(D) $\sqrt{11}y = 2x + 4\sqrt{15}$

Answer: (D) $\sqrt{11}y = 2x + 4\sqrt{15}$ · The council's preliminary key

Q229 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

The equation of the ellipse with $x + y + 2 = 0$ as its directrix, one of its focus at $(1, -1)$ and having eccentricity $\frac{2}{3}$ is

(A) $7x^2 + 7y^2 + 4xy + 26x + 26y + 10 = 0$
(B) $7x^2 + 7y^2 - 4xy - 26x - 26y - 10 = 0$
(C) $7x^2 + 7y^2 - 4xy + 26x + 26y - 10 = 0$
(D) $7x^2 + 7y^2 + 4xy - 26x - 26y + 10 = 0$

Answer: (B) $7x^2 + 7y^2 - 4xy - 26x - 26y - 10 = 0$ · The council's preliminary key

Q230 TS EAMCET 2016 · 15 May · Offline MCQ

For the ellipse given by $\frac{(x-3)^2}{25} + \frac{(y-2)^2}{16} = 1$, match the equations of the lines given in List I with those in the List II

List-I

i) The equation of the major axis
ii) The equation of a directrix
iii) The equation of a latus rectum

List-II

a) $3x = 34$
b) $y = 2$
c) $x + y = 9$
d) $x = 6$
e) $x = 3$
f) $3y = 34$

The correct matching is

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(A) (i)-(e), (ii)-(a), (iii)-(d)
(B) (i)-(b), (ii)-(f), (iii)-(e)
(C) (i)-(b), (ii)-(a), (iii)-(e)
(D) (i)-(b), (ii)-(a), (iii)-(d)

Answer: (D) (i)-(b), (ii)-(a), (iii)-(d) · Official TGCHE final key

Q231 TS EAMCET 2016 · 15 May · Offline MCQ

If S and S' are the foci of the ellipse $\frac{x^2}{25}+\frac{y^2}{16}=1$ and if PSP' is a focal chord with $SP=8$ then $SS'=$

(A) $4+S'P$
(B) $S'P-1$
(C) $4+SP$
(D) $SP-1$

Answer: (A) $4+S'P$ · Official TGCHE final key

Q232 AP EAMCET 2016 · 29 Apr · Offline MCQ

The distance between the focii of the ellipse $x=3\cos\theta, y=4\sin\theta$ is

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

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

Q233 AP EAMCET 2016 · 29 Apr · Offline MCQ

The equations of the latus recta of the ellipse $9x^2+25y^2-36x+50y-164=0$ are

(A) $x-4=0, x+2=0$
(B) $x-6=0, x+2=0$
(C) $x+6=0, x-2=0$
(D) $x+4=0, x+5=0$

Answer: (B) $x-6=0, x+2=0$ · The council's preliminary key

Q234 AP EAMCET 2014 · 22 May · Offline MCQ

If tangents are drawn from any point on the circle $x^2+y^2=25$ to the ellipse $\frac{x^2}{16}+\frac{y^2}{9}=1$ then the angle between the tangents is

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

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

Q235 AP EAMCET 2014 · 22 May · Offline MCQ

An ellipse passing through $(4\sqrt{2}, 2\sqrt{6})$ has foci at $(-4, 0)$ and $(4, 0)$. Its eccentricity is

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

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

Q236 AP EAMCET 2013 · 10 May · Offline MCQ

The midpoint of a chord of the ellipse $x^2 + 4y^2 - 2x + 20y = 0$ is $(2, -4)$. The equation of the chord is

(A) $x - 6y = 26$
(B) $x + 6y = 26$
(C) $6x - y = 26$
(D) $6x + y = 26$

Answer: (A) $x - 6y = 26$ · The council's preliminary key

Q237 AP EAMCET 2013 · 10 May · Offline MCQ

If the foci of the ellipse $\frac{x^2}{25} + \frac{y^2}{16} = 1$ and the hyperbola $\frac{x^2}{4} - \frac{y^2}{b^2} = 1$ coincide, then $b^2 =$

(A) 4
(B) 5
(C) 8
(D) 9

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

Q238 AP EAMCET 2012 · 12 May · Offline MCQ

If the line $2x + 5y = 12$ intersects the ellipse $4x^2 + 5y^2 = 20$ in two distinct points A and B, then the mid point of AB is

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

Answer: (B) $(1, 2)$ · Checked by our team

Q239 AP EAMCET 2011 · 8 May · Offline MCQ

The locus of a point such that the sum of its distances from the points $(0, 2)$ and $(0, -2)$ is 6, is

(A) $9x^2 - 5y^2 = 45$
(B) $5x^2 + 9y^2 = 45$
(C) $9x^2 + 5y^2 = 45$
(D) $5x^2 - 9y^2 = 45$

Answer: (C) $9x^2 + 5y^2 = 45$ · The council's preliminary key

Q240 AP EAMCET 2011 · 8 May · Offline MCQ

The eccentricity of the ellipse $x^2 + 4y^2 + 2x + 16y + 13 = 0$ is

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

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

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