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MATHEMATICS · EAPCET (EAMCET)

Differential Equations

Previous Year Questions with answers

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

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What is in this PDF: every Differential Equations 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.

Step-by-step solutions for every question are free in the EdLoop EAPCET app (Google Play) and on app.edloop.in. More chapters: pyq.edloop.in/free-pdfs/

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Chapter at a glance

3.4%
of Mathematics questions, 2022–2026

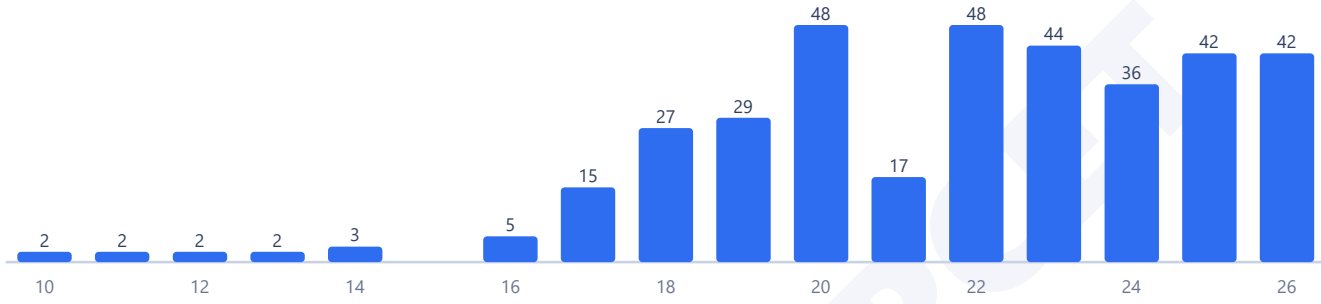
364
questions, 2010–2026

77 of 77
papers asked it, 2022–2026

364 / 0
MCQ / numerical, 2010–2026

Trend. Steady: 2.6 questions per paper in 2024–2026 against 3 in 2022–2023.

Questions per year



Counts are the questions we hold: 364 in 149 papers. 9 questions in this chapter came back in more than one paper.

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

First Order Equations	228
Basics & Formation	127
Applications	9

How often it comes up

Differential Equations represents an essential applied calculus branch that appears in every single examination session. Over the historical span from 2010 through 2026, Differential Equations supplied 364 questions across 149 evaluated exam papers, featuring in all 149 papers to maintain an average of 2.4 questions per paper and a 3.1 percent subject share. In modern examination testing from 2022 to 2026, the chapter preserved this unbroken record across all 77 sittings, delivering 212 questions (yielding an average of 2.8 questions per paper and a 3.4 percent subject share). This sustained volume places Differential Equations at rank 14 of 29 mathematics chapters.

Every paper in recent testing includes between two and three differential equations problems. Over the three most recent calendar cycles from 2024 to 2026, candidates answered 120 questions across 46 sittings (present in all 46 papers, averaging 2.6 questions per test with a 3.3 percent share). In the previous examination epoch from 2010 to 2021, the chapter accounted for 152 questions across 72 sittings (appearing in all 72 papers, 2.1 per test, 2.6 percent share). Evaluating temporal progression, comparing early testing with the last three years shows the share is up, while comparing recent testing with the last three years shows the share is about the same. Across individual state boards between 2022 and 2026, Andhra Pradesh administered 145 questions across 48 papers (all 48 papers, 3.0 per test, 3.8 percent share), while Telangana administered 67 questions across 29 papers (all 29 papers, 2.3 per test, 2.9 percent share).

Most-asked topics

Questions in this unit distribute across three key differential equation areas:

- **First Order Equations**: Supplying 228 total questions, with 128 appearing in recent examinations (tested through 2026). Key concepts encompass variable separable forms, homogeneous differential equations via y equals v x, linear differential equations of first order using integrating factors (e to the integral of P dx), and Bernoulli equations reducible to linear form.

- **Basics & Formation**: Accounting for 127 total questions, with 78 set in modern testing (last asked in 2026). Coverage includes determining order and degree of differential equations, eliminating arbitrary constants from family of curves, and establishing particular solutions under given boundary conditions.
- **Applications**: Delivering 9 total questions, with 6 emerging in the recent timeframe (tested through 2026). Problems explore orthogonal trajectories, geometric curves whose tangents or normals satisfy specified intercept relations, Newton law of cooling, and exponential growth or decay models.

What the questions look like

Examiners test systematic recognition of differential equation types, integrating factors, and constant elimination.

A standard problem presents a first-order linear differential equation dy over dx plus P of x times y equals Q of x, where candidates must compute the integrating factor e to the integral of P dx and integrate the product of Q and the integrating factor. Another frequent format asks for the differential equation governing a given two-parameter family of curves, such as y equals A e to the power m x plus B e to the power negative m x; candidates differentiate twice and eliminate the constants A and B to form a second-order linear equation. Geometric application problems typically define a property of the tangent line, such as the x-intercept of the tangent equaling the y-coordinate of the point of tangency, requiring candidates to set up and solve the resulting separable differential equation.

How to practise it

Master the recognition of standard first-order forms. For linear differential equations dy over dx plus P of x times y equals Q of x, compute the integrating factor IF equals e raised to the integral of P of x dx. The general solution is y times IF equals the integral of Q of x times IF dx plus constant.

For homogeneous differential equations where dy over dx equals a quotient of two homogeneous functions of the same degree in x and y, substitute y equals v times x, which transforms dy over dx into v plus x times dv over dx, separating variables cleanly into v and x. When determining order and degree, remember that degree is the highest power of the highest order derivative after the equation has been cleared of fractional powers and radical signs involving derivatives. If a derivative appears inside an insoluble transcendental function like sin of dy over dx, the degree is undefined while the order remains well-defined.

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

If the differential equation of the family of curves given by the equation $y = ae^x + b\cos x$, where a and b are arbitrary constants is $y_2(\cos x + \sin x) + y(\cos x - \sin x) = 2y_1\, f(x)$, then $f(x) =$

(A) $\sin x$
(B) $\cos x$
(C) $-\cos x$
(D) $-\sin x$

Answer: (B) $\cos x$ · The council's preliminary key

Q2 AP EAPCET 2026 · 18 May · Shift 1 MCQ

The general solution of the differential equation $(4xy^2 - 2xy + 2x^2y^2 - x^2y)dx = dy$ is $x^2 + \frac{x^3}{3} =$

(A) $\log \frac{c(2y-1)}{y}$
(B) $\log \frac{c|2y-1|}{\sqrt{y}}$
(C) $\log c(2y^2 - y)$
(D) $\log \frac{c(2y-1)}{y^2}$

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

Q3 AP EAPCET 2026 · 18 May · Shift 1 MCQ

The general solution of the differential equation $y(2x + y)dx = x(x + y)dy$ is

(A) $\log\left(\frac{cx^2}{y}\right) + \frac{y}{x} = 0$
(B) $\log\left(\frac{y}{cx^2}\right) + \frac{y}{x} = 0$
(C) $\log(cx^2y^2) + \frac{y}{x} = 0$
(D) $\log(cx^2y) + \frac{y}{x} = 0$

Answer: (B) $\log\left(\frac{y}{cx^2}\right) + \frac{y}{x} = 0$ · The council's preliminary key

Q4 AP EAPCET 2026 · 18 May · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx} = x^2y(x + y + xy + 1)$ is $y =$

(A) $Ae^{\frac{x^3}{3}} \cdot e^{\frac{x^4}{4}}(1 + y)$
(B) $(y + 1)Ae^{\frac{x^3}{3}} \cdot e^{\frac{-x^4}{4}}$
(C) $(y + 1) + Ae^{\frac{x^3}{3}} \cdot e^{\frac{x^4}{4}}$
(D) $\frac{Ae^{\frac{x^3}{3}}(y+1)}{e^{\frac{x^4}{4}}}$

Answer: (A) $Ae^{\frac{x^3}{3}} \cdot e^{\frac{x^4}{4}}(1 + y)$ · The council's preliminary key

Q5 AP EAPCET 2026 · 18 May · Shift 2 MCQ

The substitution required to reduce the differential equation $\frac{dy}{dx} + \sin y \cos y \sin x = \sin 2x \cos^2 y$ to a linear differential equation in z is

(A) $z = \tan x$
(B) $z = \sin 2y$
(C) $z = \cos y$
(D) $z = \tan y$

Answer: (D) $z = \tan y$ · The council's preliminary key

Q6 AP EAPCET 2026 · 18 May · Shift 2 MCQ

The differential equation among the following, whose general solution is $y = Ae^{5x} + Be^{-4x}$ is

(A) $5\frac{dy}{dx} + 4\frac{dx}{dy} = 0$
(B) $\frac{d^2y}{dx^2} + \frac{dy}{dx} + 20y = 0$
(C) $\left(\frac{dy}{dx}\right)^2 - \frac{dy}{dx} - 20y = 0$
(D) $\frac{d^2y}{dx^2} - \frac{dy}{dx} - 20y = 0$

Answer: (D) $\frac{d^2y}{dx^2} - \frac{dy}{dx} - 20y = 0$ · The council's preliminary key

Q7 AP EAPCET 2026 · 15 May · Shift 1 MCQ

Consider the differential equations

$$\frac{dy}{dx}(x + y + 1) = 1 \text{ and } \frac{dx}{dy} = 3y + 2x^2$$

Which of the following is correct regarding these two differential equations?

(A) Both are linear in x
(B) Both are linear in y
(C) One is linear in x and other is linear in y
(D) One is linear in x and other is not a linear equation

Answer: (D) One is linear in x and other is not a linear equation · The council's preliminary key

Q8 AP EAPCET 2026 · 15 May · Shift 1 MCQ

Among the following the differential equations, the equation having order 2 and degree 3 is

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(A) $\frac{dy}{dx} - \sin y = \frac{d^2y}{dx^2}\left(\sqrt{\left(\frac{d^2y}{dx^2}\right) - 1}\right)$

(B) $\left(\frac{d^2y}{dx^2}\right)^3 = \frac{dy}{dx} + y^2\left(\frac{d^3y}{dx^3}\right)^2$

(C) $\left(\frac{d^2y}{dx^2}\right)^3 = \left(\frac{d^2y}{dx^2}\right)^{\frac{3}{2}} + x^2$

(D) $\frac{dy}{dx} - \sin y = \left(\frac{d^2y}{dx^2}\right)^3\left(\sqrt{\frac{d^2y}{dx^2}} - 1\right)$

Answer: (A) $\frac{dy}{dx} - \sin y = \frac{d^2y}{dx^2}\left(\sqrt{\left(\frac{d^2y}{dx^2}\right) - 1}\right)$ · The council's preliminary key

Q9 AP EAPCET 2026 · 15 May · Shift 1 MCQ

The general solution of the differential equation $\frac{dy}{dx} + y\tan x = -\tan x \log(\cos x)\left(0 < x < \frac{\pi}{2}\right)$

(A) $\sec x = e \cdot e^{y - k\cos x}$

(B) $\sec x = e \cdot e^{y - k\sec x}$

(C) $\tan x = e \cdot e^{y - k\cos x}$

(D) $\tan x = e \cdot e^{y + k\sec x}$

Answer: (A) $\sec x = e \cdot e^{y - k\cos x}$ · The council's preliminary key

Q10 AP EAPCET 2026 · 15 May · Shift 2 MCQ

The differential equation obtained by eliminating A and B from the equation $y = A(x + B)^2$ which represents a family of curves

(A) $2yy'' = (y')^2$

(B) $yy'' = 2y'$

(C) $2yy'' = y' + y$

(D) $2yy'' = y' - y$

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

Q11 AP EAPCET 2026 · 15 May · Shift 2 MCQ

The general solution of the differential equation $\cos(x + y)dy = dx$ is

(A) $y = \tan\left(\frac{x+y}{2}\right) + c$

(B) $y = x\sec\left(\frac{y}{x}\right) + c$

(C) $y = -\mathrm{Cos}^{-1}\left(\frac{y}{x}\right) + c$

(D) $y = \tan(x + y) + c$

Answer: (A) $y = \tan\left(\frac{x+y}{2}\right) + c$ · The council's preliminary key

Q12 AP EAPCET 2026 · 15 May · Shift 2 MCQ

The general solution of the differential equation $(1 + y^2) + \left(x - e^{\tan^{-1} y}\right)\frac{dy}{dx} = 0$ is

(A) $xe^{\tan^{-1}y} = \tan^{-1}y + c$
(B) $x^2e^{2\tan^{-1}y} = e^{\tan^{-1}y} + c$
(C) $(x-2) = ce^{-\tan^{-1}y}$
(D) $2xe^{\tan^{-1}y} = e^{2\tan^{-1}y} + c$

Answer: (D) $2xe^{\tan^{-1}y} = e^{2\tan^{-1}y} + c$ · The council's preliminary key

Q13 AP EAPCET 2026 · 14 May · Shift 1 MCQ

If a and h are arbitrary constants, then the differential equation corresponding to the family of curves $ax^2 + 2hxy = 1$ is

(A) $x^2\frac{d^2y}{dx^2} + x\frac{dy}{dx} + y = 0$
(B) $x^2\frac{d^2y}{dx^2} - x\frac{dy}{dx} + y = 0$
(C) $x^2\frac{d^2y}{dx^2} + x\frac{dy}{dx} - y = 0$
(D) $x^2\frac{d^2y}{dx^2} - x\frac{dy}{dx} - y = 0$

Answer: (C) $x^2\frac{d^2y}{dx^2} + x\frac{dy}{dx} - y = 0$ · The council's preliminary key

Q14 AP EAPCET 2026 · 14 May · Shift 1 MCQ

The general solution of the differential equation $\frac{dy}{dx} = \frac{2xy-3y^2}{2x^2+3xy}$ is

(A) $3\log\left|\frac{y}{x}\right| = \frac{x}{y} + c$
(B) $\log|xy| = 2xy + c$
(C) $3\log|xy| = \frac{2x}{y} + c$
(D) $\log\left|\frac{y}{x}\right| = xy + c$

Answer: (C) $3\log|xy| = \frac{2x}{y} + c$ · The council's preliminary key

Q15 AP EAPCET 2026 · 14 May · Shift 1 MCQ

The general solution of the differential equation $(x + y - 1)\,dy = (x - y + 1)\,dx$ is

(A) $x^2 - 2xy - y^2 + 2x + 2y + c = 0$
(B) $x^2 + 2xy - y^2 + 2x + 2y + c = 0$
(C) $x^2 + 2xy + y^2 + 2x + 2y + c = 0$
(D) $x^2 - 2xy - y^2 + 2x - 2y + c = 0$

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

Q16 AP EAPCET 2026 · 14 May · Shift 2 MCQ

The order and degree of the differential equation

$$\left\{1+\left(\frac{dy}{dx}\right)^2\right\}^{3/2}=\frac{d^2y}{dx^2}$$

are respectively

(A) $\frac{3}{2}, 2$

(B) $2, 3$

(C) $2, 2$

(D) $3, 4$

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

Q17 AP EAPCET 2026 · 14 May · Shift 2 MCQ

Given that $\frac{dy}{dx}=ye^x$ is such that when $x=0, y=e$. The value of $y(y>0)$ when $x=1$ will be

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

(B) e

(C) e^e

(D) $\log e$

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

Q18 AP EAPCET 2026 · 14 May · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx}+\frac{y}{x}=x^2$ is

(A) $y=\frac{1}{3}x^3+\frac{c}{x}$

(B) $y=\frac{1}{4}x^4+cx$

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

(D) $y=\frac{1}{4}x^3+cx^{-1}$

Answer: (D) $y=\frac{1}{4}x^3+cx^{-1}$ · The council's preliminary key

Q19 AP EAPCET 2026 · 13 May · Shift 1 MCQ

If the degree of the differential equation

$$\left(\frac{d^2y}{dx^2}\right)^{3/2}+5\left(\frac{d^2y}{dx^2}\right)^{5/2}=7y$$

is m and its order is n , then $y=Ae^{mx}+Be^{nx}$ is solution of the differential equation

(A) $\frac{d^2y}{dx^2}-12\frac{dy}{dx}+20y=0$

(B) $\frac{d^2y}{dx^2}-7\frac{dy}{dx}+14y=0$

(C) $\frac{d^2y}{dx^2}-10\frac{dy}{dx}+16y=0$

(D) $\frac{d^2y}{dx^2}-8\frac{dy}{dx}+12y=0$

Answer: (A) $\frac{d^2y}{dx^2}-12\frac{dy}{dx}+20y=0$ · The council's preliminary key

Q20 AP EAPCET 2026 · 13 May · Shift 1 MCQ

If $y = f(x)$ is a solution of $\frac{dy}{dx} = (y - Kx)^2 + K$ when $x = 0$ and $y = 1$, then $f(2) =$

(A) $2K + 1$
(B) $2K - 1$
(C) $2K + 5$
(D) $2K - 5$

Answer: (B) $2K - 1$ · The council's preliminary key

Q21 AP EAPCET 2026 · 13 May · Shift 1 MCQ

At a point $P(x, y)$ on a curve $x = f(y)$, the $x-$ intercept of the tangent is always equal to the $y-$ coordinate of the point of contact, then $f(y) =$

(A) e^{cy^2}
(B) $y \log\left(\frac{c}{y}\right)$
(C) cy^2
(D) $\sin(c + y)$

Answer: (B) $y \log\left(\frac{c}{y}\right)$ · The council's preliminary key

Q22 AP EAPCET 2026 · 13 May · Shift 2 MCQ

The order and degree of the differential equation whose solution is $Ax^2 + By^2 = 1$, A and B are arbitrary constants, are respectively

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

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

Q23 AP EAPCET 2026 · 13 May · Shift 2 MCQ

The general solution of the differential equation $x\left(\frac{dy}{dx}\right)^2 + 2\sqrt{xy}\,\frac{dy}{dx} + y = 0$ is

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

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

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Q24 AP EAPCET 2026 · 13 May · Shift 2 MCQ

The general solution of the differential equation $y\,dx + (x + x^2y)\,dy = 0$ is

(A) $\frac{1}{xy} + \log y = c$

(B) $-\frac{1}{xy} + \log y = c$

(C) $x - \frac{1}{xy} = c$

(D) $\log y = c\,x^2$

Answer: (B) $-\frac{1}{xy} + \log y = c$ · The council's preliminary key

Q25 AP EAPCET 2026 · 12 May · Shift 1 MCQ

Let the differential equation for which $y = A\,e^x + B\,e^{-x}$ is the general solution is of degree m and order n. If the above differential equation satisfies the condition $y(0) = m$ and $y'(0) = n$, then its solution is $y =$

(A) $\frac{e^x + e^{-x}}{2}$

(B) $\frac{e^x - e^{-x}}{2}$

(C) $\frac{3e^x - e^{-x}}{2}$

(D) $\frac{e^x - 3e^{-x}}{2}$

Answer: (C) $\frac{3e^x - e^{-x}}{2}$ · The council's preliminary key

Q26 AP EAPCET 2026 · 12 May · Shift 1 MCQ

The differential equation having $y = \frac{A}{x^5} + \frac{\log x}{5} - \frac{1}{25}$ as its general solution is

(A) $x\frac{dy}{dx} - 5y = x$

(B) $x\frac{d^2y}{dx^2} + y = \log x$

(C) $x\frac{dy}{dx} + 5y = \log x$

(D) $x^2\frac{dy}{dx} + 5y = \log x$

Answer: (C) $x\frac{dy}{dx} + 5y = \log x$ · The council's preliminary key

Q27 AP EAPCET 2026 · 12 May · Shift 1 MCQ

The differential equation $f'(y)\frac{dy}{dx} + P(x)f(y) = x^3$ is reduced to linear differential equation by substituting $Z = f(y)$. If the integrating factor of the reduced linear equation is e^{x^2}, then the solution of the given differential equation is

(A) $x^2 + Ae^{-x^2} - 2f(y) = 1$
(B) $f(y) = \frac{1}{2}(x^2 - 1) + Ce^{x^2}$
(C) $x^2 + Ae^{x^2} + 2f(y) = 1$
(D) $f(y) = (x^3 + Ce^{x^2})$

Answer: (A) $x^2 + Ae^{-x^2} - 2f(y) = 1$ · The council's preliminary key

Q28 AP EAPCET 2026 · 12 May · Shift 2 MCQ

If the solution of $\frac{dy}{dx} = \log(x+1)$ when $y(0) = 3$ is $y = (x+1)\log(x+1) + f(x)$, then $f(x) =$

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

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

Q29 AP EAPCET 2026 · 12 May · Shift 2 MCQ

The differential equation of the family of curves given by $y = e^{3x}(Ax + B)$ where A, B are arbitrary constants, is

(A) $\frac{d^2y}{dx^2} + 6\frac{dy}{dx} + 9y = 0$
(B) $\frac{d^2y}{dx^2} + 6\frac{dy}{dx} - 9y = 0$
(C) $\frac{d^2y}{dx^2} - 6\frac{dy}{dx} - 9y = 0$
(D) $\frac{d^2y}{dx^2} - 6\frac{dy}{dx} + 9y = 0$

Answer: (D) $\frac{d^2y}{dx^2} - 6\frac{dy}{dx} + 9y = 0$ · The council's preliminary key

Q30 AP EAPCET 2026 · 12 May · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx} = x^3\cos^2 y - x\sin 2y$ is

(A) $\tan y = \frac{1}{2}(x^2 + 1) + e^{-x^2}$
(B) $\tan y = \frac{1}{2}(x^2 - 1) + Ce^{-x^2}$
(C) $\tan y = \frac{1}{2}(x^2 - 1) + Ce^{x^2}$
(D) $\tan y = \frac{1}{2}(x^2 + 1) + Ce^{x^2}$

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

Q31 TS EAPCET 2026 · 11 May · Shift 1 MCQ

The solution of the differential equation $\frac{dy}{dx} = \frac{3^{x+y} - 2.3^x}{3^{x+y} - 2.3^y}$ when $y(1) = 2$ is

(A) $3^y = 7\left(3^x\right) + 12$
(B) $y = \log_3\left(7\left(3^x\right) - 14\right)$
(C) $y = \log_3\left(7\left(3^x\right) - 12\right)$
(D) $3^y = 7\left(3^x\right) - 14$

Answer: (C) $y = \log_3\left(7\left(3^x\right) - 12\right)$ · The council's preliminary key

Q32 TS EAPCET 2026 · 11 May · Shift 1 MCQ

The general solution of the differential equation $(2xy + y^2)\,dy = (x^2 - y^2)\,dx$ is

(A) $x^3 - 3x^2y - y^3 = c$
(B) $x^3 - 3x^2y + y^3 = c$
(C) $x^3 - 3xy^2 + y^3 = c$
(D) $x^3 - 3xy^2 - y^3 = c$

Answer: (D) $x^3 - 3xy^2 - y^3 = c$ · The council's preliminary key

Q33 TS EAPCET 2026 · 11 May · Shift 2 MCQ

The integrating factor of the linear differential equation in x given by $\frac{dy}{dx} = \frac{1}{3x+y+2}$ is

(A) e^{-3x}
(B) e^{-x}
(C) e^{-3y}
(D) e^{-y}

Answer: (C) e^{-3y} · The council's preliminary key

Q34 TS EAPCET 2026 · 11 May · Shift 2 MCQ

If the general solution of the differential equation $\frac{dy}{dx} + \frac{2x+2y-1}{x+y-5} = 0$ is $ax + by - 9\log(|x + y + p|) = c$, and b, a, p are in GP, then the common ratio of this GP is

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

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

Q35 TS EAPCET 2026 · 10 May · Shift 1 MCQ

The differential equation corresponding to the family of curves $y = \log_e(ax + 3)$, where a is an arbitrary constant is

(A) $x\frac{dy}{dx}+3e^{-x}=1$

(B) $x\frac{dy}{dx}+3e^{y}=1$

(C) $x\frac{dy}{dx}+3e^{-y}=1$

(D) $x\frac{dy}{dx}+3e^{x}=1$

Answer: (C) $x\frac{dy}{dx}+3e^{-y}=1$ · The council's preliminary key

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Q36 TS EAPCET 2026 · 10 May · Shift 1 MCQ

The general solution of the differential equation $x^3dx-xy^2dy+y^3dx=0$ is

(A) $y^3=3x^4+cx$

(B) $y^3=x^3\log|x|+c$

(C) $e^{\left(\frac{y^3}{x^3}\right)}=cx^3$

(D) $y^3=\log(cx)^3$

Answer: (C) $e^{\left(\frac{y^3}{x^3}\right)}=cx^3$ · The council's preliminary key

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Q37 TS EAPCET 2026 · 10 May · Shift 2 MCQ

The differential equation corresponding to the family of curves $y=ae^{2x}+bx^2$, where a and b are parameters is $\left(x-x^2\right)\frac{d^2y}{dx^2}+y(2-4x)=$

(A) $\left(1-2x^2\right)\frac{dy}{dx}$

(B) $\left(2-4x^2\right)\frac{dy}{dx}$

(C) $(1-2x)\frac{dy}{dx}$

(D) $(2-4x)\frac{dy}{dx}$

Answer: (A) $\left(1-2x^2\right)\frac{dy}{dx}$ · The council's preliminary key

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Q38 TS EAPCET 2026 · 10 May · Shift 2 MCQ

If a curve $y=f(x)$ belonging to the family of curves corresponding to the differential equation $(\tan x)\frac{dy}{dx}+(1+\tan^2 x)y=\tan x(1+\tan^2 x)^2$ passes through the point $\left(\frac{\pi}{4},\frac{3}{4}\right)$, then $f\left(\frac{\pi}{3}\right)=$

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

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

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Q39 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If $\frac{dy}{dx} = \left(x^3 - x\right) - \left(1 - 3x^2\right)\tan x + \left(x^3 - x\right)\tan^2 x$ and $y(1) = 0$, then $\frac{64}{\pi}\, y\left(\frac{\pi}{4}\right) =$

(A) 1
(B) $\pi^2 + 16$
(C) $\pi^2 - 16$
(D) $16\pi^2$

Answer: (C) $\pi^2 - 16$ · The council's preliminary key

Q40 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If $\frac{dy}{dx} - \frac{2x}{x^2+b}y = -2x\left(x^2 + b\right)$, $y(0) = 12$, $y(1) = 10$, then sum of all possible values of b is

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

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

Q41 TS EAPCET 2026 · 9 May · Shift 2 MCQ

If a and b are arbitrary constants, then the differential equation corresponding to the family of curves given by $y = ax^2 - 2abx + ab^2$ is

(A) $2x\frac{d^2y}{dx^2} = \left(\frac{dy}{dx}\right)^2$
(B) $2y\frac{d^2y}{dx^2} = \left(\frac{dy}{dx}\right)^2$
(C) $2x\left(\frac{dy}{dx}\right)^2 = \frac{d^2y}{dx^2}$
(D) $2y\left(\frac{dy}{dx}\right)^2 = \frac{d^2y}{dx^2}$

Answer: (B) $2y\frac{d^2y}{dx^2} = \left(\frac{dy}{dx}\right)^2$ · The council's preliminary key

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Q42 TS EAPCET 2026 · 9 May · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx} = x^2y^2 + 3x^2y - 2xy^2 - 6xy$ is

(A) $y = c(y+3)e^{(x^3-3x^2)}$

(B) $y = c(y+3)(x+2)e^{x^2}$

(C) $y = c(x+2)e^{(y^3-3y^2)}$

(D) $y = c(x+2)e^{(x^4-3x^3)}$

Answer: (A) $y = c(y+3)e^{(x^3-3x^2)}$ · The council's preliminary key

Q43 AP EAPCET 2025 · 27 May · Shift 1 MCQ

The general solution of the differential equation $\left(x\sin\frac{y}{x}\right)dy = \left(y\sin\frac{y}{x} - x\right)dx$ is

(A) $\cos\left(\frac{y}{x}\right) = \log|x| + c$

(B) $\cos\left(\frac{y}{x}\right) = \frac{1}{x} + c$

(C) $\cos\left(\frac{x}{y}\right) = \log|y| + c$

(D) $\cos\frac{y}{x} = \frac{2}{x} + c$

Answer: (A) $\cos\left(\frac{y}{x}\right) = \log|x| + c$ · The council's preliminary key

Q44 AP EAPCET 2025 · 27 May · Shift 1 MCQ

The general solution of the differential equation $\cos(x+y)\,dy = dx$ is

(A) $y = \tan\left(\frac{x+y}{2}\right) + c$

(B) $y = \sec\left(\frac{x+y}{2}\right) + c$

(C) $y = x\sec\left(\frac{y}{x}\right) + c$

(D) $y = -\cos^{-1}\left(\frac{y}{x}\right) + c$

Answer: (A) $y = \tan\left(\frac{x+y}{2}\right) + c$ · The council's preliminary key

Q45 AP EAPCET 2025 · 27 May · Shift 1 MCQ

If $Ax^3 + Bxy = 4$ (A and B are arbitrary constants) is the general solution of the differential equation $F(x)\frac{d^2y}{dx^2} + G(x)\frac{dy}{dx} - 2y = 0$, then $F(1) + G(1) =$

(A) 1

(B) 0

(C) 4

(D) 9

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

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Q46 AP EAPCET 2025 · 26 May · Shift 1 MCQ

The general solution of the differential equation

$(2x-y)^2dy-2(2x-y)^2dx-2dx=0$ is

(A) $\log(2x-y)=2x+c$

(B) $(2x-y)^3+4y=c$

(C) $(2x-y)^3+6x=c$

(D) $\log(2x-y)=2y+c$

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

Q47 AP EAPCET 2025 · 26 May · Shift 1 MCQ

The general solution of the differential equation $x\log x\,dy=(x\log x-y)dx$ is

(A) $(x-y)\log x+x=c$

(B) $x-y=\dfrac{x}{\log x}+c$

(C) $y-x=\dfrac{x}{\log x}+c$

(D) $(y-x)\log x+x=c$

Answer: (D) $(y-x)\log x+x=c$ · The council's preliminary key

Q48 AP EAPCET 2025 · 26 May · Shift 2 MCQ

If a and b are arbitrary constants, then the differential equation corresponding to the family of curves $y=\tan(ax+b)$ is

(A) $(1+x^2)y_2-2yy_1+y=0$

(B) $(1+y^2)y_2-2yy_1^2=0$

(C) $(1+x^2)y_2+2yy_1^2=0$

(D) $(1+y^2)y_2-2yy_1^2+y=0$

Answer: (B) $(1+y^2)y_2-2yy_1^2=0$ · The council's preliminary key

Q49 AP EAPCET 2025 · 26 May · Shift 2 MCQ

The general solution of the differential equation $xy(y+2)dy+(y^3-1)dx=0$ is

(A) $\log|x+2y|+\frac{2}{\sqrt{3}}\text{Tan}^{-1}\left(\frac{y-x}{\sqrt{3}x}\right)=c$

(B) $\log|2x-y|+\frac{2}{3}\text{Tan}^{-1}\left(\frac{x-y}{\sqrt{3}x}\right)=c$

(C) $\log|xy-x|+\frac{2}{\sqrt{3}}\text{Tan}^{-1}\left(\frac{2y+1}{\sqrt{3}}\right)=c$

(D) $\log|x+y|+\frac{2}{3}\text{Tan}^{-1}\left(\frac{x-2y}{\sqrt{3}x}\right)=c$

Answer: (C) $\log|xy-x|+\frac{2}{\sqrt{3}}\text{Tan}^{-1}\left(\frac{2y+1}{\sqrt{3}}\right)=c$ · The council's preliminary key

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Q50 AP EAPCET 2025 · 26 May · Shift 2 MCQ

The general solution of the differential equation $(1+\sin^2 x)\frac{dy}{dx}+y\sin 2x=\cos x+\sin^2 x\cos x$ is

(A) $(\sin 2x)y=\sin^2 x+c$

(B) $(1+\sin^2 x)y=\sin x-\frac{\sin^3 x}{3}+c$

(C) $(1+\sin^2 x)y=\sin x+\frac{\sin^3 x}{3}+c$

(D) $(\sin 2x)y=\sin x+\sin^2 x+c$

Answer: (C) $(1+\sin^2 x)y=\sin x+\frac{\sin^3 x}{3}+c$ · The council's preliminary key

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Q51 AP EAPCET 2025 · 24 May · Shift 1 MCQ

If the slope of the tangent drawn at any point (x,y) on a curve is $(x+y)$, then the equation of that curve is

(A) $y=ce^x+1+x$

(B) $y=ce^x-x$

(C) $y=ce^{-x}-1-x$

(D) $y=ce^x-1-x$

Answer: (D) $y=ce^x-1-x$ · The council's preliminary key

Q52 AP EAPCET 2025 · 24 May · Shift 1 MCQ

The solution of the differential equation $x^2(y+1)\frac{dy}{dx}+y^2(x+1)^2=0$, when $y(1)=2$, is

(A) $\log|x^2y|=\frac{2}{x}+\frac{1}{y}+x-1$

(B) $\log\left|\frac{1}{4}x^2y\right|=\frac{1}{x}+\frac{2}{y}+x-1$

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

(D) $\log\left|\frac{1}{3}x^2y\right|=\frac{1}{x}+\frac{1}{y}-x+\frac{1}{2}$

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

Q53 AP EAPCET 2025 · 24 May · Shift 1 MCQ

The general solution of the differential equation $\frac{dy}{dx} = \frac{2x+y-3}{2y-x+3}$ is

(A) $x^2 - xy - y^2 + 3x + 3y + c = 0$

(B) $x^2 - xy - y^2 - 3x - 3y + c = 0$

(C) $x^2 + xy - y^2 - 3x - 3y + c = 0$

(D) $x^2 + xy + y^2 + 3x - 3y + c = 0$

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

Q54 AP EAPCET 2025 · 24 May · Shift 1 MCQ

If $x \log x \frac{dy}{dx} + y = \log x^2$ and $y(e) = 0$, then $y(e^2) =$

(A) 0

(B) 1

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

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

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

Q55 AP EAPCET 2025 · 23 May · Shift 1 MCQ

The general solution of the differential equation $\sec(x - y + 1)\, dy = dx$ is

(A) $x + \cot\left(\frac{x - y + 1}{2}\right) = c$

(B) $x + \cot(x - y + 1) = c$

(C) $x - \cot\left(\frac{x - y + 1}{2}\right) = c$

(D) $x - \cot(x - y + 1) = c$

Answer: (A) $x + \cot\left(\frac{x - y + 1}{2}\right) = c$ · The council's preliminary key

Q56 AP EAPCET 2025 · 23 May · Shift 1 MCQ

The differential equation for which $y^2 = 4a(x + a)$ (a is the parameter) is the general solution is

(A) $y = 2x\frac{dy}{dx} + y\left(\frac{dy}{dx}\right)^2$

(B) $y = y\frac{dy}{dx} - x\left(\frac{dy}{dx}\right)^2$

(C) $x = 3\frac{dy}{dx} + y\left(\frac{dy}{dx}\right)^2$

(D) $y = 3x^2\frac{dy}{dx} + y^2\left(\frac{dy}{dx}\right)^2$

Answer: (A) $y = 2x\frac{dy}{dx} + y\left(\frac{dy}{dx}\right)^2$ · The council's preliminary key

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Q57 AP EAPCET 2025 · 23 May · Shift 1 MCQ

The general solution of the differential equation $\frac{dy}{dx} = \frac{2xy-4x+y-2}{2xy+x-4y-2}$ is

(A) $5(y-x) + 2\log\left(\frac{y-2}{x-2}\right) = c$

(B) $2(y-x) - 5\log\left(\frac{y-2}{x-2}\right) = c$

(C) $2(y-x) + 5\log\left(\frac{y-2}{x-2}\right) = c$

(D) $5(y-x) - 2\log\left(\frac{y-2}{x-2}\right) = c$

Answer: (C) $2(y-x) + 5\log\left(\frac{y-2}{x-2}\right) = c$ · The council's preliminary key

Q58 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If the order and degree of the differential equation $x\frac{d^2y}{dx^2} = \left(1 + \left(\frac{d^2y}{dx^2}\right)^2\right)^{-1/2}$ are k and l respectively, then k, l are the roots of

(A) $x^2 - 5x + 6 = 0$

(B) $x^2 - 3x + 2 = 0$

(C) $x^2 - 7x + 12 = 0$

(D) $x^2 - 6x + 8 = 0$

Answer: (D) $x^2 - 6x + 8 = 0$ · The council's preliminary key

Q59 AP EAPCET 2025 · 23 May · Shift 2 MCQ

The equation of the curve passing through the point $(0, \pi)$ and satisfying the differential equation $y\,dx = (x + y^3\cos y)\,dy$ is

(A) $x = y^2\sin y + y\cos^2 y$

(B) $x = y^2\sin y + 2y\cos^2\frac{y}{2}$

(C) $x = y^2\sin y + y\cos^2\frac{y}{2}$

(D) $x = y^2\sin y - y\cos^2 y$

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

Q60 AP EAPCET 2025 · 23 May · Shift 2 MCQ

The general solution of the differential equation $(x - (x+y)\log(x+y))dx + x\,dy = 0$ is

(A) $y\log(x+y) = cx$

(B) $x\log(x+y) = cy$

(C) $\log(x+y) = cy$

(D) $\log(x+y) = cx$

Answer: (D) $\log(x+y) = cx$ · The council's preliminary key

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Q61 AP EAPCET 2025 · 22 May · Shift 1 MCQ

The general solution of the differential equation $\frac{dy}{dx} = \frac{2x^2 - xy - y^2}{x^2 - y^2}$ is

(A) $\log\left|\frac{y^2-2x^2}{x^2}\right| + \sqrt{2}\log\left|\frac{y-\sqrt{2}x}{y+\sqrt{2}x}\right| + 2\sqrt{2}\log|x| = c$

(B) $\sqrt{2}\log\left|\frac{y^2-2x^2}{x^2}\right| + \log\left|\frac{y-\sqrt{2}x}{y+\sqrt{2}x}\right| + 2\sqrt{2}\log|x| = c$

(C) $\sqrt{2}\log\left|\frac{y^2+2x^2}{x^2}\right| + \log\left|\frac{y+\sqrt{2}x}{y-\sqrt{2}x}\right| + 2\sqrt{2}\log|x| = c$

(D) $\log\left|\frac{2x^2-y^2}{x^2}\right| + \sqrt{2}\log\left|\frac{y+\sqrt{2}x}{y-\sqrt{2}x}\right| + \log|x| = c$

Answer: (B) $\sqrt{2}\log\left|\frac{y^2-2x^2}{x^2}\right| + \log\left|\frac{y-\sqrt{2}x}{y+\sqrt{2}x}\right| + 2\sqrt{2}\log|x| = c$ · The council's preliminary key

Q62 AP EAPCET 2025 · 22 May · Shift 1 MCQ

If the degree of the differential equation corresponding to the family of curves $y = ax + \frac{1}{a}$ (where $a \neq 0$ is an arbitary constant) is r and it's order is m, then the solution of $\frac{dy}{dx} = \frac{y}{2x}, y(1) = \sqrt{r+m}$ is

(A) $y = 3^x$

(B) $y^2 = 3x$

(C) $x^2 = 3y$

(D) $y = 3\log x$

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

Q63 AP EAPCET 2025 · 22 May · Shift 1 MCQ

The general solution of the differential equation $y + \cos x\left(\frac{dy}{dx}\right) - \cos^2 x = 0$ is

(A) $(\sec x + \tan x)\, y = x + \cos x + c$

(B) $(1 + \cos x)\, y = (x + c)\cos x - \cos^2 x$

(C) $(1 + \sin x)\, y = (x + c)\cos x - \cos^2 x$

(D) $(\sec x + \tan x)\, y = x - \sin x + c$

Answer: (C) $(1 + \sin x)\, y = (x + c)\cos x - \cos^2 x$ · The council's preliminary key

Q64 AP EAPCET 2025 · 22 May · Shift 2 MCQ

The differential equation of the family of circles passing through the origin and having centre on X-axis is

(A) $(y^2 + x^2)dx - 2y\,dy = 0$

(B) $(y^2 - x^2)dx - 2xy\,dy = 0$

(C) $(y^2 - x^2)dx + 2y\,dy = 0$

(D) $(y^2 + x^2)dx + 2y\,dy = 0$

Answer: (B) $(y^2 - x^2)dx - 2xy\,dy = 0$ · The council's preliminary key

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Q65 AP EAPCET 2025 · 22 May · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx}=\frac{x+y}{x-y}$ is

(A) $y-x=cx^2$

(B) $\text{Tan}^{-1}\left(\frac{y}{x}\right)=\log\left(cx\sqrt{x^2+y^2}\right)$

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

(D) $\text{Tan}^{-1}\left(\frac{y}{x}\right)=\log\left(c\sqrt{x^2+y^2}\right)$

Answer: (D) $\text{Tan}^{-1}\left(\frac{y}{x}\right)=\log\left(c\sqrt{x^2+y^2}\right)$ · The council's preliminary key

Q66 AP EAPCET 2025 · 22 May · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx}+\frac{\sec x}{\cos x+\sin x}y=\frac{\cos x}{1+\tan x}$ is

(A) $(\cos x+\sin x)\,y=\sin x+c$

(B) $(\cos x+\sin x)\,y=\cos x+c$

(C) $(1+\tan x)\,y=\cos x+c$

(D) $\sec x\,(\cos x+\sin x)\,y=\sin x+c$

Answer: (D) $\sec x\,(\cos x+\sin x)\,y=\sin x+c$ · The council's preliminary key

Q67 AP EAPCET 2025 · 21 May · Shift 1 MCQ

The differential equation corresponding to the family of parabolas whose axis is along $x=1$ is

(A) $\frac{d^2y}{dx^2}-(x-1)\frac{dy}{dx}=0$

(B) $(x-1)\frac{d^2y}{dx^2}-\frac{dy}{dx}=0$

(C) $\frac{d^2y}{dx^2}+(x-1)\frac{dy}{dx}-y=0$

(D) $(x-1)\frac{d^2y}{dx^2}+\frac{dy}{dx}=0$

Answer: (B) $(x-1)\frac{d^2y}{dx^2}-\frac{dy}{dx}=0$ · The council's preliminary key

Q68 AP EAPCET 2025 · 21 May · Shift 1 MCQ

The general solution of the equation $\frac{dy}{dx}+\frac{1}{x}y=\frac{1}{x}e^x$ is

(A) $y=xe^x+c$

(B) $y=xe^x+ce^{-x}$

(C) $y=\frac{e^x+c}{x}$

(D) $y=\frac{e^{-x}+cx}{x}$

Answer: (C) $y=\frac{e^x+c}{x}$ · The council's preliminary key

Q69 AP EAPCET 2025 · 21 May · Shift 1 MCQ

The general solution of the differential equation $\left(x\sin\frac{y}{x}\right)dy=\left(y\sin\frac{y}{x}-x\right)dx$ is

(A) $\log x + \tan \frac{y}{x} = c$
(B) $\log x + \cos \frac{y}{x} = c$
(C) $\log x - \sin \frac{y}{x} = c$
(D) $\log x - \cos \frac{y}{x} = c$

Answer: (D) $\log x - \cos \frac{y}{x} = c$ · The council's preliminary key

Q70 AP EAPCET 2025 · 21 May · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx} + xy = 4x - 2y + 8$ is

(A) $y = 4 - ce^{-\frac{(x+2)^2}{2}}$
(B) $y = 8 + ce^{\frac{-x^2}{2} - 2x}$
(C) $y = ce^{-(x+2)^2} + x$
(D) $y + 2x = ce^{-\frac{x}{2} - 2x}$

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

Q71 AP EAPCET 2025 · 21 May · Shift 2 MCQ

The general solution of the differential equation $(x + 2y^3)\frac{dy}{dx} - y = 0,\ y > 0$ is

(A) $y = x^3 + cy$
(B) $x = y^3 + cy$
(C) $y(1 - xy) = cx$
(D) $x(1 - xy) = cy$

Answer: (B) $x = y^3 + cy$ · The council's preliminary key

Q72 AP EAPCET 2025 · 21 May · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx} + \frac{x+y+1}{x-3y+5} = 0$ is

(A) $3(y-1)^2 - 2(x+2)(y-1) - (x+2)^2 = c$
(B) $x^2 - 3y^2 - 4xy - 2x - 10y = c$
(C) $3(y+1)^2 + 2(x-2)(y+1) - (x-2)^2 = c$
(D) $x^2 + 3y^2 + 4xy + 2x + 10y = c$

Answer: (A) $3(y-1)^2 - 2(x+2)(y-1) - (x+2)^2 = c$ · The council's preliminary key

Q73 TS EAPCET 2025 · 4 May · Shift 1 MCQ

If $y = f(x)$ is the solution of the differential equation $(1 + \cos^2 x)f'(x) - 4\sin 2x - f(x)\sin 2x = 0$ when $f(0) = 0$, then $f\left(\frac{\pi}{3}\right) =$

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

Answer: (B) $\frac{12}{5}$ · The council's preliminary key

Q74 TS EAPCET 2025 · 4 May · Shift 1 MCQ

The differential equation corresponding to the family of ellipses $\frac{x^2}{a^2}+\frac{y^2}{4}=1$, where 'a' is an arbitrary constant is

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

Answer: (D) $xy\frac{dy}{dx}=y^2-4$ · The council's preliminary key

Q75 TS EAPCET 2025 · 4 May · Shift 2 MCQ

The differential equation of the family of all circles of radius 'a' is

(A) $y_1y_2+(1+y_1^2)=a$
(B) $(1+y_1^2)^3=a^2y_2^2$
(C) $1+y_1^2=y_2^2+a^2$
(D) $y_2^2+1=y_1^2+a^2$

Answer: (B) $(1+y_1^2)^3=a^2y_2^2$ · The council's preliminary key

Q76 TS EAPCET 2025 · 4 May · Shift 2 MCQ

If the general solution of $(1+y^2)\,dx=(\mathrm{Tan}^{-1}y-x)\,dy$ is $x=f(y)+ce^{-\mathrm{Tan}^{-1}y}$, then $f(y)=$

(A) $\mathrm{Tan}^{-1}y$
(B) $\mathrm{Tan}^{-1}y+1$
(C) $\mathrm{Tan}^{-1}y-1$
(D) $y\,\mathrm{Tan}^{-1}y$

Answer: (C) $\mathrm{Tan}^{-1}y-1$ · The council's preliminary key

Q77 TS EAPCET 2025 · 3 May · Shift 1 MCQ

The differential equation of a family of hyperbolas whose axes are parallel to coordinate axes, centres lie on the line $y=2x$ and eccentricity is $\sqrt{3}$ is

(A) $(2x-y)y_2+y_1^2-2y_1=y_1^3+2$
(B) $(y-2x)y_2+y_1^2+2y_1=y_1^3+2$
(C) $(y-2x)y_2-y_1^2+2y_1=y_1^3-2$
(D) $(y+2x)y_2+y_1^2+2y_1=y_1^3-2$

Answer: (B) $(y-2x)y_2+y_1^2+2y_1=y_1^3+2$ · The council's preliminary key

Q78 TS EAPCET 2025 · 3 May · Shift 1 MCQ

The general solution of the differential equation $(x^3-y^3)dx=(x^2y-xy^2)dy$ is

(A) $y=x\log(c|x+y|)$
(B) $y=\log(c|x+y|)$
(C) $xy=\log(c|x+y|)$
(D) $x+y+\log|x+y|+c=0$

Answer: (A) $y=x\log(c|x+y|)$ · The council's preliminary key

Q79 TS EAPCET 2025 · 3 May · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx}+(\sec x\,\operatorname{cosec} x)y=\cos^2 x$ is

(A) $y\sec^2 x=\sin^2 x+c$
(B) $y\sec^2 x=\tan x+c$
(C) $y\tan x=\sin x\cos x+c$
(D) $2y\tan x=\sin^2 x+c$

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

Q80 TS EAPCET 2025 · 3 May · Shift 2 MCQ

If the differential equation having $y=Ae^x+B\sin x$ as its general solution is

$$f(x)\frac{d^2y}{dx^2}+g(x)\frac{dy}{dx}+h(x)y=0$$

, then $f(x)+g(x)+h(x)=$

(A) $2\cos x$
(B) $4\sin x$
(C) 0
(D) $\cos x-\sin x$

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

Q81 TS EAPCET 2025 · 2 May · Shift 1 MCQ

If $\cos x\frac{dy}{dx}=y\sin x-1,\ x\neq(2n+1)\frac{\pi}{2},\ n\in Z$ is the differential equation corresponding to the curve $y=f(x)$ and $f(0)=1$ then $f(x)=$

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(A) $(1-x)\sec x$
(B) $(1-x)\cos x$
(C) $x+\cos x$
(D) $x+\sec x$

Answer: (A) $(1-x)\sec x$ · The council's preliminary key

Q82 TS EAPCET 2025 · 2 May · Shift 1 MCQ

The general solution of the differential equation $2dx+dy=(6xy+4x-3y)dx$ is

(A) $2\log|2x-1|=3y^2+4y+c$
(B) $\log|3y+2|=3x^2-3x+c$
(C) $\log|3y+2|=x^2-x+c$
(D) $\log|2x-1|=3y^2-4y+c$

Answer: (B) $\log|3y+2|=3x^2-3x+c$ · The council's preliminary key

Q83 TS EAPCET 2025 · 2 May · Shift 2 MCQ

The substitution required to reduce the differential equation $t^2dx+\left(x^2-tx+t^2\right)dt=0$ to a differential equation which can be solved by variables separable method is

(A) $t=Vx$
(B) $ax+bt=Z$
(C) $V=tx^2$
(D) $x=tV^2$

Answer: (A) $t=Vx$ · The council's preliminary key

Q84 TS EAPCET 2025 · 2 May · Shift 2 MCQ

The equation which represents the system of parabolas whose axis is parallel to y-axis satisfies the differential equation

(A) $\frac{d^3y}{dx^3}=0$
(B) $\frac{d^3y}{dx^3}+\frac{d^2y}{dx^2}=x+y$
(C) $\frac{d^2y}{dx^2}+xy=4ax$
(D) $\frac{dy}{dx}+xy=x^2$

Answer: (A) $\frac{d^3y}{dx^3}=0$ · The council's preliminary key

Q85 AP EAPCET 2024 · 23 May · Shift 1 MCQ

If the length of the sub-tangent at any point P on a curve is proportional to the abscissa of the point P, then the equation of that curve is (C is an arbitrary constant)

(A) $y^k + x^k = C$
(B) $x^{1/k}C = y^k$
(C) $(x+y)^k = C$
(D) $y = x^{1/k}C$

Answer: (D) $y = x^{1/k}C$ · The council's preliminary key

Q86 AP EAPCET 2024 · 23 May · Shift 1 MCQ

Among the options given below, from which option a differential equation of order two can be formed?

(A) All circles passing through origin
(B) All parabolas passing through origin and having focus on x-axis
(C) All the lines passing through the origin
(D) All hyperbolas of the form $x^2 - y^2 = k^2$

Answer: (A) All circles passing through origin · The council's preliminary key

Q87 AP EAPCET 2024 · 23 May · Shift 1 MCQ

The differential equation for which $ax + by = 1$ is general solution is

(A) $\frac{dy}{dx} = x + c$
(B) $y\frac{d^2y}{dx^2} + x = 1$
(C) $\frac{d^2y}{dx^2} = 0$
(D) $\frac{d^3y}{dx^3} = 0$

Answer: (C) $\frac{d^2y}{dx^2} = 0$ · The council's preliminary key

Q88 AP EAPCET 2024 · 23 May · Shift 1 MCQ

The solution of the differential equation $e^x y\,dx + e^x dy + x\,dx = 0$ is

(A) $e^x + yx^2 = c$
(B) $2ye^x + x^2 = c$
(C) $ye^x + x^2e^y = c$
(D) $e^x + xe^y = c$

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

Q89 AP EAPCET 2024 · 22 May · Shift 1 MCQ

The general solution of the differential equation $(1 + \tan y)(dx - dy) + 2x\,dy = 0$ is

(A) $e^x(y\cos x+\sin x)+\sin x=c$
(B) $e^x(y\cos x+y\sin x-\sin x)+\cos x=0$
(C) $e^y(x\cos y+x\sin y-\sin y)=c$
(D) $e^y(x\cos y+x\sin y+\sin y)=c$

Answer: (C) $e^y(x\cos y+x\sin y-\sin y)=c$ · The council's preliminary key

Q90 AP EAPCET 2024 · 22 May · Shift 1 MCQ

The general solution of the differential equation $x\,dy-y\,dx=\sqrt{x^2+y^2}\,dx$ is

(A) $y+\sqrt{x^2+y^2}=cx^2$
(B) $y+\sqrt{x^2+y^2}=cx$
(C) $x+\sqrt{x^2+y^2}=cy$
(D) $x-\sqrt{x^2+y^2}=cy^2$

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

Q91 AP EAPCET 2024 · 22 May · Shift 1 MCQ

The sum of the order and degree of the differential equation $x\left(\frac{d^2y}{dx^2}\right)^{1/2}=\left(1+\frac{dy}{dx}\right)^{4/3}$ is

(A) 5
(B) 8
(C) 12
(D) 10

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

Q92 AP EAPCET 2024 · 22 May · Shift 2 MCQ

The differential equation of the family of hyperbolas having their centres at origin and their axes along the coordinates axes is

(A) $xyy_2+xy_1^2-yy_1=0$
(B) $xy_2-xyy_1^2+yy_1=0$
(C) $xyy_2+xy_1^2+yy_1=0$
(D) $xy_2+xy_1^2-yy_1=0$

Answer: (A) $xyy_2+xy_1^2-yy_1=0$ · The council's preliminary key

Q93 AP EAPCET 2024 · 22 May · Shift 2 MCQ

The general solution of the differential equation $(xy+y^2)dx-(x^2-2xy)dy=0$ is

(A) $c\,x\,y^2 = e^{x/y}$
(B) $c\,x\,y^2 e^{x/y} = 1$
(C) $c\,x\,y\,e^{x/y} = 1$
(D) $c\,x\,y = e^{x/y}$

Answer: (B) $c\,x\,y^2 e^{x/y} = 1$ · The council's preliminary key

Q94 AP EAPCET 2024 · 21 May · Shift 1 MCQ

The differential equation formed by eliminating a and b from the equation $y = ae^{2x} + bxe^{2x}$ is

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

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

Q95 AP EAPCET 2024 · 21 May · Shift 1 MCQ

If $y = a^3 e^{b^2 x + c}$ is the general solution of a differential equation, where a and c are arbitrary constants and b is a fixed constant, then the order of differential equation is

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

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

Q96 AP EAPCET 2024 · 21 May · Shift 1 MCQ

The solution of differential equation $(x + 2y^3)\frac{dy}{dx} = y$ is

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

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

Q97 AP EAPCET 2024 · 21 May · Shift 2 MCQ

The differential equation formed by eliminating arbitrary constants A, B from the equation $y = A\cos 3x + B\sin 3x$ is

(A) $\frac{d^2y}{dx^2} + y = 0$
(B) $\frac{d^2y}{dx^2} + 9y = 0$
(C) $\frac{d^2y}{dx^2} - 9y = 0$
(D) $\frac{d^2y}{dx^2} - y = 0$

Answer: (B) $\frac{d^2y}{dx^2} + 9y = 0$ · The council's preliminary key

Q98 AP EAPCET 2024 · 21 May · Shift 2 MCQ

If $\cos x \frac{dy}{dx} - y \sin x = 6x$, $\left(0 < x < \frac{\pi}{2}\right)$ and $y\left(\frac{\pi}{3}\right) = 0$ then $y\left(\frac{\pi}{6}\right) =$

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

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

Q99 AP EAPCET 2024 · 21 May · Shift 2 MCQ

$\frac{dy}{dx} = \frac{y + x\tan\frac{y}{x}}{x} \Rightarrow \sin\frac{y}{x} =$

(A) cx^2
(B) cx
(C) cx^3
(D) cx^4

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

Q100 AP EAPCET 2024 · 20 May · Shift 1 MCQ

The sum of the order and degree of the differential equation $\frac{d^4y}{dx^4} = \left\{c + \left(\frac{dy}{dx}\right)^2\right\}^{3/2}$ is

(A) 4
(B) 6
(C) 5
(D) 8

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

Q101 AP EAPCET 2024 · 20 May · Shift 1 MCQ

The general solution of the differential equation $(x + y)y\,dx + (y - x)x\,dy = 0$ is

(A) $x + y\log(cy) = 0$
(B) $\frac{y}{x} = \log(xy) + c$
(C) $x + y\log(cxy) = 0$
(D) $\frac{y}{x} = \log(cxy)$

Answer: (C) $x + y\log(cxy) = 0$ · The council's preliminary key

Q102 AP EAPCET 2024 · 20 May · Shift 1 MCQ

The general solution of the differential equation $(y^2 + x + 1)dy = (y + 1)dx$ is

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

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

Q103 AP EAPCET 2024 · 20 May · Shift 2 MCQ

Order and degree of the differential equation $\frac{d^3y}{dx^3} = \left[1 + \left(\frac{dy}{dx}\right)^2\right]^{5/2}$ respectively are

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

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

Q104 AP EAPCET 2024 · 20 May · Shift 2 MCQ

Integrating factor of the differential equation $\sin x\frac{dy}{dx} - y\cos x = 1$ is

(A) $\sin x$
(B) $\cos x$
(C) $\sec x$
(D) $\text{cosec}\, x$

Answer: (D) $\text{cosec}\, x$ · The council's preliminary key

Q105 AP EAPCET 2024 · 20 May · Shift 2 MCQ

The general solution of the differential equation $\left(x\sin\frac{y}{x}\right)dy = \left(y\sin\frac{y}{x} - x\right)dx$ is

(A) $\cos\frac{x}{y} = \log_e x + c$

(B) $\cos\frac{y}{x} = \log_e x + c$

(C) $\cos\frac{x}{y} = \log_e y + c$

(D) $\cos\frac{y}{x} = \log_e y + c$

Answer: (B) $\cos\frac{y}{x} = \log_e x + c$ · The council's preliminary key

Q106 AP EAPCET 2024 · 19 May · Shift 2 MCQ

The difference of the order and degree of the differential equation

$$\left(\frac{d^2y}{dx^2}\right)^{-7/2}\left(\frac{d^3y}{dx^3}\right)^2 - \left(\frac{d^2y}{dx^2}\right)^{-5/2}\left(\frac{d^4y}{dx^4}\right) = 0$$

is

(A) 5

(B) 3

(C) 4

(D) 2

Answer: (B) 3 · Checked by our team

Q107 AP EAPCET 2024 · 19 May · Shift 2 MCQ

If $x\,dy + (y + y^2x)\,dx = 0$ and $y = 1$ at $x = 1$, then

(A) $y = \dfrac{x}{1 + \log x}$

(B) $y = \dfrac{1 + \log x}{x}$

(C) $y = x(1 + \log x)$

(D) $y = \dfrac{1}{x(1 + \log x)}$

Answer: (D) $y = \dfrac{1}{x(1 + \log x)}$ · The council's preliminary key

Q108 AP EAPCET 2024 · 19 May · Shift 2 MCQ

The solution of $x\,dy - y\,dx = \sqrt{x^2 + y^2}\,dx$ when $y(\sqrt{3}) = 1$ is

(A) $y^2 + \sqrt{x^2 + y^2} = x^2$

(B) $5y - \sqrt{x^2 + y^2} = x^2$

(C) $y + \sqrt{x^2 + y^2} = x^2$

(D) $5y^2 - \sqrt{x^2 + y^2} = x$

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

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Q109 AP EAPCET 2024 · 18 May · Shift 1 MCQ

The differential equation representing the family of circles having their centres on Y-axis is $\left(y_1 = \frac{dy}{dx} \text{ and } y_2 = \frac{d^2y}{dx^2}\right)$

(A) $y_2 = y(y_1^2 + 1)$
(B) $y_2 = xy(y_1^2 + 1)$
(C) $xy_2 = y_1(y_1^2 + 1)$
(D) $xy_2 = y(y_1^2 + 1)$

Answer: (C) $xy_2 = y_1(y_1^2 + 1)$ · The council's preliminary key

Q110 AP EAPCET 2024 · 18 May · Shift 1 MCQ

The general solution of the differential equation $(\sin y \cos^2 y - x \sec^2 y)\, dy = (\tan y)\, dx$ is

(A) $\tan y = 3x \cos^3 y + c$
(B) $x(\sec y + \tan y) = \cos^2 y + c$
(C) $y \sin y = x^2 \cos^2 y + c$
(D) $3x \tan y + \cos^3 y = c$

Answer: (D) $3x \tan y + \cos^3 y = c$ · The council's preliminary key

Q111 AP EAPCET 2024 · 18 May · Shift 1 MCQ

The general solution of the differential equation $(x - y - 1)\, dy = (x + y + 1)\, dx$ is

(A) $\text{Tan}^{-1}\left(\frac{y+1}{x}\right) - \frac{1}{2}\log(x^2 + y^2 + 2y + 1) = c$
(B) $(x - y) + \log(x + y) = c$
(C) $y^2 - x^2 + xy - 3y - x = c$
(D) $(x - y - 1)^2(x + y + 1)^3 = c$

Answer: (A) $\text{Tan}^{-1}\left(\frac{y+1}{x}\right) - \frac{1}{2}\log(x^2 + y^2 + 2y + 1) = c$ · The council's preliminary key

Q112 TS EAPCET 2024 · 11 May · Shift 1 MCQ

If the equation of the curve which passes through the point $(1, 1)$ satisfies the differential equation $\frac{dy}{dx} = \frac{2x-5y+3}{5x+2y-3}$, then the equation of that curve is

(A) $x^2 + 5xy - y^2 + 3x - 3y - 5 = 0$
(B) $x^2 + 5xy - y^2 + 3x + 3y - 11 = 0$
(C) $x^2 - 5xy - y^2 - 3x - 3y + 11 = 0$
(D) $x^2 - 5xy - y^2 + 3x + 3y - 1 = 0$

Answer: (D) $x^2 - 5xy - y^2 + 3x + 3y - 1 = 0$ · The council's preliminary key

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Q113 TS EAPCET 2024 · 11 May · Shift 1 MCQ

The general solution of the differential equation $(6x^2 - 2xy - 18x + 3y)dx - (x^2 - 3x)dy = 0$ is

(A) $2x^3 - x^2y - 9x^2 + 3xy + c = 0$

(B) $4x^3 - 2x^2y - 6x^2 + 6xy + c = 0$

(C) $2x^2 - 4xy - y^2 - x + 3y + c = 0$

(D) $3x^2 + 5xy - 2y^2 - 4x - 2y + c = 0$

Answer: (A) $2x^3 - x^2y - 9x^2 + 3xy + c = 0$ · The council's preliminary key

Q114 TS EAPCET 2024 · 10 May · Shift 1 MCQ

If A and B are arbitrary constants, then the differential equation having $y = Ae^{-x} + B\cos x$ as its general solution is

(A) $(\sin x - \cos x)\frac{d^2y}{dx^2} + 2\cos x\frac{dy}{dx} - (\sin x + \cos x)y = 0$

(B) $(\cos x - \sin x)\frac{d^2y}{dx^2} + 2\cos x\frac{dy}{dx} + (\sin x + \cos x)y = 0$

(C) $(\cos x + \sin x)\frac{d^2y}{dx^2} + 2\sin x\frac{dy}{dx} - (\sin x - \cos x)y = 0$

(D) $(\cos x - \sin x)\frac{d^2y}{dx^2} - 2\sin x\frac{dy}{dx} + (\cos x + \sin x)y = 0$

Answer: (B) $(\cos x - \sin x)\frac{d^2y}{dx^2} + 2\cos x\frac{dy}{dx} + (\sin x + \cos x)y = 0$ · The council's preliminary key

Q115 TS EAPCET 2024 · 10 May · Shift 1 MCQ

The general solution of the differential equation $\frac{dy}{dx} + \frac{\sin(2x+y)}{\cos x} + 2 = 0$ is

(A) $(\sec x + \tan x)[\text{cosec}(2x + y) - \cot(2x + y)] = c$

(B) $\sin(2x + y)\cos x = c$

(C) $\cos(2x + y)\sin x = c$

(D) $(\text{cosec}\, x - \cot x)(\sec(2x + y) - \tan(2x + y)) = c$

Answer: (A) $(\sec x + \tan x)[\text{cosec}(2x + y) - \cot(2x + y)] = c$ · The council's preliminary key

Q116 TS EAPCET 2024 · 10 May · Shift 2 MCQ

The order and degree of the differential equation $\frac{dy}{dx} = \left(\frac{d^2y}{dx^2} + 2\right)^{1/2} + \frac{d^2y}{dx^2} + 5$ are respectively

(A) 2, 1

(B) 2, 4

(C) 2, 2

(D) 2, 3

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

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Q117 TS EAPCET 2024 · 10 May · Shift 2 MCQ

If $y = \sin x + A\cos x$ is the general solution of $\frac{dy}{dx} + f(x)y = \sec x$, then an integrating factor of the differential equation is

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

Answer: (A) $\sec x$ · The council's preliminary key

Q118 TS EAPCET 2024 · 9 May · Shift 1 MCQ

The general solution of the differential equation $(3x^2 - 2xy)dy + (y^2 - 2xy)dx = 0$ is

(A) $x^2 - xy = cy^2$
(B) $y^2 - xy = cx^3$
(C) $xy - x^2 = cy^3$
(D) $xy - y^2 = cy^3$

Answer: (C) $xy - x^2 = cy^3$ · The council's preliminary key

Q119 TS EAPCET 2024 · 9 May · Shift 2 MCQ

The general solution of the differential equation $(9x - 3y + 5)dy = (3x - y + 1)dx$ is

(A) $x - 3y - \log|12x - 4y + 7| = c$
(B) $4x - 12y - \log|12x - 4y + 7| = c$
(C) $4x - 12y + \log|6x - 2y + 7| = c$
(D) $2x - 6y + \log|12x - 4y + 7| = c$

Answer: (B) $4x - 12y - \log|12x - 4y + 7| = c$ · The council's preliminary key

Q120 TS EAPCET 2024 · 9 May · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx} = \frac{2y^2+1}{2y^3-4xy+y}$ is

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

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

Q121 AP EAPCET 2023 · 19 May · Shift 1 MCQ

Let a and b be arbitrary constants and C be a fixed constant. If $y = ae^{2x} + bxe^{2x} + C$ is the general solution of a differential equation, then the order of that differential equation is

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

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

Q122 AP EAPCET 2023 · 19 May · Shift 1 MCQ

The differential equation $y^2dx + (3xy - 1)dy = 0$ is

(A) linear in y
(B) not a linear equation
(C) a homogenous equation
(D) linear in x

Answer: (D) linear in x · The council's preliminary key

Q123 AP EAPCET 2023 · 19 May · Shift 1 MCQ

The particular solution of the differential equation $\frac{dx}{dy} = \frac{\sin y(1+y\cot y)}{x\log(x^2e)}$, $y(1) = 0$ is

(A) $y\sin y = x^2\log x$
(B) $y^2\sin y = \log x$
(C) $y = \left(\frac{e^2}{\sin e}\right)(x-1)$
(D) $y = e^2\sec x$

Answer: (A) $y\sin y = x^2\log x$ · The council's preliminary key

Q124 AP EAPCET 2023 · 18 May · Shift 1 MCQ

Which one of the following is a linear differential equation?

(A) $\frac{dx}{dy} + y^2 = e^{e^x}$
(B) $dr + (2r^2\cot\theta + \sin 2\theta)\,d\theta = 0$
(C) $\frac{dy}{dx} = e^{x-y}\left(e^x - e^{-y}\right)$
(D) $x^2dy + xy\,dx - 1 = 0$

Answer: (D) $x^2dy + xy\,dx - 1 = 0$ · The council's preliminary key

Q125 AP EAPCET 2023 · 18 May · Shift 1 MCQ

If $X = x + h$, $Y = y + k$ transforms $\frac{dy}{dx} = \frac{2x + 3y - 7}{3x + 2y - 8}$ to a homogeneous differential equation, then $(h, k) =$

(A) $(1, 2)$
(B) $(2, 1)$
(C) $(7, 8)$
(D) $(8, 7)$

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

Q126 AP EAPCET 2023 · 18 May · Shift 1 MCQ

If $\log y$ is an integrating factor of $\frac{dx}{dy} + P(y)x = Q(y)$, then $P(y) =$

(A) $\frac{1}{y + \log y}$
(B) $\frac{y}{\log y}$
(C) $\frac{\log y}{y}$
(D) $\frac{1}{y \log y}$

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

Q127 AP EAPCET 2023 · 18 May · Shift 2 MCQ

If $f(x)$ is a function such that $f'(x) = \sqrt{f^2(x) - 1}$ and $f(0) = 1$, then $f(1) =$

(A) $\frac{e^{-2}+1}{2e}$
(B) $\frac{e^{2}+1}{2e}$
(C) $\frac{e^{2}-1}{2e}$
(D) $\frac{e^{-2}-1}{2e}$

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

Q128 AP EAPCET 2023 · 18 May · Shift 2 MCQ

The general solution of $\frac{dy}{dx} = \cos^2(x - y - 1)$ is given by $x =$

(A) $C - \cot(x - y - 1)$
(B) $C - \tan(x - y + 1)$
(C) $y + C\cot(x - y - 1)$
(D) $Cy + \tan(x - y - 1)$

Answer: (A) $C - \cot(x - y - 1)$ · The council's preliminary key

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Q129 AP EAPCET 2023 · 18 May · Shift 2 MCQ

The degree of the differential equation $\log\left(\frac{dy}{dx}\right) = \left(2x + 3\frac{dy}{dx}\right)^2$ is

(A) 1
(B) 2
(C) 3
(D) not defined

Answer: (D) not defined · The council's preliminary key

Q130 AP EAPCET 2023 · 18 May · Shift 2 MCQ

If $y = y(x)$ is a particular solution of $\sqrt{1-x^2}\,\frac{dy}{dx} + \frac{2x}{\sqrt{1-x^2}}\,y = x$, $y(0) = 1$, then $y\left(\frac{1}{2}\right) =$

(A) $\frac{\sqrt{3}}{2}$
(B) $\frac{1}{4}$
(C) $\frac{1}{2}$
(D) 0

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

Q131 AP EAPCET 2023 · 17 May · Shift 1 MCQ

The particular solution of the differential equation $(1+y^2)\,dx - xy\,dy = 0,\ y(1) = 0$ represents

(A) a circle
(B) a part of parabola
(C) a part of ellipse
(D) a part of hyperbola

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

Q132 AP EAPCET 2023 · 17 May · Shift 1 MCQ

If c and d are arbitrary constants, then $y = e^{2x}\left(c\cosh\sqrt{2}\,x + d\sinh\sqrt{2}\,x\right)$ is the general solution of the differential equation

(A) $y'' + 4y' + 2y = 0$
(B) $y'' - 4y' + 2y = 0$
(C) $y'' - 4y' + 4y = 0$
(D) $y'' - 2\sqrt{2}\,y' + 2y = 0$

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

Q133 AP EAPCET 2023 · 17 May · Shift 1 MCQ

Which one of the following is a homogeneous differential equation?

(A) $\frac{dy}{dx} = x^3 + (\sin x)\, y$
(B) $\frac{dy}{dx} = (x^3 + y^3)\, e^{\frac{x}{y}} + x\sqrt{y}$
(C) $(x^2 + y^2)\, dx = 2xy\, dy$
(D) $x\frac{dy}{dx} = y + e^{\frac{x}{y}}$

Answer: (C) $(x^2 + y^2)\, dx = 2xy\, dy$ · The council's preliminary key

Q134 AP EAPCET 2023 · 17 May · Shift 2 MCQ

Let c_1, c_2, c_3, c_4 be arbitrary constants. The order of the differential equation, corresponding to $y = c_1 e^x + c_2 e^{\log_e x} + c_3 \sin^2 x - c_4(\cos^2 x - 1)$ is

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

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

Q135 AP EAPCET 2023 · 17 May · Shift 2 MCQ

The order and degree of the differential equation $3x^2 \frac{d^2y}{dx^2} - \sin\left(\frac{d^3y}{dx^3}\right) + \cos(xy) = 0$ are

(A) Order can't be defined and degree is 3
(B) Oder is 3 and degree can't be defined
(C) Order is 3 and degree is 1
(D) Order is 1 and degree is 3

Answer: (B) Oder is 3 and degree can't be defined · The council's preliminary key

Q136 AP EAPCET 2023 · 17 May · Shift 2 MCQ

If $y = y(x)$ is the solution of $x\frac{dy}{dx} = y + xe^{-\left(\frac{y}{x}\right)}$, $y(1) = \log e$, then $y(e) =$

(A) $\log\left(\frac{1}{e} + 1\right)$
(B) $e\log(1 + e)$
(C) $e\log\left(\frac{1}{e} + 1\right)$
(D) $e\log\left(1 - \frac{1}{e}\right)$

Answer: (B) $e\log(1 + e)$ · The council's preliminary key

Q137 AP EAPCET 2023 · 16 May · Shift 1 MCQ

If $\lim_{x\to\infty} y(x) = \frac{\pi}{2}$, then the solution of $x^3 \sin y \frac{dy}{dx} = 2$ is $\cos y =$

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

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

Q138 AP EAPCET 2023 · 16 May · Shift 1 MCQ

a, b, c, d are arbitrary constants. Then the corresponding differential equation to $y = ae^x + be^{-x} + c\cos x + d\sin x$ is

(A) $y^{(4)} = y$
(B) $y^{(4)} + y = 0$
(C) $y^{(4)} - y^{(2)} + 1 = 0$
(D) $y^{(4)} + 2y^{(2)} + 1 = 0$

Answer: (A) $y^{(4)} = y$ · The council's preliminary key

Q139 AP EAPCET 2023 · 16 May · Shift 1 MCQ

If $y = y(x)$ is the solution of $\frac{dy}{dx} = \frac{x - y\cos x}{1+\sin x}$, $y\left(\frac{\pi}{2}\right) = \frac{\pi^2}{8}$, then $y(\pi) =$

(A) $\frac{5\pi^2}{8}$
(B) $\frac{7\pi^2}{8}$
(C) $\frac{9\pi^2}{8}$
(D) $\frac{12\pi^2}{7}$

Answer: (A) $\frac{5\pi^2}{8}$ · The council's preliminary key

Q140 AP EAPCET 2023 · 16 May · Shift 2 MCQ

If a curve passes through $(1, 2)$ and has the slope of its tangent $1 - \frac{1}{x^2}$ at a point (x, y), then the equation of that curve is

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

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

Q141 AP EAPCET 2023 · 16 May · Shift 2 MCQ

The differential equation having $y = (a + b)\, e^{cx+d}$ as its general solution, where a,b,c,d, are arbitrary constants, is

(A) $y^{(4)}+3yy^{(3)}+6y^{(2)}y^2+y=0$

(B) $y^{(3)}+4yy^{(2)}+6y^2y^{(1)}+12y=0$

(C) $y^{(1)}-y=0$

(D) $yy^{(2)}-\left(y^{(1)}\right)^2=0$

Answer: (D) $yy^{(2)}-\left(y^{(1)}\right)^2=0$ · The council's preliminary key

Q142 AP EAPCET 2023 · 16 May · Shift 2 MCQ

The integrating factor of the linear differential equation $\frac{dy}{dx}=\frac{1}{4x+3y}$ is

(A) e^{-4x}

(B) e^{4x}

(C) e^{3y}

(D) e^{-3y}

Answer: (A) e^{-4x} · The council's preliminary key

Q143 AP EAPCET 2023 · 15 May · Shift 1 MCQ

The substitution $x=vy$ converts which one of the following differential equation to an equation solvable by variable separable method?

(A) $(y^2-2x^2y)\,dx=(x^2-2xy^2)\,dy$

(B) $x^2\,dy-y\,dx=\sqrt{x^2+y^2}\,dx$

(C) $\frac{dy}{dx}=\frac{y^2}{x+\sqrt{xy}}$

(D) $\left(1+2e^{\frac{x}{y}}\right)+2e^{\frac{x}{y}}\left(1-\frac{x}{y}\right)\frac{dy}{dx}=0$

Answer: (D) $\left(1+2e^{\frac{x}{y}}\right)+2e^{\frac{x}{y}}\left(1-\frac{x}{y}\right)\frac{dy}{dx}=0$ · The council's preliminary key

Q144 AP EAPCET 2023 · 15 May · Shift 1 MCQ

If $\frac{dy}{dx}=f(x,y)$ is a homogeneous differential equation, then the general form of $f(x,y)$ is

(A) $x^n\phi\left(\frac{y}{x}\right),n\neq 1$

(B) $y^n\phi\left(\frac{x}{y}\right),n\neq 1$

(C) $\phi\left(\frac{y}{x}\right)$

(D) $K^nf(x,y),n\neq 1$

Answer: (C) $\phi\left(\frac{y}{x}\right)$ · The council's preliminary key

Q145 AP EAPCET 2023 · 15 May · Shift 1 MCQ

The order and degree of the differential equation $\left(\frac{d^3y}{dx^3}\right)^{\frac{1}{2}}-2\left(\frac{dy}{dx}\right)^{\frac{1}{4}}+xy=0$ are respectively

(A) 3 and 12
(B) 3 and 2
(C) 3 and 4
(D) 3 and 6

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

Q146 AP EAPCET 2023 · 15 May · Shift 2 MCQ

If $x^{\alpha}\frac{dy}{dx} = y^{\beta}(\gamma \log x + \delta \log y + 1)$ is a homogeneous differential equation, then

(A) $\alpha = \beta$ and $\gamma = -\delta$
(B) $\alpha = \beta$ and $\gamma = \delta$
(C) $\alpha \neq \beta$ and $\gamma = \delta$
(D) $\alpha \neq \beta$ and $\gamma \neq \delta$

Answer: (A) $\alpha = \beta$ and $\gamma = -\delta$ · The council's preliminary key

Q147 AP EAPCET 2023 · 15 May · Shift 2 MCQ

The general solution of the differential equation $\tan x \tan y\, dx + \cos^2 x \operatorname{cosec}^2 y\, dy = 0$ is

(A) $\tan^2 x + \cot^2 y = C$
(B) $\cot^2 x - \tan^2 y = C$
(C) $\tan^2 x - \cot^2 y = C$
(D) $\cot^2 x + \tan^2 y = C$

Answer: (C) $\tan^2 x - \cot^2 y = C$ · The council's preliminary key

Q148 AP EAPCET 2023 · 15 May · Shift 2 MCQ

If α and β are respectively the order and degree of the differential equation $y = e^{\left(\frac{dy}{dx} + \frac{d^2y}{dx^2}\right)}$, then the value of $\alpha + \alpha^{\beta} + \alpha^{2\beta} + \ldots + \alpha^{2023\beta} =$

(A) $2^{2025} + 2$
(B) $2^{2024} + 1$
(C) 2^{2024}
(D) $2^{2024} - 1$

Answer: (C) 2^{2024} · The council's preliminary key

Q149 TS EAMCET 2023 · 14 May · Shift 1 MCQ

If the order and degree of the differential equation corresponding to the family of curves $y^2 = 4a(x + a)$ (a is parameter) are m and n respectively, then $m + n^2 =$

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

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

Q150 TS EAMCET 2023 · 14 May · Shift 1 MCQ

If the solution of the differential equation $\frac{dy}{dx} = \frac{2x+3y}{3x-2y}$ is $y = x\tan(f(x)) + c$ then $f(x) =$

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

Answer: (A) $\frac{1}{3}\log(x^2+y^2)$ · The council's preliminary key

Q151 TS EAMCET 2023 · 14 May · Shift 1 MCQ

The general solution of the differential equation $(x^2+2)dy + 2xydx = e^x(x^2+2)dx$ is

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

Answer: (C) $(x^2+2)y = e^x(x^2-2x+4)+c$ · The council's preliminary key

Q152 TS EAMCET 2023 · 14 May · Shift 2 MCQ

If a and b are the arbitrary constants, then the differential equation corresponding to the family of curves given by $y = x\left[a\cos(\log x) + b\sin(\log x)\right]$ is

(A) $x\frac{d^2y}{dx^2} + x\frac{dy}{dx} - 2y = 0$
(B) $x^2\frac{d^2y}{dx^2} - x\frac{dy}{dx} + 2y = 0$
(C) $x^2\frac{d^2y}{dx^2} - x\frac{dy}{dx} - 2y = 0$
(D) $x^2\frac{d^2y}{dx^2} - x\frac{dy}{dx} + y = 0$

Answer: (B) $x^2\frac{d^2y}{dx^2} - x\frac{dy}{dx} + 2y = 0$ · The council's preliminary key

Q153 TS EAMCET 2023 · 14 May · Shift 2 MCQ

If the solution for the differential equation $y^2dx + \left(x^2 - xy - y^2\right)dy = 0$ at $(2,1)$ is $x + y = k(xy^2 - y^3)$, then k =

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

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

Q154 TS EAMCET 2023 · 14 May · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx}+\frac{y}{x}=x^2$ is

(A) $xy=\frac{x^2}{2}+c$
(B) $xy=\frac{x^3}{3}+c$
(C) $xy=\frac{x^4}{4}+c$
(D) $xy=\frac{x^5}{5}+c$

Answer: (C) $xy=\frac{x^4}{4}+c$ · The council's preliminary key

Q155 TS EAMCET 2023 · 13 May · Shift 1 MCQ

If A and B are arbitrary constants, then the differential equation having $y=Ae^{2x}+B\sin 2x$ as its general solution is

(A) $(\cos 2x-\sin 2x)\frac{d^2y}{dx^2}+(4\sin 2x)\frac{dy}{dx}-4(\sin 2x+\cos 2x)y=0$
(B) $(\cos 2x+\sin 2x)\frac{d^2y}{dx^2}+(4\sin 2x)\frac{dy}{dx}-4(\sin 2x-\cos 2x)y=0$
(C) $(\cos 2x-\sin 2x)\frac{d^2y}{dx^2}+(4\sin 2x)\frac{dy}{dx}+4(\sin 2x+\cos 2x)y=0$
(D) $(\sin 2x-\cos 2x)\frac{d^2y}{dx^2}-(4\sin 2x)\frac{dy}{dx}-4(\sin 2x+\cos 2x)y=0$

Answer: (A) $(\cos 2x-\sin 2x)\frac{d^2y}{dx^2}+(4\sin 2x)\frac{dy}{dx}-4(\sin 2x+\cos 2x)y=0$ · The council's preliminary key

Q156 TS EAMCET 2023 · 13 May · Shift 1 MCQ

The general solution of the differential equation $\frac{dy}{dx}=\sin(x-y)+\cos(x-y)$ is

(A) $\log\left|\frac{\tan\frac{(x-y)}{2}+1}{\tan\frac{(x-y)}{2}}\right|=x+c$
(B) $\log\left|\frac{\tan\frac{(x-y)}{2}-1}{\tan\frac{(x-y)}{2}}\right|=x+c$
(C) $\log\left|\frac{\tan(x-y)-1}{\tan(x-y)}\right|=x+c$
(D) $\log\left|\frac{\sin(x-y)+\cos(x-y)}{\cos(x-y)}\right|=x+c$

Answer: (B) $\log\left|\frac{\tan\frac{(x-y)}{2}-1}{\tan\frac{(x-y)}{2}}\right|=x+c$ · The council's preliminary key

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Q157 TS EAMCET 2023 · 13 May · Shift 1 MCQ

The general solution of the differential equation $x^2dy - (xy - y^2)dx = 0$ is

(A) $y^2 = 3x^2 \log(cx)$

(B) $y^2 = \log x + c$

(C) $y \log x = x + cy$

(D) $y \log x = x^2 + c$

Answer: (C) $y \log x = x + cy$ · The council's preliminary key

Q158 TS EAMCET 2023 · 13 May · Shift 2 MCQ

The general solution of the differential equation $(3x - 4y)(dx - 3dy) + (6dx - 4dy) = 0$ is

(A) $x - 2y + \log|3x - 4y + 6| = c$

(B) $5x - 15y - 4\log|15x - 20y - 12| = c$

(C) $5x - 15y + 14\log|15x - 20y - 12| = c$

(D) $8y - 4x + \log|9x - 12y + 4| = c$

Answer: (C) $5x - 15y + 14\log|15x - 20y - 12| = c$ · The council's preliminary key

Q159 TS EAMCET 2023 · 13 May · Shift 2 MCQ

The general solution of the differential equation $(\sec x + \tan x)\frac{dy}{dx} + \left(\sec^2 x + \sec x \tan x\right) y = 1$ is

(A) $(1 + \sin x)\, y = n \cos x + c$

(B) $(1 + \cos x)\, y = x \sin x + c$

(C) $(\sec x + \tan x)\, y = x \sec x + c$

(D) $(\sec x + \tan x)\, y = x + c$

Answer: (D) $(\sec x + \tan x)\, y = x + c$ · The council's preliminary key

Q160 TS EAMCET 2023 · 12 May · Shift 1 MCQ

If m and n are respectively the order and degree of the differential equation of the family of parabolas with origin as its focus and X-axis as its axis, then $mn - m + n =$

(A) 1

(B) 2

(C) 3

(D) 4

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

Q161 TS EAMCET 2023 · 12 May · Shift 1 MCQ

The general solution of $\frac{dy}{dx} + yf'(x) - f(x)f'(x) = 0, \quad y \neq f(x)$ is

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(A) $y = f(x) + 1 + ce^{-f(x)}$
(B) $y = ce^{-f(x)}$
(C) $y = f(x) - 1 + ce^{-f(x)}$
(D) $y = f(x) + ce^{f(x)}$

Answer: (C) $y = f(x) - 1 + ce^{-f(x)}$ · The council's preliminary key

Q162 TS EAMCET 2023 · 12 May · Shift 2 MCQ

The degree and order of the differential equation of the family of parabolas whose axis is the X-axis, are respectively

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

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

Q163 TS EAMCET 2023 · 12 May · Shift 2 MCQ

The general solution of the differential equation $\left(x \sin \frac{y}{x}\right) dy = \left(y \sin \frac{y}{x} - x\right) dx$ is

(A) $\sin^{-1}\left(\frac{y}{x}\right) = \frac{x}{2} + c$
(B) $\sin\left(\frac{x}{y}\right) = \frac{x^2}{2} + c$
(C) $\sin\left(\frac{y}{x}\right) = \log|x| + c$
(D) $\cos\left(\frac{y}{x}\right) = \log|x| + c$

Answer: (D) $\cos\left(\frac{y}{x}\right) = \log|x| + c$ · The council's preliminary key

Q164 TS EAMCET 2023 · 12 May · Shift 2 MCQ

The general solution of the differential equation $(2x - 10y^3)\,dy + y\,dx = 0,\ y \neq 0$ is

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

Answer: (B) $xy^2 - 2y^5 = c$ · The council's preliminary key

Q165 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

The number of arbitrary constants that appear in the general solution of the differential equation $\left(\frac{d^4y}{dx^4} + \frac{d^2y}{dx^2}\right)^{3/2} = 5\frac{d^3y}{dx^3}$ is

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

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

Q166 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

Assertion (A) : The degree of the differential equation $y'' + 2xy' + \log_e\left(\frac{dy}{dx}\right) = 0$ is 2.

Reason (R) : The degree of a differential equation is the highest degree of the highest order derivative occurring in the equation, after the equation is expressed in the form of a polynomial in differential coefficients.

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

Q167 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

Let S be the family of curves given by the general solution of the differential equation $\frac{y^2 e^{-1/y}}{\sqrt{x}}dx - 2\sec\sqrt{x}\,dy = 0$. Then the equation of the curve belonging to S and passing through $(\pi^2, 1)$ is

(A) $\sin\sqrt{x} + e^{1/y} = 1 + e$
(B) $\cos\sqrt{x} + e^{y} = e - 1$
(C) $\sin\sqrt{x} + e^{1/y} = e$
(D) $\cos\sqrt{x} + e^{y} = e$

Answer: (C) $\sin\sqrt{x} + e^{1/y} = e$ · The council's preliminary key

Q168 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

$f(x, y, c_1, c_2) = 0$ is an equation containing two arbitrary constants c_1 and c_2. If the differential equation having $f(x, y, c_1, c_2) = 0$ as its general solution is of kth order, then the differential equation corresponding to $x^k + y^k = c^2$ (c is an arbitrary constant) is

(A) $\frac{dy}{dx}+\frac{x}{y}=0$
(B) $\frac{dy}{dx}+\frac{y}{x}=0$
(C) $\frac{dy}{dx}-\frac{x}{y}=0$
(D) $\frac{dy}{dx}-\frac{y}{x}=0$

Answer: (A) $\frac{dy}{dx}+\frac{x}{y}=0$ · The council's preliminary key

Q169 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

If l and m are respectively the order and the degree of the differential equation $f(x)y''+g(x)y'=\frac{4y}{x}$ whose general solution is $y=ax^2+b\log x$, then $f(m)+g(m)=$

(A) $2l$
(B) l
(C) $3m$
(D) $l+m$

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

Q170 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

The general solution of the differential equation $dx=(2x+3y-4)dy$ is

(A) $2x+6y-3\log|4x+6y-5|=c$
(B) $6y-3\log|4x+6y-5|=c$
(C) $2x+6y-8-3\log|4x+6y-5|=c$
(D) $6x+6y-3\log|4x+6y-5|=c$

Answer: (B) $6y-3\log|4x+6y-5|=c$ · The council's preliminary key

Q171 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

The equation of any member of the family of all the ellipses whose axes are along the coordinate axes satisfies the differential equation

(A) $xyy''+x(y')^2-yy'=0$
(B) $xyy''+x(y')^2-y=y'$
(C) $y''+\frac{(y')^2}{y}-\frac{y}{x}=0$
(D) $y''+(y')^2+x^2y^2=0$

Answer: (A) $xyy''+x(y')^2-yy'=0$ · The council's preliminary key

Q172 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

The degree of the differential equation $\left(\frac{d^2y}{dx^2}\right)^{\frac{4}{3}} + x\left(\frac{dy}{dx}\right)^2 - y\cos\left(\frac{dy}{dx}\right) = 0$ is

(A) 4
(B) 3
(C) 6
(D) not defined

Answer: (D) not defined · The council's preliminary key

Q173 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

The general solution of the differential equation $\frac{dy}{dx} = \frac{2x-3y+5}{6x-9y+7}$ is

(A) $x - 3y + \frac{22}{3}\log|3x-7| + c = 0$
(B) $x - 3y + \frac{8}{3}\log|6x-9y-1| + c = 0$
(C) $3x - 3y + \frac{8}{3}\log|3x-9y+1| + c = 0$
(D) $3x - 2y + \frac{22}{3}\log|2x-3y-7| + c = 0$

Answer: (B) $x - 3y + \frac{8}{3}\log|6x-9y-1| + c = 0$ · The council's preliminary key

Q174 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

Statement I : The differential equation corresponding to the family of circles having their centres on Y - axis and fixed radius k is $\left(x^2-k^2\right)\left(\frac{dy}{dx}\right)^2 + x^2 = 0$

Statement II: The differential equation corresponding to the family of circles passing through the origin and having their centres on X - axis is $x^2 - y^2 + 2xy\frac{dy}{dx} = 0$.

Which of the above statements is(are) true?

(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: (C) Both Statement I and Statement II are true · The council's preliminary key

Q175 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

If m and n are respectively the order and the degree of the differential equation representing the family of curves $y^2 - 5ax - 5a^{3/2} = 0$ ($a > 0$ is a parameter), then the value of $m - n$ is

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

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

Q176 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

The general solution of $\left(\left(1+x^2\right) y \sin x-2xy\right) dx-\log y^{1+x^2} dy=0$ is

(A) $\sin x-\log\left(1+x^2\right)=\log y+c$
(B) $(\log y)^2+2\cos x+\log\left(1+x^2\right)^2=c$
(C) $\log y=2\cos x+\log\left(1+x^2\right)+c$
(D) $\frac{\log y}{y}=2\sin x+\cos x\log\left(1+x^2\right)+c$

Answer: (B) $(\log y)^2+2\cos x+\log\left(1+x^2\right)^2=c$ · The council's preliminary key

Q177 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

The differential equation of the family of circles with fixed radius r units and centre on the line $y=3$, is

(A) $1+\left(\frac{dy}{dx}\right)^2=\frac{r^2}{(y-3)^2}$
(B) $1+\left(\frac{dy}{dx}\right)^2=\frac{r^2}{y-3}$
(C) $\left(\frac{dy}{dx}\right)^2=\frac{r^2}{(y-3)^2}$
(D) $\left(\frac{dy}{dx}\right)^2=\frac{r^2}{y-3}$

Answer: (A) $1+\left(\frac{dy}{dx}\right)^2=\frac{r^2}{(y-3)^2}$ · The council's preliminary key

Q178 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

The degree of the differential equation $x\left(\frac{d^2y}{dx^2}\right)^{1/3}+2x^2\left(\frac{d^2y}{dx^2}\right)^{5/3}+7\frac{dy}{dx}+y=0$ is

(A) 15
(B) 5
(C) 12
(D) 3

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

Q179 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

The curve that satisfies the differential equation $xy\,dy-(1+y^2)dx=0$ passes through $(1,0)$ and intersects the curve $x^2+3y^2=3$ at an angle θ. Then $\frac{2\theta}{\pi}=$

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

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

Q180 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

The differential equation corresponding to the family of curves given by $ax^2+by^2=1$ where a and b are arbitrary constants is

(A) $x\frac{d^2y}{dx^2}=\frac{dy}{dx}$
(B) $xy\frac{d^2y}{dx^2}+x\left(\frac{dy}{dx}\right)^2-y\frac{dy}{dx}=0$
(C) $xy\frac{d^2y}{dx^2}+y\left(\frac{dy}{dx}\right)^2-x\frac{dy}{dx}=0$
(D) $xy\frac{d^2y}{dx^2}-x\left(\frac{dy}{dx}\right)^2+y\frac{dy}{dx}=0$

Answer: (B) $xy\frac{d^2y}{dx^2}+x\left(\frac{dy}{dx}\right)^2-y\frac{dy}{dx}=0$ · The council's preliminary key

Q181 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

For the differential equation $\sqrt{\frac{d^2y}{dx^2}}=\sqrt[3]{\left[y\frac{dy}{dx}+x\sin\left(\frac{dy}{dx}\right)\right]^2}$

(A) Order is 2 and degree is 3
(B) Order is 3 and degree is 3
(C) Order is 3 and degree is 2
(D) Order is 2 and degree is not defined

Answer: (D) Order is 2 and degree is not defined · The council's preliminary key

Q182 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx}=\frac{xy+x-2y-2}{xy-2x+y-2}$ is

(A) $x+y+3\log\left|\frac{x+1}{y+1}\right|=c$

(B) $x+y+3\log\left|\frac{y+1}{x+1}\right|=c$

(C) $x-y+3\log\left|\frac{x+1}{y+1}\right|=c$

(D) $x-y+3\log\left|\frac{y+1}{x+1}\right|=c$

Answer: (D) $x-y+3\log\left|\frac{y+1}{x+1}\right|=c$ · The council's preliminary key

Q183 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

The equation of the family of curves for which length of the sub normal at any point (x,y) is always a constant (k) is

(A) $y^2=4ax$

(B) $y^2-A=2Kx$

(C) $y^2-K=2x$

(D) $y^2=K(x+K)$

Answer: (B) $y^2-A=2Kx$ · The council's preliminary key

Q184 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

If the differential equation obtained by eliminating A,B from $y=(\sin^{-1}x)^2+A\cos^{-1}x+B$ is $(a-x^2)y''-xy'=b$, then $\frac{b+a}{b-a}=$

(A) 2

(B) -2

(C) 3

(D) -3

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

Q185 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

$y=ax+b$ is

(A) General solution of $\frac{d^3y}{dx^3}=0$

(B) General solution of $\frac{dy}{dx}=a+b$

(C) General solution for both $\frac{d^2y}{dx^2}=0$ and $\frac{d^3y}{dx^3}=0$

(D) General solution for $\frac{d^2y}{dx^2}=0$

Answer: (D) General solution for $\frac{d^2y}{dx^2}=0$ · The council's preliminary key

Q186 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

If the solution of $\frac{dy}{dx}=\frac{y^3\cos\sqrt{x}}{\sqrt{x}\,e^{1/y^2}}$, $y(0)=1$ is $\frac{1}{y^2}=\log_e(f(x))$, then $f(x)=$

(A) $4+4\sin\sqrt{x}$
(B) $e\sin\sqrt{x}$
(C) $1-4\sin\sqrt{x}$
(D) $e-4\sin\sqrt{x}$

Answer: (D) $e-4\sin\sqrt{x}$ · The council's preliminary key

Q187 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

Suppose that $f(x,y)$ and $g(x,y)$ are homogeneous functions of same order. If $x=Vy$ reduces the equation $\frac{dy}{dx}=\frac{f(x,y)}{g(x,y)}$ to the form $\frac{dV}{dy}=\frac{1}{y}(F(V))$, then $F(V)=$

(A) $\left(\frac{f(1,V)}{g(1,V)}-V\right)$
(B) $\left(\frac{f(V,1)}{g(V,1)}-V\right)$
(C) $\left(\frac{g(1,V)}{f(1,V)}-V\right)$
(D) $\left(\frac{g(V,1)}{f(V,1)}-V\right)$

Answer: (D) $\left(\frac{g(V,1)}{f(V,1)}-V\right)$ · The council's preliminary key

Q188 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

The general solution of $x\,dy-y\,dx=y\,dy$ is

(A) $y=Ae^{-x/y}$
(B) $y=A\,e^{x}$
(C) $\frac{y}{x}=A\,e^{x}$
(D) $\frac{x}{y}+\frac{y}{x}=C$

Answer: (A) $y=Ae^{-x/y}$ · The council's preliminary key

Q189 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

If $\frac{a}{a_1}=\frac{b}{b_1}$, then the substitution to be used to solve the differential equation $\frac{dy}{dx}=\frac{ax+by+c}{a_1x+b_1y+c_1}$ by using separation of variables is

(A) $x=x+h, y=y+k$
(B) $ax+by=Z$
(C) $y=V(x)\cdot x$
(D) $x=at, y=bt$

Answer: (B) $ax+by=Z$ · The council's preliminary key

Q190 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

For the differential equation $\frac{d^3y}{dx^3} = 0$, $y = ax^2 + bx + c$ is

(A) the general solution
(B) a particular solution
(C) not a solution
(D) a solution, but not a particular solution

Answer: (A) the general solution · The council's preliminary key

Q191 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

The differential equation of the family of circles passing through $(0, 0)$ and having centre on x- axis is

(A) $2xy\frac{dy}{dx} + x^2 - y^2 = 0$
(B) $\left(\frac{dy}{dx}\right)^2 + y\frac{d^2y}{dx^2} + 1 = 0$
(C) $xy\frac{dy}{dx} + y^2 - x^2 = 0$
(D) $\frac{dy}{dx} = \frac{x+y}{x-y}$

Answer: (A) $2xy\frac{dy}{dx} + x^2 - y^2 = 0$ · The council's preliminary key

Q192 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

If a and b are respectively the order and degree of a differential equation $y^2(y'')^2 + 3x(y')^{1/3} + x^2y^2 = \sin x$, then

(A) b=a
(B) a=3b
(C) b=3a
(D) ab=6

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

Q193 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

An integrating factor of the differential equation $(x^2 + 1)\frac{dy}{dx} + xy = x^3$ is

(A) $\frac{x}{1+x^2}$
(B) $\frac{1}{2}\log(1 + x^2)$
(C) $\sqrt{1 + x^2}$
(D) $e^{\log(1+x^2)}$

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

Q194 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

If the general solution of $\frac{dy}{dx} = \frac{y^2}{xy - y^2 - x^2}$ is $\tan^{-1}\left(\frac{y}{x}\right) = f(y) + C$, then $f(e^3) =$

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

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

Q195 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

The substitution $\frac{dy}{dx} = z$, reduces the differential equation $\frac{d^2y}{dx^2} - \frac{dy}{dx} = 0$ to a differential equation whose solution is $z =$

(A) $\log x + C$
(B) $x + C$
(C) Ae^x
(D) $x^2 + C$

Answer: (C) Ae^x · The council's preliminary key

Q196 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

p and q are positive integers and $n < r < m$. If the order and degree of the differential equation $\left(\frac{d^m y}{dx^m} + \frac{d^n y}{dx^n}\right)^{p/q} = 5\frac{d^r y}{dx^r}$ are respectively 4 and 3, then

(A) $n = 4,\ q = 3$
(B) $m = 4,\ q = 3$
(C) $r = 4,\ q = 3$
(D) $m = 4,\ p = 3$

Answer: (D) $m = 4,\ p = 3$ · The council's preliminary key

Q197 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

The solution of $(1 + y^2)\,dx - xy\,dy = 0$, $y(1) = 0$ represents a conic. Its eccentricity is

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

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

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Q198 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

a, b, c, d are real numbers. The general solution of $\frac{dy}{dx} = \frac{ax+b}{cy+d}$ represents a family of straight lines, when

(A) $a = c = 0$, and $b^2 + d^2 \neq 0$
(B) $a \neq 0, c = 0$ or $a = 0, c \neq 0$
(C) $bd = 0, a \neq 0, c \neq 0$
(D) $b + d = 0, a + c = 0$

Answer: (A) $a = c = 0$, and $b^2 + d^2 \neq 0$ · The council's preliminary key

Q199 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

If $\cos\frac{y}{x} = A\log x + C$ is the general solution of $\left(x\sin\frac{y}{x}\right)dy = \left(y\sin\frac{y}{x} - x\right)dx$, then $A =$

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

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

Q200 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

Every curve represented by the general solution of $\frac{dy}{dx} - \frac{x\log x}{y^3 e^{y^2-5}} = 0$ cuts every curve represented by the general solution of $\frac{dy}{dx} + \frac{y^3 e^{y^2-5}}{x\log x} = 0$ at angle θ. Then $4\theta - \frac{\pi}{2} =$

(A) $\pi/2$
(B) 2π
(C) $3\pi/2$
(D) π

Answer: (C) $3\pi/2$ · The council's preliminary key

Q201 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

The general solution of the differential equation $\frac{dy}{dx} = \cos^2(3x+y)$ is $\tan^{-1}\left(\frac{\sqrt{3}}{2}\tan(3x+y)\right) = f(x)$. Then $f(x) =$

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

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

Q202 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

If the general solution of the differential equation $\cos^2 x\,\frac{dy}{dx}+y=\tan x$ is $y=\tan x-1+C\,e^{-\tan x}$ satisfies $y(\pi/4)=1$, then $C=$

(A) e
(B) 1
(C) -1
(D) 1/e

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

Q203 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

Assertion (A): Order of the differential equations of a family of circles with constant radius is two.
Reason (R): An algebraic equation having two arbitrary constants is general solution of a 2nd order differential equation.

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

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

Q204 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

The integrating factor of the linear directional equation $\frac{dy}{dx}+P(x)y=Q(x)$ is a solution of the differential equation

(A) $\frac{dy}{dx}-P(x)y=0$
(B) $\frac{dy}{dx}+P(x)y=0$
(C) $\frac{dy}{dx}-\frac{y}{x}=P(x)$
(D) $\frac{dy}{dx}+\frac{x}{y}=P(x)$

Answer: (A) $\frac{dy}{dx}-P(x)y=0$ · The council's preliminary key

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Q205 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

If the slope of the tangent at a point (x, y) on a curve is $\frac{y-4}{x-3}$ and the curve passes through $(4, 3)$, then the point where it cuts the line $y = x$ is

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

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

Q206 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

By multiplying with $e^{\int P dx}$ on both sides of the equation $\frac{dy}{dx} + P(x)y = Q(x)$, the left side of the equation takes the form $\frac{d}{dx}(y\, f(x))$, then $f(x) =$

(A) $\int y\, e^{\int P dx} dx$
(B) $y\, P(x)$
(C) $e^{\int P dx}$
(D) $P(x)\, e^{\int P dx}$

Answer: (C) $e^{\int P dx}$ · The council's preliminary key

Q207 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

If the solution of $\frac{dy}{dx} - y \log_e 0.5 = 0$, y(0) = 1, and $y(x) \to k$, as $x \to \infty$ then k =

(A) ∞
(B) -1
(C) 1
(D) 0

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

Q208 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

At any point (x,y) on a curve if the length of the subnormal is (x-1) and the curve passes through (1, 2) then the curve is a conic. A vertex of the curve is

(A) (1, 0)
(B) (0, 1)
(C) $(\sqrt{5}, 0)$
(D) $(0, \sqrt{5})$

Answer: (D) $(0, \sqrt{5})$ · The council's preliminary key

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Q209 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

$y = Ae^{x} + Be^{-2x}$ satisfies which of the following differential equations?

(A) $\frac{d^2y}{dx^2} - \frac{dy}{dx} + 2y = 0$

(B) $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} - y = 0$

(C) $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = 0$

(D) $\frac{d^2y}{dx^2} + \frac{dy}{dx} - 2y = 0$

Answer: (D) $\frac{d^2y}{dx^2} + \frac{dy}{dx} - 2y = 0$ · The council's preliminary key

Q210 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

If l and m are order and degree of a differential equation of all the straight lines at constant distance of P units from the origin, then $lm^2 + l^2m =$

(A) 2

(B) 6

(C) 12

(D) 30

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

Q211 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

If $2x - y + c\log(|x - 2y - 4|) = k$ is the general solution of $\frac{dy}{dx} = \frac{2x-4y-5}{x-2y+2}$ then c =

(A) 4

(B) 2

(C) 3

(D) -4

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

Q212 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

By eliminating the arbitrary constants from $y = (a + b)\sin(x + c) - de^{x+e+f}$, the differential equation obtained is of order

(A) 6

(B) 4

(C) 3

(D) 5

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

Q213 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

Find the solution of the following differential equation:

$\text{Sin}^{-1}\left(\frac{dy}{dx}\right) = x + y$

(A) $x = \tan(x+y) + \sec(x+y) + c$

(B) $x = \tan(x+y) - \sec(x+y) + c$

(C) $x = \tan(x+y) + \sec^2(x+y) + c$

(D) $x = \tan(x+y) - \sec^2(x+y) + c$

Answer: (B) $x = \tan(x+y) - \sec(x+y) + c$ · The council's preliminary key

Q214 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

Solve the following Differential equation. $(x^2+1)\frac{dy}{dx} + 4xy = \frac{1}{x^2+1}$

(A) $y(x^2-1)^2 = x + c$

(B) $y(x^2+1)^2 = x + c$

(C) $y(x^2+1)^2 = x^2 + c$

(D) $y(x^2-1)^2 = x^2 + c$

Answer: (B) $y(x^2+1)^2 = x + c$ · The council's preliminary key

Q215 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

Let $y = Y(x)$ be the solution of the differential equation $\frac{dy}{dx} + y\tan x = 2x + x^2\tan x$, $x \in \left(\frac{-\pi}{2}, \frac{\pi}{2}\right)$, such that $Y(0) = 1$, then _____

(A) $y\left(\frac{\pi}{4}\right) + Y\left(\frac{-\pi}{4}\right) = \frac{\pi^2}{2} + 2$

(B) $y'\left(\frac{\pi}{4}\right) + Y'\left(\frac{-\pi}{4}\right) = -\sqrt{2}$

(C) $y\left(\frac{\pi}{4}\right) - Y\left(\frac{-\pi}{4}\right) = \sqrt{2}$

(D) $y'\left(\frac{\pi}{4}\right) - Y'\left(\frac{-\pi}{4}\right) = \pi - \sqrt{2}$

Answer: (D) $y'\left(\frac{\pi}{4}\right) - Y'\left(\frac{-\pi}{4}\right) = \pi - \sqrt{2}$ · The council's preliminary key

Q216 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

Solve the differential equation: $\frac{dy}{dx} = e^{x+y}$

(A) $e^x + e^y = c$

(B) $e^x - e^y = c$

(C) $e^x + e^{-y} = c$

(D) $e^x - e^{-y} = c$

Answer: (C) $e^x + e^{-y} = c$ · Checked by our team

Q217 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

The equation of a curve passing through the point $(0, 1)$, given that the slope of the tangent to the curve at any point (x, y) is equal to the sum of the x-coordinate, and the product of x and y coordinates at that point, is _____

(A) $y = 1 - 2e^{(x^2/2)}$
(B) $y = -1 + 2e^{(x^2/2)}$
(C) $y = -1 - 2e^{(x^2/2)}$
(D) $y = 1 + 2e^{(x^2/2)}$

Answer: (B) $y = -1 + 2e^{(x^2/2)}$ · The council's preliminary key

Q218 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

The order and degree of the differential equation $\sqrt{\frac{dy}{dx}} - 4\frac{dy}{dx} - 7x = 0$ are respectively _____

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

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

Q219 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

Find the particular solution of the following differential equation, given that $y = 1$ when $x = 0$.
$(1 + x^2)\frac{dy}{dx} = e^{m(\mathrm{Tan}^{-1}(x))} - y$

(A) $x\, e^{\mathrm{Tan}^{-1}(x)} = \mathrm{Tan}^{-1}(x) + 1$
(B) $x\, e^{\mathrm{Tan}^{-1}(x)} = \mathrm{Tan}^{-1}(x) - 1$
(C) $y\, e^{\mathrm{Tan}^{-1}(x)} = \mathrm{Tan}^{-1}(x) + 1$
(D) $y\, e^{\mathrm{Tan}^{-1}(x)} = \mathrm{Tan}^{-1}(x) - 1$

Answer: (C) $y\, e^{\mathrm{Tan}^{-1}(x)} = \mathrm{Tan}^{-1}(x) + 1$ · The council's preliminary key

Q220 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

The solution of the differential equation $2x\left(\frac{dy}{dx}\right) - y = 4$ represents a family of _____

(A) Ellipses
(B) Parabolas
(C) Straight lines
(D) Circles

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

Q221 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

The equation of the curve passing through the point $\left(0, \frac{\pi}{4}\right)$ and satisfying the differential equation $(e^x \tan y)\,dx + ((1+e^x)\sec^2 y)\,dy = 0$ is given by _____

(A) $(1+e^x)\tan y = 2$

(B) $1+e^x = 2\tan y$

(C) $1+e^x = 2\sec y$

(D) $(1+e^x)\tan y = k$

Answer: (A) $(1+e^x)\tan y = 2$ · The council's preliminary key

Q222 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

The solution of the differential equation $\frac{d^2y}{dx^2} + y = 0$ is _____

(A) $y = 3\sin x + 4\cos x$

(B) $y = x^2$

(C) $y = x + 2$

(D) $y = \log x$

Answer: (A) $y = 3\sin x + 4\cos x$ · The council's preliminary key

Q223 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

If $x^2 + y^2 = 1$, then _____

(A) $y(y'') - 4(y')^2 + 1 = 0$

(B) $y(y'') + (y')^2 + 1 = 0$

(C) $y(y'') - (y')^2 - 1 = 0$

(D) $y(y'') + 2(y')^2 + 1 = 0$

Answer: (B) $y(y'') + (y')^2 + 1 = 0$ · The council's preliminary key

Q224 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

The general solution of $\frac{dy}{dx} = \frac{x^3\left(y^4+1\right)}{\left[2y^{-2/3} + 3\left(\frac{x}{\sqrt[3]{y}}\right)^2\right]^{3/2}}$ is

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(A) $\log\left(\frac{y^4}{1+y^4}\right)=\frac{4}{9}\left(\frac{4+3x^2}{\sqrt{2+3x^2}}\right)+C$

(B) $\frac{1}{4}\log\left(\frac{y^4}{1+y^4}\right)=\frac{1}{9}\log\left(\frac{4+3x^2}{\sqrt{2+3x^2}}\right)+C$

(C) $\frac{1}{4}\log\left(\frac{y^4}{1+y^4}\right)=\frac{4}{9}\frac{1}{\sqrt{2+3x^2}}+C$

(D) $\log\left(\frac{y^4}{1+y^4}\right)=\frac{1}{9}\frac{1}{\sqrt{2+3x^2}}+C$

Answer: (A) $\log\left(\frac{y^4}{1+y^4}\right)=\frac{4}{9}\left(\frac{4+3x^2}{\sqrt{2+3x^2}}\right)+C$ · The council's preliminary key

Q225 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

The differential equation for which $y^2=4a(x+a)$ (where a is a parameter) is general solution, is

(A) $y-yy'^2=2xy'$

(B) $y+yy'^2=2xy'$

(C) $y(y+y')=2xy'$

(D) $y(y-y')=2xy'$

Answer: (A) $y-yy'^2=2xy'$ · The council's preliminary key

Q226 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

The solution of $\frac{dy}{dx}=\sqrt{1-y^2}$, $y(0)=1$, is

(A) $\text{Sin}^{-1}y=x-\text{Sin}^{-1}(1)$

(B) $\text{Sin}^{-1}y=x+\text{Sin}^{-1}(1)$

(C) $\text{Cos}^{-1}y=x+\text{Cos}^{-1}(1)$

(D) $\text{Sin}^{-1}y+x=\text{Sin}^{-1}(1)$

Answer: (B) $\text{Sin}^{-1}y=x+\text{Sin}^{-1}(1)$ · The council's preliminary key

Q227 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

If the solution of $\frac{dy}{dx}=(3x+y+4)^2$ is $\frac{1}{\sqrt{3}}\left(\text{Tan}^{-1}f(x,y)\right)-x=K$ then $f(1,2)=$

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

(B) 3

(C) $3\sqrt{3}$

(D) $2\sqrt{3}$

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

Q228 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

The general solution of $\frac{dy}{dx}=x+\sin x\cos y+x\cos y+\sin x$ is

(A) $\tan\frac{x}{2}=\frac{y^2}{2}-\cos y+C$
(B) $\tan\frac{y}{2}=\frac{x^2}{2}-\cos x+C$
(C) $\sec^2\frac{y}{2}=\frac{x^2}{2}-\cos x+C$
(D) $\tan\frac{y}{2}=\frac{x^2}{2}+\cos x+Cx$

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

Q229 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

The solution of $\frac{dy}{dx}=e^{-2x},\ y(\log 2)=\frac{1}{16}$, is $y=$

(A) $\frac{\log x}{16}$
(B) $\frac{4-12e^{-2x}}{16}$
(C) $\frac{4e^{-2x}}{16}$
(D) $\frac{3-8e^{-2x}}{16}$

Answer: (D) $\frac{3-8e^{-2x}}{16}$ · The council's preliminary key

Q230 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

Solve the differential equation $\frac{dy}{dx}=\frac{y(1+x)}{-x(1+y)}$

(A) $y-x+\log(xy)=c$
(B) $x-y+\log(xy)=c$
(C) $x+y-\log(xy)=c$
(D) $x+y+\log(xy)=c$

Answer: (D) $x+y+\log(xy)=c$ · The council's preliminary key

Q231 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

The general solution of the differential equation $\tan(y)\,dx+\sec^2(y)\cdot\tan(x)\,dy=0$ is

(A) $\sin(y)\cdot\tan(x)=c$
(B) $\sin(x)\cdot\tan(y)=c$
(C) $\sin(x)+\tan(y)=c$
(D) $\sin(x)-\sin(y)=c$

Answer: (B) $\sin(x)\cdot\tan(y)=c$ · The council's preliminary key

Q232 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

Find the solution of the differential equation given below
$\frac{dy}{dx}+y\cdot\operatorname{cosec}^2(x)=\operatorname{cosec}^2(x)\cdot\cot(x)$

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(A) $ye^{\cot x} = (1+\cot x)\, e^{-\cot x} + c$

(B) $ye^{-\cot x} = (1-\cot x)\, e^{-\cot x} + c$

(C) $ye^{\cot x} = (1+\cot x)\, e^{\cot x} + c$

(D) $ye^{-\cot x} = (1+\cot x)\, e^{-\cot x} + c$

Answer: (D) $ye^{-\cot x} = (1+\cot x)\, e^{-\cot x} + c$ · The council's preliminary key

Q233 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

Solve the differential equation given below

$\frac{x\,dy}{dx} = y + \sqrt{x^2+y^2}$

(A) $x^2 = c\left[y + \sqrt{y^2+x^2}\right]$

(B) $y^2 = c\left[x + \sqrt{y^2-x^2}\right]$

(C) $y^2 = c\left[x + \mathrm{Tan}^{-1}\left(\sqrt{1+y^2}\right)\right]$

(D) $y^2 = c\left[x - \sqrt{y^2+x^2}\right]$

Answer: (A) $x^2 = c\left[y + \sqrt{y^2+x^2}\right]$ · The council's preliminary key

Q234 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

If it is mentioned that for a curve passing through $(3,4)$, the slope of the curve at any point is the reciprocal of twice the ordinate of that point, then that curve is a _____

(A) Ellipse

(B) Parabola

(C) Hyperbola

(D) Circle

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

Q235 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

Express $\frac{dt}{dx} = \frac{t}{\left(x + te^{-2x/t}\right)}$ in the form of $\frac{dx}{dt} = \phi\left(\frac{x}{t}\right)$

(A) $\frac{x}{t} + e^{-2\left(\frac{x}{t}\right)}$

(B) $\frac{x}{t} - e^{-2\left(\frac{x}{t}\right)}$

(C) $\frac{x}{t} + e^{2\left(\frac{x}{t}\right)}$

(D) $\frac{x}{t} - e^{2\left(\frac{x}{t}\right)}$

Answer: (A) $\frac{x}{t} + e^{-2\left(\frac{x}{t}\right)}$ · The council's preliminary key

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Q236 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

The equation of the curve passing through $(1, 2)$ and whose tangent at any point (x, y) makes an angle $\mathrm{Tan}^{-1}(2x + 3y)$ with the x-axis is _____

(A) $6x + 9y + 2 = 26\, e^{3x-3}$
(B) $6x + 9y - 2 = 26\, e^{3x-3}$
(C) $6x + 9y + 2 = 26\, e^{3x+3}$
(D) $6x + 9y - 2 = 26\, e^{3x+3}$

Answer: (A) $6x + 9y + 2 = 26\, e^{3x-3}$ · The council's preliminary key

Q237 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

In a bank, the principal increases continuously at the rate of 6% per year. Then the time required to double 6000 rupees is ___ (in years)

(A) $\frac{50}{3}\log 2$
(B) $\frac{50}{3}\log 6$
(C) $\frac{50}{3}\log 3$
(D) $\frac{50}{3}\log 12$

Answer: (A) $\frac{50}{3}\log 2$ · The council's preliminary key

Q238 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

Find the sum of the order and degree of the differential equation $y = x\left(\frac{dy}{dx}\right)^3 + \frac{d^2y}{dx^2}$

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

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

Q239 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

Find the degree of the differential equation $y_3^{2/3} + 2 + 3y_2 + y_1 = 0$.

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

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

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Q240 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

On solving $\frac{dy}{dx} = \frac{x-y+3}{2x-2y+5}$, the solution obtained is $x = 2(x-y) + \log(t) + c$, find t

(A) $x - y + 2$
(B) $x + y - 2$
(C) $x + y + 2$
(D) $x - y - 2$

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

Q241 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

The general solution of the differential equation $\log\left(\frac{dy}{dx}\right) = ax + by$ is

(A) $ae^{-by} + be^{ax} = c$
(B) $ae^{ax} + be^{-by} = c$
(C) $ae^{-by} - be^{ax} = c$
(D) $ae^{by} + be^{-ax} = c$

Answer: (A) $ae^{-by} + be^{ax} = c$ · The council's preliminary key

Q242 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

Solve of the differential equation $\frac{dy}{dx} = \frac{1+y^2}{(\mathrm{Tan}^{-1}y) - x}$

(A) $xe^{\mathrm{Tan}^{-1}y} = e^{-\mathrm{Tan}^{-1}y}\left((\mathrm{Tan}^{-1}y) - 1\right) + c$
(B) $xe^{\mathrm{Tan}^{-1}y} = e^{\mathrm{Tan}^{-1}y}\left((\mathrm{Tan}^{-1}y) - 1\right) + c$
(C) $xe^{\mathrm{Tan}^{-1}y} = e^{\mathrm{Tan}^{-1}y}\left((\mathrm{Tan}^{-1}y) + 1\right) + c$
(D) $xe^{\mathrm{Tan}^{-1}y} = e^{-\mathrm{Tan}^{-1}y}\left((\mathrm{Tan}^{-1}y) + 1\right) + c$

Answer: (B) $xe^{\mathrm{Tan}^{-1}y} = e^{\mathrm{Tan}^{-1}y}\left((\mathrm{Tan}^{-1}y) - 1\right) + c$ · The council's preliminary key

Q243 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

The solution of $\frac{d^2y}{dx^2} = 0$ represents

(A) straight lines
(B) a circle
(C) a parabola
(D) a point

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

Q244 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

The differential equation of the family of all straight lines passing through the origin is

(A) $x = y\dfrac{dy}{dx}$

(B) $\dfrac{dy}{dx} = 0$

(C) $y = x\dfrac{dy}{dx}$

(D) $\dfrac{d^2y}{dx^2} = \dfrac{y}{x}$

Answer: (C) $y = x\dfrac{dy}{dx}$ · The council's preliminary key

Q245 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

The solution of the differential equation $\cos(x+y)\,dy = dx$ given that $y(0) = 0$ is

(A) $y = \tan\left(\dfrac{x+y}{2}\right)$

(B) $y = \sin\left(\dfrac{x+y}{2}\right)$

(C) $y = \tan\left(\dfrac{y}{2}\right)$

(D) $y = \tan\left(\dfrac{x}{2}\right)$

Answer: (A) $y = \tan\left(\dfrac{x+y}{2}\right)$ · The council's preliminary key

Q246 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx} + y\,g'(x) = g(x)\,g'(x)$ is _____

(A) $g(x) + \log(1 + y + g(x)) = c$

(B) $g(x) + \log(1 + y - g(x)) = c$

(C) $g(x) - \log(1 + y + g(x)) = c$

(D) $g(x) - \log(1 + y - g(x)) = c$

Answer: (B) $g(x) + \log(1 + y - g(x)) = c$ · The council's preliminary key

Q247 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

The particular solution of the differential equation $\frac{dy}{dx} = \sec y$, $y(0) = 0$ is

(A) $x = \cos y$

(B) $x = \sin y + q$

(C) $y = \sin x$

(D) $x = \sin y$

Answer: (D) $x = \sin y$ · The council's preliminary key

Q248 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

The solution of $x\frac{dy}{dx} = y(\log y - \log x + 1)$ is

(A) $y = xe^{cx}$

(B) $y^2 = cx^2$

(C) $y^2 = cx\log(x)$

(D) $\log(y) = cx$

Answer: (A) $y = xe^{cx}$ · The council's preliminary key

Q249 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

Find the solution of the differential equation $(e^{y-x})\,dy = (e^x - e^y)\,dx$

(A) $e^y e^x = e^{2x} - e^{x^2} + c$

(B) $e^y e^x = e^x e^{e^x} - e^{e^x} + c$

(C) $e^y e^{e^x} = e^x e^{e^x} - e^{e^x} + c$

(D) $e^{e^y} e^x = e^x e^{e^x} - e^{e^x} + c$

Answer: (C) $e^y e^{e^x} = e^x e^{e^x} - e^{e^x} + c$ · The council's preliminary key

Q250 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

Find the solution of the following differential equation
$\left\{x\cos\left(\frac{y}{x}\right) + y\sin\left(\frac{y}{x}\right)\right\} y\,dx = \left\{y\sin\left(\frac{y}{x}\right) - x\cos\left(\frac{y}{x}\right)\right\} x\,dy$

(A) $y\cos\left(\frac{x}{y}\right) = \pm e^{-c}$

(B) $x\cos\left(\frac{y}{x}\right) = \pm e^{-c}$

(C) $xy\cos\left(\frac{y}{x}\right) = \pm e^{-c}$

(D) $xy\sin\left(\frac{y}{x}\right) = \pm e^{-c}$

Answer: (C) $xy\cos\left(\frac{y}{x}\right) = \pm e^{-c}$ · The council's preliminary key

Q251 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

If c_1, c_2, c_3, c_4, c_5 are arbitrary constants, then the order of the differential equation whose general solution is $y = (c_1 + c_2)\sin(x + c_3) + c_4 e^{x+c_5}$, is

(A) 3

(B) 5

(C) 4

(D) Not defined

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

Q252 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

The product of the degree and order of the differential equation $\left(\frac{d^2y}{dx^2}\right)^2 - \left(\frac{dy}{dx}\right)^3 = y^3$ is

(A) 3
(B) 4
(C) 6
(D) 5

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

Q253 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

The integrating factor of $x\frac{dy}{dx} + 3y = x^2$ is

(A) $\frac{3}{x}$
(B) $\log x$
(C) x^3
(D) x

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

Q254 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

If the order and degree of the differential equation corresponding to the family of curves $(x-2)^2 + (y-a)^2 = b^2$, (where a and b are parameters) are m and n respectively, then $m^2 + n =$

(A) 7
(B) 5
(C) 4
(D) 3

Answer: (B) 5 · Official TGCHE final key

Q255 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

Consider the differential equation $\frac{dy}{dx} = \frac{1}{ax+4y+7}$ and the following statements:
A) The given differential equation is linear in x
B) The given differential equation is not linear in y
C) The given differential equation is linear in y
D) e^{ax} is the integrating factor of the given differential equation
Which one of the following options is true?

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(A) Only C and D are true
(B) Only B and D are true
(C) Only B and A are true
(D) Only A and C are true

Answer: (C) Only B and A are true · Official TGCHE final key

Q256 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

The solution of the differential equation $x\cos x\frac{dy}{dx}+(x\sin x+\cos x)y=1$ is

(A) $x\sec x-y\tan x=C$
(B) $x^2y\cos x-\tan x=C$
(C) $xy\sec x+y\tan x=C$
(D) $xy\sec x-\tan x=C$

Answer: (D) $xy\sec x-\tan x=C$ · Official TGCHE final key

Q257 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

The order and degree of the differential equation $\frac{d^2y}{dx^2}+y+\left(\frac{dy}{dx}-\frac{d^3y}{dx^3}\right)^{3/2}=0$, are respectively

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

Answer: (D) 3, 3 · Official TGCHE final key

Q258 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx}=\frac{2x-3y+4}{3x+2y-7}$ is

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

Answer: (D) $x^2-3xy-y^2+4x+7y+C=0$ · Official TGCHE final key

Q259 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

The general solution of $\frac{dy}{dx}=\frac{x+y+1}{y-x+1}$ is

(A) $2xy + (x+1)^2 - (y+1)^2 = C$

(B) $(x+1)^2 - (y+1)^2 = C + xy$

(C) $(x+1)^2 + 2xy = C(y+1)$

(D) $(x+1)(y+1) = Cxy$

Answer: (A) $2xy + (x+1)^2 - (y+1)^2 = C$ · Official TGCHE final key

Q260 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

The differential equation for which $lx^2 + my^2 = x + y$ is the general solution is

(A) $\begin{vmatrix} x^2 & y^2 & x+y \\ 2x & 2y'y & y'+1 \\ 2 & 2yy'' & y'' \end{vmatrix} = 0$

(B) $\begin{vmatrix} x^2 & y^2 & x+y \\ 2x & 2yy' & 1+y' \\ 2 & 2(y'^2+yy'') & y'' \end{vmatrix} = 0$

(C) $\begin{vmatrix} x^2 & y^2 & x+y \\ 2x & 2yy' & y+1 \\ 2 & 2(y'^2+y'y'') & y'' \end{vmatrix} = 0$

(D) $\begin{vmatrix} x^2 & y^2 & x+y \\ 2x & 2y & 1+y' \\ 2 & 2yy'y'' & y'' \end{vmatrix} = 0$

Answer: (B) $\begin{vmatrix} x^2 & y^2 & x+y \\ 2x & 2yy' & 1+y' \\ 2 & 2(y'^2+yy'') & y'' \end{vmatrix} = 0$ · Official TGCHE final key

Q261 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

The general solution of the differential equation $(x - 2y + 1)dy - (3x - 6y + 2)dx = 0$ is

(A) $\left|x + 2y + \frac{3}{5}\right|^{\frac{2}{25}} \cdot e^{115(x+2y)} = C$

(B) $\left|x - 2y + \frac{3}{5}\right|^{\frac{2}{25}} \cdot e^{\frac{1}{5}(x-2y)} = C$

(C) $\left|x - 2y + \frac{3}{5}\right|^{\frac{2}{25}} \cdot e^{\frac{1}{5}(6x-2y)} = C$

(D) $\left|x - 2y + \frac{1}{5}\right|^{\frac{2}{25}} \cdot e^{\frac{1}{5}(x-2y)} = C$

Answer: (C) $\left|x - 2y + \frac{3}{5}\right|^{\frac{2}{25}} \cdot e^{\frac{1}{5}(6x-2y)} = C$ · Official TGCHE final key

Q262 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

The general solution of the differential equation $(1 + y^2)dx = (\mathrm{Tan}^{-1}y - x)dy$ is

(A) $x = (\mathrm{Tan}^{-1}y) - 1 + Ce^{-\mathrm{Tan}^{-1}y}$
(B) $x = (\mathrm{Tan}^{-1}y) - 1 + Ce^{\mathrm{Tan}^{-1}y}$
(C) $x = (\mathrm{Tan}^{-1}y) - 1 + C$
(D) $x = (\mathrm{Tan}^{-1}y) + Ce^{-\mathrm{Tan}^{-1}y}$

Answer: (A) $x = (\mathrm{Tan}^{-1}y) - 1 + Ce^{-\mathrm{Tan}^{-1}y}$ · Official TGCHE final key

Q263 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

If α and β are respectively the order and degree of the differential equation for which $ax^2 + by^2 = 1$ is the general solution, then the eccentricity of the ellipse $\alpha x^2 + \beta y^2 = 1$ is

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

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

Q264 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

The solution of the differential equation $x\,dy - y\,dx = \sqrt{x^2+y^2}\,dx$, given that $y = 1$ when $x = \sqrt{3}$, is

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

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

Q265 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

If the solution $y(x)$ of the differential equation $\sin x \frac{dy}{dx} + y\cos x = e^{2x}$, $x \in (0, \pi)$ satisfies $y\left(\frac{\pi}{2}\right) = 0$, then $y\left(\frac{\pi}{6}\right) =$

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

Answer: (B) $e^{\frac{\pi}{3}} - e^{\pi}$ · Official TGCHE final key

Q266 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

If the family of curves $y = ae^{4x} + be^{-x}$, where a, b are arbitrary constants represents the general solution of the differential equation $f\left(x, y, \frac{dy}{dx}, \frac{d^2y}{dx^2}\right) = 0$, then $\frac{df}{dx} =$

(A) $\frac{d^2y}{dx^2} - 3\frac{dy}{dx} - 4y$
(B) $\frac{d^3y}{dx^3} - 3\frac{d^2y}{dx^2} - 4\frac{dy}{dx}$
(C) $\frac{d^3y}{dx^3} - \frac{d^2y}{dx^2} - 3\frac{dy}{dx} + 2$
(D) $\frac{d^3y}{dx^3} - \frac{d^2y}{dx^2} + 3$

Answer: (B) $\frac{d^3y}{dx^3} - 3\frac{d^2y}{dx^2} - 4\frac{dy}{dx}$ · Official TGCHE final key

Q267 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

If the length of the sub tangent at any point $p(x, y)$ on a curve $f(x, y) = 0$ is $x + 7y^2$, then $f(x, y) =$

(A) $xy + cy - 7x$
(B) $\frac{x}{y} + 7x - c$
(C) $7y^2 + cy - x$
(D) $7xy + cy - x$

Answer: (C) $7y^2 + cy - x$ · Official TGCHE final key

Q268 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

If the general solution of the differential equation $(y - x + 1)\,dy - (y + x + 2)\,dx = 0$ is $f(x, y, c) = 0$, then the value of c such that $f(1, 1, c) = 0$ is

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

Answer: (C) 2 · Official TGCHE final key

Q269 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

The differential equation for which $y = ax^2 + bx + c$ is the general solution is

(A) $\frac{d^4y}{dx^4} = 0$
(B) $\frac{d^3y}{dx^3} = 0$
(C) $\frac{d^5y}{dx^5} = 0$
(D) $\frac{d^3y}{dx^3} + \frac{d^4y}{dx^4} = 0$

Answer: (B) $\frac{d^3y}{dx^3} = 0$ · Official TGCHE final key

Q270 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

The general solution of the differential equation $(3y - 7x + 7)dx + (7y - 3x + 3)dy = 0$ is

(A) $(x - y + 1)^2(x + y - 1)^5 = C$
(B) $(x + y + 1)^5(x - y - 1)^2 = C$
(C) $(x - y - 1)^2(x + y - 1)^5 = C$
(D) $(x + y - 1)^7 = C$

Answer: (C) $(x - y - 1)^2(x + y - 1)^5 = C$ · Official TGCHE final key

Q271 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

The general solution of the differential equation $x \cos \frac{y}{x}(y\,dx + x\,dy) = y \sin \frac{y}{x}(x\,dy - y\,dx)$ is

(A) $\log(xy) = \log \cos \frac{x}{y} + C$
(B) $\cos\left(\frac{y}{x}\right) = \frac{C}{xy}$
(C) $\log(xy) = \log \sec \frac{x}{y} + C$
(D) $x + y + C = 0$

Answer: (B) $\cos\left(\frac{y}{x}\right) = \frac{C}{xy}$ · Official TGCHE final key

Q272 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

The differential equation for which $\sqrt{1 + y^2} = Cxe^{\text{Tan}^{-1}x}$ is the general solution, of

(A) $xy(1 + x^2)dy - e^{\text{Tan}^{-1}x}(1 + x + x^2)dx = 0$
(B) $xy(1 + y^2)dy - (1 + x^2)(1 + y + y^2)dx = 0$
(C) $(1 + y^2)\text{Tan}^{-1}x\frac{dy}{dx} = \frac{1+x^2}{xy}$
(D) $xy(1 + x^2)dy - (1 + y^2)(1 + x + x^2)dx = 0$

Answer: (D) $xy(1 + x^2)dy - (1 + y^2)(1 + x + x^2)dx = 0$ · Official TGCHE final key

Q273 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

The general solution of the differential equation $\frac{dy}{dx} = \frac{x+y-3}{x+y-7}$ is

(A) $(x+y-5)^2 = Ce^{y+x}$
(B) $(x+y-5)^2 = Ce^{y-x}$
(C) $2\log(x+y-5) = 3x+2y+C$
(D) $\log(x+y-3) = 3(x+y-2)^2+C$

Answer: (B) $(x+y-5)^2 = Ce^{y-x}$ · Official TGCHE final key

Q274 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

If $y = f(x)$ is the solution of the differential equation $x\frac{dy}{dx} = x^2+3y$, $x>0$, $y(2)=4$, then $f(4) =$

(A) 48
(B) 260
(C) 80
(D) 36

Answer: (A) 48 · Official TGCHE final key

Q275 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

The differential equation of which $xy = ae^x + be^{-x} + x^2$ is a solution, is

(A) $xy'' - 2y' + xy + x^2 - 2 = 0$
(B) $xy'' + 2y' - x + x^2 + 2 = 0$
(C) $xy'' + 2y' - y + x^2 - 2 = 0$
(D) $xy'' + 2y' - xy + x^2 - 2 = 0$

Answer: (D) $xy'' + 2y' - xy + x^2 - 2 = 0$ · Official TGCHE final key

Q276 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx} = \frac{x+7y-3}{3x+5y-9}$ is

(A) $(x-3)^4(y-x+3)^4 = c(5y+x-3)^5$
(B) $(x+3)^4(y-x-3)^4 = c(5y+x+3)^5$
(C) $(y-x+3)^4 = c\lvert 5y+x-3\rvert$
(D) $(y-x+3)^4 = c\lvert 5y+x+3\rvert$

Answer: (C) $(y-x+3)^4 = c\lvert 5y+x-3\rvert$ · Official TGCHE final key

Q277 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

If the solution of the differential equation $xy' = y + x^2\sin x$ subject to the condition $y(\pi) = 0$ is $y = f(x)$ and $f(x)$ has an extreme value at $x = \alpha$ then

(A) $\alpha \cos \alpha + 2$

(B) $\alpha = (2n-1)\frac{\pi}{2},\ n \in \mathbb{Z}$

(C) $\cos \frac{\alpha}{2} = 1$

(D) $\alpha = \cot \frac{\alpha}{2}$

Answer: (D) $\alpha = \cot \frac{\alpha}{2}$ · Official TGCHE final key

Q278 TS EAMCET 2019 · 6 May · Shift 1 MCQ

The family of curves represented by the general solution of $y' = \frac{y}{2x}$ contains

(A) circles

(B) ellipses

(C) hyperbolas

(D) parabolas

Answer: (D) parabolas · Official TGCHE final key

Q279 TS EAMCET 2019 · 6 May · Shift 1 MCQ

The solution of the differential equation $(x + 2y^3)\frac{dy}{dx} = y$ is

(A) $x = y^3 + c$

(B) $x = y^3 + cy$

(C) $y = x^3 + c$

(D) $y = x^3 + cx + d$

Answer: (B) $x = y^3 + cy$ · Official TGCHE final key

Q280 TS EAMCET 2019 · 6 May · Shift 1 MCQ

The solution of the differential equation $\frac{dy}{dx} = (4x + y + 1)^2$, when $y(0) = 1$ is

(A) $y = 2x^2 - 1 - \frac{\pi}{8}$

(B) $y = 4x - \left(1 + \frac{\pi}{8}\right)$

(C) $y = 2\tan\left(2x + \frac{\pi}{4}\right) - 4x - 1$

(D) $y = 2\tan\left(x + \frac{\pi}{8}\right) + 4x - 1$

Answer: (C) $y = 2\tan\left(2x + \frac{\pi}{4}\right) - 4x - 1$ · Official TGCHE final key

Q281 TS EAMCET 2019 · 4 May · Shift 1 MCQ

If k and l respectively are the order and degree of the differential equation whose general solution represents the family of circles of constant radius, then $k^2 + l^2 =$

(A) 2
(B) 6
(C) 8
(D) 10

Answer: (C) 8 · Official TGCHE final key

Q282 TS EAMCET 2019 · 4 May · Shift 1 MCQ

The solution of the differential equation $\frac{dy}{dx} = 1 - \cos(y-x)\cot(y-x)$ is

(A) $x\tan(y-x) = c$
(B) $x = \tan(y-x) + c$
(C) $x = \sec(y-x) + c$
(D) $x + \sec(y-x) = c$

Answer: (D) $x + \sec(y-x) = c$ · Official TGCHE final key

Q283 TS EAMCET 2019 · 4 May · Shift 1 MCQ

The general solution of the differential equation $(y\sin x + y)\frac{dy}{dx} - \cos^2 x = 0$

(A) $y^2 = x - \cos x + c$
(B) $y = 1 + \sin x + c$
(C) $y^2 = 2x - 2\sin x + c$
(D) $y^2 = 2x + 2\cos x + c$

Answer: (D) $y^2 = 2x + 2\cos x + c$ · Official TGCHE final key

Q284 TS EAMCET 2019 · 4 May · Shift 2 MCQ

If m and n are the order and degree of the differential equation of the family of parabolas with focus at the origin and X-axis as its axis, then $mn - m + n =$

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

Answer: (C) 3 · Official TGCHE final key

Q285 TS EAMCET 2019 · 4 May · Shift 2 MCQ

The solution of the differential equation $\frac{dy}{dx} + \frac{x}{y}\cdot\frac{x^2+y^2-1}{2(x^2+y^2)+1} = 0$ is

(A) $x^2+y^2+3\log(x^2+y^2)=c$
(B) $x^2+2xy-3\log(x^2+y^2+2)=c$
(C) $x^2+2y^2-3\log(x^2+y^2+2)=c$
(D) $-x^2-2y^2-3\log(x^2+y^2+2)=c$

Answer: (C) $x^2+2y^2-3\log(x^2+y^2+2)=c$ · Official TGCHE final key

Q286 TS EAMCET 2019 · 4 May · Shift 2 MCQ

If $x\log x\frac{dy}{dx}+y=\log x^2$ and $y(e)=0$, then $y(e^2)=$

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

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

Q287 TS EAMCET 2019 · 3 May · Shift 1 MCQ

The differential equation representing the family of circles of constant radius r is

(A) $r^2y''=\left[1+(y')^2\right]^2$
(B) $r^2(y'')^2=\left[1+(y')^2\right]^2$
(C) $r^2(y'')^2=\left[1+(y')^2\right]^3$
(D) $(y'')^2=r^2\left[1+(y')^2\right]^2$

Answer: (C) $r^2(y'')^2=\left[1+(y')^2\right]^3$ · Official TGCHE final key

Q288 TS EAMCET 2019 · 3 May · Shift 1 MCQ

The solution of the differential equation $(2x-3y+5)\,dx+(9y-6x-7)\,dy=0$ is

(A) $3x-3y+8\log|6x-9y-1|=c$
(B) $3x-9y+8\log|6x-9y-1|=c$
(C) $3x-9y+8\log|2x-3y-1|=c$
(D) $3x-9y+4\log|2x-3y-1|=c$

Answer: (B) $3x-9y+8\log|6x-9y-1|=c$ · Official TGCHE final key

Q289 TS EAMCET 2019 · 3 May · Shift 1 MCQ

The solution of the differential equation $\sqrt{1-y^2}\,dx+x\,dy-\sin^{-1}y\,dy=0$ is

(A) $x = \sin^{-1} y - 1 + ce^{-\sin^{-1} y}$

(B) $y = x\sqrt{1-y^2} + \sin^{-1} y + c$

(C) $x = 1 + \sin^{-1} y + ce^{\sin^{-1} y}$

(D) $y = \sin^{-1} y - 1 + x\sqrt{1-y^2} + c$

Answer: (A) $x = \sin^{-1} y - 1 + ce^{-\sin^{-1} y}$ · Official TGCHE final key

Q290 TS EAMCET 2019 · 3 May · Shift 2 MCQ

If the order of a differential equation $\frac{d^2y}{dx^2} - 2\left(\frac{dy}{dx}\right)^3 + \sin\left(\frac{dy}{dx}\right) + y = 0$ is l and the degree of the differential equation $\left(1 + \frac{d^2y}{dx^2}\right)^{2/3} = \left[2 - \left(\frac{dy}{dx}\right)^3\right]^{3/2}$ is m, then the differential equation corresponding to the family of curves $y = Ax^l + Be^{mx}$, where A and B are arbitrary constants, is

(A) $(4x^2 - 2x)y'' + (16x^2 - 2)y' + (32x - 8)y = 0$

(B) $(2x^2 - x)y'' + (8x^2 - 2)y' + (16x - 4)y = 0$

(C) $(2x^2 - x)y'' - (8x^2 - 1)y' + (16x - 4)y = 0$

(D) $(4x^2 - 2x)y'' + (8x^2 - 1)y' + (16x - 4)y = 0$

Answer: (C) $(2x^2 - x)y'' - (8x^2 - 1)y' + (16x - 4)y = 0$ · Official TGCHE final key

Q291 TS EAMCET 2019 · 3 May · Shift 2 MCQ

The solution of the differential equation $y\,dx - x\,dy + 3x^2y^2e^{x^3}\,dx = 0$ satisfying $y = 1$ when $x = 1$, is

(A) $y\left(e^{x^3} - (1 + 2e)\right) - x = 0$

(B) $y\left(e^{x^3} + (1 - e)\right) + x = 0$

(C) $y\left(e^{x^3} + (1 + e)\right) - x = 0$

(D) $y\left(e^{x^3} - (1 + e)\right) + x = 0$

Answer: (D) $y\left(e^{x^3} - (1 + e)\right) + x = 0$ · Official TGCHE final key

Q292 TS EAMCET 2019 · 3 May · Shift 2 MCQ

The solution of the differential equation $(1 + y^2) + \left(x - e^{\mathrm{Tan}^{-1}y}\right)\frac{dy}{dx} = 0$ is

(A) $xe^{2\mathrm{Tan}^{-1}y} - e^{\mathrm{Tan}^{-1}y} = c$

(B) $(x - 2)e^{-\mathrm{Tan}^{-1}y} = c$

(C) $2xe^{\mathrm{Tan}^{-1}y} - e^{2\mathrm{Tan}^{-1}y} = c$

(D) $xe^{\mathrm{Tan}^{-1}y} + 2e^{2\mathrm{Tan}^{-1}y} = c$

Answer: (C) $2xe^{\mathrm{Tan}^{-1}y} - e^{2\mathrm{Tan}^{-1}y} = c$ · Official TGCHE final key

Q293 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

The differential equation corresponding to the family of curves $y = e^x(A\cos x + B\sin x)$ is

(A) $y'' + y' + y = 0$
(B) $y'' + 2y' + 2y = 0$
(C) $y'' - 2y' + 2y = 0$
(D) $y'' - 2y' - 2y = 0$

Answer: (C) $y'' - 2y' + 2y = 0$ · Official APSCHE final key

Q294 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

The solution of the differential equation $x\frac{dy}{dx} = y - x\tan\left(\frac{y}{x}\right)$ is (Here k is an arbitrary constant)

(A) $x = y\,\mathrm{Sin}^{-1}\left(\frac{k}{x}\right)$
(B) $y = x\,\mathrm{Sin}^{-1}\left(\frac{k}{x}\right)$
(C) $x\sin y + k = 0$
(D) $y = x\cos(kx)$

Answer: (B) $y = x\,\mathrm{Sin}^{-1}\left(\frac{k}{x}\right)$ · Official APSCHE final key

Q295 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

Statement (I): The elimination of arbitrary constants from α, β and γ from $y = (\alpha + \beta + \gamma)x$ results in a differential equation of order three
Statement (II): The elimination of arbitrary constants α, β and γ from $y = \alpha x + \beta\sin x + \gamma e^x$ results in a differential equation of order three
Make the correct choice of the following

(A) I is true and II is false
(B) I is false and II is false
(C) I is true and II is true
(D) I is false and II is true

Answer: (D) I is false and II is true · Official APSCHE final key

Q296 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

The general solution of $\sin y \cdot \frac{dy}{dx} = \cos y(1 - x\cos y)$ is

(A) $\sec y = x - 1 - ce^x$

(B) $\sec y = x + 1 + ce^x$

(C) $\sec y = x + e^x + c$

(D) $\sec y = x - e^x + c$

Answer: (B) $\sec y = x + 1 + ce^x$ · Official APSCHE final key

Q297 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

The degree and order respectively of the differential equation of the family of the curves represented by $y = \sqrt{c\,(x + \sqrt{c})}$ are (Here c is a parameter)

(A) $1, 3$

(B) $2, 3$

(C) $3, 1$

(D) $2, 2$

Answer: (C) $3, 1$ · Official APSCHE final key

Q298 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

The solution of the differential equation $\frac{x+y-1}{x+y-2}\frac{dy}{dx} = \frac{x+y+1}{x+y+2}$, given that $y = 1$ when $x = 1$; is

(A) $2(y - x) + \log\left|\frac{(x+y)^2-2}{2}\right| = 0$

(B) $\log\left|\frac{(x+y)^2-2}{2}\right| = (x - y)^2$

(C) $\log\left|\frac{(x-y)^2+2}{2}\right| + 2(y - x) = 0$

(D) $(x - y) + \log\left|\frac{(x+y)^2-2}{2}\right| = 0$

Answer: (A) $2(y - x) + \log\left|\frac{(x+y)^2-2}{2}\right| = 0$ · Official APSCHE final key

Q299 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

The differential equation of all parabolas whose axes are parallel to Y-axis is

(A) $\frac{d^3y}{dx^3} = 0$

(B) $\frac{d^2y}{dx^2} = 0$

(C) $\frac{d^2y}{dx^2} + \frac{dy}{dx} = 0$

(D) $y\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^2 = 0$

Answer: (A) $\frac{d^3y}{dx^3} = 0$ · Official APSCHE final key

Q300 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

The solution of the equation $\frac{dy}{dx} + 2y\tan x = \sin x$ satisfying $y = 0$ when $x = \frac{\pi}{3}$, is

(A) $y = 2\sin^2 x + \cos x - 2$
(B) $y = 2\sin^2 x - \cos x - 2$
(C) $y = 2\cos^2 x - \sin x + 2$
(D) $y = 2\cos x - \sin^2 x - 1$

Answer: (A) $y = 2\sin^2 x + \cos x - 2$ · Official APSCHE final key

Q301 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

The differential equation formed by eliminating a and b from the equation $y = e^x(a\cos x + b\sin x)$ is

(A) $2\frac{d^2y}{dx^2} + \frac{dy}{dx} - 2y = 0$
(B) $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} - 2y = 0$
(C) $2\frac{d^2y}{dx^2} - \frac{dy}{dx} + 2y = 0$
(D) $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + 2y = 0$

Answer: (D) $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + 2y = 0$ · Official APSCHE final key

Q302 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

If $y = A(x)e^{-\int P\,dx}$ is a solution of $\frac{dy}{dx} + P(x)y = Q(x)$, then $A'(x) =$

(A) $e^{\int P\,dx}$
(B) $Q(x)e^{-\int P\,dx}$
(C) $\int Q(x)e^{\int P\,dx}\,dx$
(D) $Q(x)e^{\int P\,dx}$

Answer: (D) $Q(x)e^{\int P\,dx}$ · Official APSCHE final key

Q303 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

If c is a parameter, then the differential equation of the family of curves $x^2 = c(y + c)^2$ is

(A) $x\left(\frac{dy}{dx}\right)^3 + y\left(\frac{dy}{dx}\right)^2 - 1 = 0$
(B) $x\left(\frac{dy}{dx}\right)^3 - y\left(\frac{dy}{dx}\right)^2 + 1 = 0$
(C) $x\left(\frac{dy}{dx}\right)^3 + y\left(\frac{dy}{dx}\right)^2 + 1 = 0$
(D) $x\left(\frac{dy}{dx}\right)^3 - y\left(\frac{dy}{dx}\right)^2 - 1 = 0$

Answer: (D) $x\left(\frac{dy}{dx}\right)^3 - y\left(\frac{dy}{dx}\right)^2 - 1 = 0$ · Official APSCHE final key

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Q304 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

If $f(x), f'(x), f''(x)$ are positive functions and $f(0)=1,\ f'(0)=2$, then the solution of the differential equation $\begin{vmatrix} f(x) & f'(x) \\ f'(x) & f''(x) \end{vmatrix} = 0$ is

(A) e^{2x}

(B) $2\sin x + 1$

(C) $\sin^2 x + 2x + 1$

(D) e^{4x}

Answer: (A) e^{2x} · Official APSCHE final key

Q305 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

The order of the differential equation corresponding to the family of parabolas whose axes are along the X-axis and whose foci are at the origin, is

(A) 4

(B) 3

(C) 2

(D) 1

Answer: (D) 1 · Official APSCHE final key

Q306 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

The general solution of the differential equation $yy' = x\left[\frac{y^2}{x^2} + \frac{\phi\left(\frac{y^2}{x^2}\right)}{\phi'\left(\frac{y^2}{x^2}\right)}\right]$, where ϕ is an arbitrary function, is

(A) $x\phi\left(\frac{y^2}{x^2}\right) = cy$

(B) $x^2\phi\left(\frac{y^2}{x^2}\right) = c$

(C) $x^2\phi\left(\frac{y^2}{x^2}\right) = cy^2$

(D) $\phi\left(\frac{y^2}{x^2}\right) = cx^2$

Answer: (D) $\phi\left(\frac{y^2}{x^2}\right) = cx^2$ · Official APSCHE final key

Q307 TS EAMCET 2018 · 7 May · Shift 1 MCQ

Consider the following differential equations

$D_1 : y = 4\frac{dy}{dx} + 3x\frac{dx}{dy}$

$D_2 : \frac{d^2y}{dx^2} = \left(3 + \left(\frac{dy}{dx}\right)^2\right)^{4/3}$

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$D_3 : \left[1+\left(\frac{dy}{dx}\right)\right]^2 = \left(\frac{dy}{dx}\right)^2$

The ratio of the sum of the orders of D_1, D_2 and D_3 to the sum of their degrees is

(A) $1:2$

(B) $1:1$

(C) $2:3$

(D) $3:2$

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

Q308 TS EAMCET 2018 · 7 May · Shift 1 MCQ

The general solution of the differential equation $\frac{dy}{dx} = 1 + x + y + xy$ is

(A) $\log(1+x) = y + \frac{x^2}{2} + k$

(B) $y = x + \frac{x^2}{2} + k$

(C) $\log(1+y) = \frac{x^3}{3} + k$

(D) $y = ke^{x+\frac{x^2}{2}} - 1$

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

Q309 TS EAMCET 2018 · 7 May · Shift 1 MCQ

The general solution of the differential equation $(1+y^2)dx = (\mathrm{Tan}^{-1}y - x)dy$ is

(A) $x\mathrm{Tan}^{-1}y = e^{(\mathrm{Tan}^{-1}y-1)} + k$

(B) $x\mathrm{Tan}^{-1}y = e^{\mathrm{Tan}^{-1}y} - 1 + k$

(C) $xe^{\mathrm{Tan}^{-1}y} = \left(\mathrm{Tan}^{-1}y - e^y\right) + k$

(D) $x = \left(\mathrm{Tan}^{-1}y - 1\right) + ke^{-\mathrm{Tan}^{-1}y}$

Answer: (D) $x = \left(\mathrm{Tan}^{-1}y - 1\right) + ke^{-\mathrm{Tan}^{-1}y}$ · The council's preliminary key

Q310 TS EAMCET 2018 · 5 May · Shift 1 MCQ

The differential equation corresponding to the family of curves given by $y = a + be^{2x} + ce^{-3x}$ is

(A) $y_3 - y_2 + 6y_1 = 0$

(B) $y_3 + y_2 - 6y_1 = 0$

(C) $y_3 - 6y_2 - y_1 = 0$

(D) $y_3 + 6y_2 - y_1 = 0$

Answer: (B) $y_3 + y_2 - 6y_1 = 0$ · The council's preliminary key

Q311 TS EAMCET 2018 · 5 May · Shift 1 MCQ

The general solution of the differential equation $x^2y\,dx - (x^3+y^3)\,dy = 0$ is

(A) $y^3 = 3x^3 \log(cx)$
(B) $c(x^3 - y^3) = x^2$
(C) $\log y - \frac{x^3}{3y^3} = c$
(D) $y^2 - x^2 = c^2(y^2 + x^2)$

Answer: (C) $\log y - \frac{x^3}{3y^3} = c$ · The council's preliminary key

Q312 TS EAMCET 2018 · 5 May · Shift 1 MCQ

The general solution of the differential equation $(1 + y^2)\,dx = (\text{Tan}^{-1}y - x)\,dy$ is

(A) $2xe^{\text{Tan}^{-1}y} = e^{2\text{Tan}^{-1}y} + c$
(B) $xy + \text{Tan}^{-1}y = c$
(C) $2\text{Tan}^{-1}y = (y^2 - 1)x + c$
(D) $xe^{\text{Tan}^{-1}y} = e^{\text{Tan}^{-1}y}(\text{Tan}^{-1}y - 1) + c$

Answer: (D) $xe^{\text{Tan}^{-1}y} = e^{\text{Tan}^{-1}y}(\text{Tan}^{-1}y - 1) + c$ · The council's preliminary key

Q313 TS EAMCET 2018 · 5 May · Shift 2 MCQ

The general solution of the differential equation $\left(\frac{1}{x^2} + x\right)\frac{dy}{dx} + 3y = 1$ is

(A) $y = \frac{1}{x^2} + 3c$
(B) $(3y - 1)x^3 + 3y = c$
(C) $\log y - xy = c$
(D) $\left(1 + x^3\right)y = x^3 + c$

Answer: (B) $(3y - 1)x^3 + 3y = c$ · The council's preliminary key

Q314 TS EAMCET 2018 · 5 May · Shift 2 MCQ

A family of curves whose equation is general solution of a differential equation having order 1 and degree 3, is (g, a, c are arbitrary constants)

(A) $x^2 + y^2 + 2gx + 4y + 2 = 0$
(B) $x^2 = a^2\left(1 + y^2\right)$
(C) $y^2 = 2c\left(x + \sqrt{c}\right)$
(D) $y^2 = 4ax$

Answer: (C) $y^2 = 2c\left(x + \sqrt{c}\right)$ · The council's preliminary key

Q315 TS EAMCET 2018 · 5 May · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx} = \frac{1}{x + y + 1}$ is (k, c are arbitrary constants)

(A) $y = \log_e\left(\frac{x+y+2}{k}\right)$

(B) $x = \log_e\left(\frac{x+y+2}{k}\right)$

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

(D) $y = ce^x + x + 2$

Answer: (A) $y = \log_e\left(\frac{x+y+2}{k}\right)$ · The council's preliminary key

Q316 TS EAMCET 2018 · 4 May · Shift 1 MCQ

The differential equation corresponding to the family of circles having centres on X-axis and passing through the origin is

(A) $y^2 + x^2 + \frac{dy}{dx} = 0$

(B) $y^2 - x^2 + \frac{dy}{dx} = 0$

(C) $y^2 + x^2 + 2xy\frac{dy}{dx} = 0$

(D) $y^2 - x^2 - 2xy\frac{dy}{dx} = 0$

Answer: (D) $y^2 - x^2 - 2xy\frac{dy}{dx} = 0$ · The council's preliminary key

Q317 TS EAMCET 2018 · 4 May · Shift 1 MCQ

The general solution of the differential equation $(x^2 + xy)y' = y^2$ is

(A) $e^{\frac{y}{x}} = cx$

(B) $e^{-\frac{y}{x}} = cy$

(C) $e^{-\frac{y}{x}} = cxy$

(D) $e^{\frac{-2y}{x}} = cy$

Answer: (B) $e^{-\frac{y}{x}} = cy$ · The council's preliminary key

Q318 TS EAMCET 2018 · 4 May · Shift 1 MCQ

At any point on a curve, the slope of the tangent is equal to the sum of abscissa and the[] product of ordinate and abscissa of that point. If the curve passes through $(0, 1)$, then the[] equation of the curve is

(A) $y = 2e^{\frac{x^2}{2}} - 1$

(B) $y = 2e^{x^2}$

(C) $y = e^{-x^2}$

(D) $y = 2e^{-x^2} - 1$

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

Q319 TS EAMCET 2018 · 4 May · Shift 2 MCQ

The general solution of the differential equation $\cos(x+y)dy = dx$ is

(A) $y = \sec(x+y) + c$

(B) $y - \tan\frac{y}{2} = x + c$

(C) $y = \tan\left(\frac{x+y}{2}\right) + c$

(D) $y = \frac{1}{2}\tan(x+y) + c$

Answer: (C) $y = \tan\left(\frac{x+y}{2}\right) + c$ · The council's preliminary key

Q320 TS EAMCET 2018 · 4 May · Shift 2 MCQ

The general solution of the differential equation $(x^3 - 3xy^2)dx = (y^3 - 3x^2y)dy$ is
Where c is an arbitrary constant

(A) $c^2(x^2+y^2) = (y^2 - x^2)$

(B) $c^2(x^2+y^2) = (y^2 - x^2)^2$

(C) $c^2(x^2+y^2)^2 = (y^2 - x^2)$

(D) $c^2(x^2-y^2)^2 = (y^2 - x^2)$

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

Q321 TS EAMCET 2018 · 4 May · Shift 2 MCQ

The differential equation corresponding to all the circles lying in the first quadrant and touching the coordinate axes is

(A) $(x-y)^2\left[1+\left(\frac{dy}{dx}\right)^2\right] = \left(x + y\frac{dy}{dx}\right)^2$

(B) $(x-y)^2\left[1+\frac{dy}{dx}\right]^2 = \left(x + y\frac{dy}{dx}\right)^2$

(C) $(x-y)^2\left[1+\left(\frac{dy}{dx}\right)^2\right] = x + y\left(\frac{dy}{dx}\right)^2$

(D) $(x-y)^2\left[1+\frac{dy}{dx}\right] = \left(x + y\frac{dy}{dx}\right)^{1/2}$

Answer: (A) $(x-y)^2\left[1+\left(\frac{dy}{dx}\right)^2\right] = \left(x + y\frac{dy}{dx}\right)^2$ · The council's preliminary key

Q322 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

If a and b are arbitrary constants, then the differential equation having $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ as its general solution is

(A) $\left(\frac{d^2y}{dx^2}\right)^2 = \left[1+\left(\frac{dy}{dx}\right)^2\right]^3$

(B) $(x^2-y^2)\frac{d^2y}{dx^2} - 2xy\frac{dy}{dx} - y = 0$

(C) $xy\frac{d^2y}{dx^2} + x\left(\frac{dy}{dx}\right)^2 - y\frac{dy}{dx} = 0$

(D) $x^2\frac{d^2y}{dx^2} + 2x\frac{dy}{dx} - 2y = 0$

Answer: (C) $xy\frac{d^2y}{dx^2} + x\left(\frac{dy}{dx}\right)^2 - y\frac{dy}{dx} = 0$ · The council's preliminary key

Q323 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

The general solution of the differential equation $\frac{dx}{dy} + \frac{x}{y} = x^2$ is

(A) $\frac{1}{y} = cx - y\log x$

(B) $\frac{1}{x} = cy + x\log x$

(C) $\frac{1}{x} = cy - y\log y$

(D) $\frac{1}{y} = cx + y\log x$

Answer: (C) $\frac{1}{x} = cy - y\log y$ · The council's preliminary key

Q324 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

The differential equation of the family of curves $r^2 = a^2\cos 2\theta$ where 'a' is an arbitrary constant is:

(A) $\frac{dr}{d\theta} = r\cot 2\theta$

(B) $\frac{dr}{d\theta} = r\tan 2\theta$

(C) $\frac{dr}{d\theta} = r\sin 2\theta$

(D) $\cos 2\theta \cdot \frac{dr}{d\theta} + r\sin 2\theta = 0$

Answer: (D) $\cos 2\theta \cdot \frac{dr}{d\theta} + r\sin 2\theta = 0$ · The council's preliminary key

Q325 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

The general solution of the differential equation $\frac{dy}{dx} = \frac{x+2y-3}{2x+y-3}$ is

(A) $x = 2(x-y) + \log(x-y+2) + c$

(B) $\left(x+y+\frac{4}{3}\right)(x-y+2)^3 = c^2$

(C) $(2x-y)^2 = c(x+2y-3)$

(D) $x+y-2 = c^2(x-y)^3$

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

Q326 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

If l and m are the degree and the order respectively of the differential equation of the family of all circles in the XY plane with radius 5 units, then $2l+3m =$

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(A) 5
(B) 10
(C) 15
(D) 7

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

Q327 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

If $-\frac{\pi}{4} < x < \frac{\pi}{4}$, then the general solution of the differential equation $\cos^2 x \cdot \frac{dy}{dx} - (\tan 2x)\, y = \cos^4 x$ is

(A) $y = \frac{1}{2}\left[\frac{\tan 2x + c}{1 - \tan^2 x}\right]$
(B) $y = \frac{1}{2}\left[\frac{\cos 2x + c}{1 - \tan^2 x}\right]$
(C) $y = \frac{1}{2}\left[\frac{\sin 2x + c}{1 - \tan^2 x}\right]$
(D) $y = \frac{1}{2}\left[\frac{\sin x + c}{1 - \tan^2 x}\right]$

Answer: (C) $y = \frac{1}{2}\left[\frac{\sin 2x + c}{1 - \tan^2 x}\right]$ · The council's preliminary key

Q328 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

The order and the degree of the differential equation $y = px + \sqrt{a^2p^2 + b^2}$, (where $p = \frac{dy}{dx}$) are respectively

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

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

Q329 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

The solution of the differential equation $\frac{dx}{dy} + 2yx = 2y$ which passes through the point $(2, 0)$ is

(A) $(x - 1) = 2e^{y^2}$
(B) $(x - 1) = 2e^{-y^2}$
(C) $(x - 1) = e^{y^2}$
(D) $(x - 1) = e^{-y^2}$

Answer: (D) $(x - 1) = e^{-y^2}$ · The council's preliminary key

Q330 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

If m and n are respectively the order and degree of the differential equation of the family of parabolas with focus at the origin and X-axis as its axis, then $mn - m + n =$

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

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

Q331 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

The general solution of $\left(1+e^{x/y}\right)dx+e^{x/y}\left(1-\frac{x}{y}\right)dy=0$ is

(A) $ye^{y/x}+x=c$
(B) $ye^{x/y}-x=c$
(C) $ye^{x/y}+y=c$
(D) $ye^{x/y}+x=c$

Answer: (D) $ye^{x/y}+x=c$ · The council's preliminary key

Q332 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

The differential equation corresponding to the family of parabolas $y^2=4a(x+a)$, where a is the parameter, is

(A) $y\left(\frac{dy}{dx}\right)^2+2x\frac{dy}{dx}+y=0$
(B) $y\left(\frac{dy}{dx}\right)^2-2x\frac{dy}{dx}-y=0$
(C) $y\left(\frac{dy}{dx}\right)^2+2x\left(\frac{dy}{dx}\right)-y=0$
(D) $y=2x\frac{dy}{dx}$

Answer: (C) $y\left(\frac{dy}{dx}\right)^2+2x\left(\frac{dy}{dx}\right)-y=0$ · The council's preliminary key

Q333 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

The general solution of $\frac{dy}{dx}+y\tan x=2x+x^2\tan x$

(A) $y-x^2=c\sec x$
(B) $y\cos x=x^2\sec x+c$
(C) $y\sec x=x^2+c\cos x$
(D) $y=x^2+c\cos x$

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

Q334 TS EAMCET 2017 · 12 May · Offline MCQ

The solution of $\frac{dy}{dx} = \frac{x+y}{x-y}$ is

(A) $\tan^{-1}\left(\frac{y}{x}\right) = \log\sqrt{x^2+y^2} + C$

(B) $\tan^{-1}\left(\frac{y}{x}\right) = \log\sqrt{x^2-y^2} + C$

(C) $\sin^{-1}\left(\frac{y}{x}\right) = \log\sqrt{x^2+y^2} + C$

(D) $\cos^{-1}\left(\frac{y}{x}\right) = \log\sqrt{x^2-y^2} + C$

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

Q335 TS EAMCET 2017 · 12 May · Offline MCQ

The solution of $(y - 3x^2)\,dx + x\,dy = 0$ is

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

(B) $y(x) = \cos x - \frac{1}{x^2} + C$

(C) $y(x) = x^2 + \frac{C}{x}$

(D) $y(x) = \sqrt{x} + \frac{C}{x}$

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

Q336 TS EAMCET 2017 · 12 May · Offline MCQ

The differential equation of the simple harmonic motion given by $x = A\cos(nt + \alpha)$ is

(A) $\frac{d^2x}{dt^2} - n^2x = 0$

(B) $\frac{d^2x}{dt^2} + n^2x = 0$

(C) $\frac{dx}{dt} - \frac{d^2x}{dt^2} = 0$

(D) $\frac{d^2x}{dt^2} - \frac{dx}{dt} + nx = 0$

Answer: (B) $\frac{d^2x}{dt^2} + n^2x = 0$ · The council's preliminary key

Q337 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

The differential equation corresponding to the family of circles in the plane touching the Y-axis at the origin, is

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(A) $\frac{dy}{dx} = \frac{x^2 + y^2}{2xy}$

(B) $\frac{dy}{dx} = \frac{x^2 - y^2}{2xy}$

(C) $\frac{dy}{dx} = \frac{y^2 - x^2}{2xy}$

(D) $\frac{dy}{dx} = \frac{2xy}{x^2 + y^2}$

Answer: (C) $\frac{dy}{dx} = \frac{y^2 - x^2}{2xy}$ · The council's preliminary key

Q338 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

The solution of the equation $(x - 4y^3)\frac{dy}{dx} - y = 0,\ (y > 0)$ is

(A) $x + 2y^3 = cy$

(B) $y = x^3 + cx$

(C) $x = y^3 + cy$

(D) $y + 2x^3 = cx$

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

Q339 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

The differential equation formed by eliminating A and B from $Ax^2 + By^2 = 1$ is

(A) $xy \cdot \frac{d^2y}{dx^2} - x\left(\frac{dy}{dx}\right)^2 = \frac{dy}{dx}$

(B) $xy \cdot \frac{d^2y}{dx^2} + x\left(\frac{dy}{dx}\right)^2 = y\frac{dy}{dx}$

(C) $xy\frac{d^2y}{dx^2} + x\left(\frac{dy}{dx}\right)^2 = \frac{dy}{dx}$

(D) $xy \cdot \frac{d^2y}{dx^2} - x\left(\frac{dy}{dx}\right)^2 = y\frac{dy}{dx}$

Answer: (B) $xy \cdot \frac{d^2y}{dx^2} + x\left(\frac{dy}{dx}\right)^2 = y\frac{dy}{dx}$ · The council's preliminary key

Q340 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

If the form of the solution of the differential equation $(y^3 + x)\frac{dy}{dx} = y$ when $y(4) = 2$ is $y^3 = ax + b$, then $4a + 12b^2 =$

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

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

Q341 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

The differential equation of the family of curves given by $y = ae^{2x} + be^{5x}$ where a and b are parameters is

(A) $\frac{d^2y}{dx^2} + 7\frac{dy}{dx} - 10y = 0$
(B) $\frac{d^2y}{dx^2} - 7\frac{dy}{dx} + 10y = 0$
(C) $\frac{d^2y}{dx^2} - 7\frac{dy}{dx} + 12y = 0$
(D) $\frac{d^2y}{dx^2} - 10\frac{dy}{dx} + 7y = 0$

Answer: (B) $\frac{d^2y}{dx^2} - 7\frac{dy}{dx} + 10y = 0$ · The council's preliminary key

Q342 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

The equation of the curve passing through $\left(\frac{\pi}{6}, 0\right)$ and satisfying the differential equation $(e^y + 1)\cos x\, dx + e^y \sin x\, dy = 0$, is

(A) $y = \log_e(\text{cosec}\, x - 1)$
(B) $y = \log_e(\text{cosec}\, x + 1)$
(C) $x = \log_e(y + 1)$
(D) $x = \log_e(y - 1)$

Answer: (A) $y = \log_e(\text{cosec}\, x - 1)$ · The council's preliminary key

Q343 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The general solution of the differential equation $(x - y)^2 \frac{dy}{dx} = a^2$ is

(A) $y = a \log\left(\frac{x - y + 1}{x + y - 1}\right) + c$
(B) $y = \frac{a}{2} \log\left(\frac{x - y - a}{x - y + a}\right) + c$
(C) $y = \frac{a}{2} \log\left(\frac{x + y - a}{x - y - a}\right) + c$
(D) $y = \frac{a}{4} \log\left(\frac{x - y + a}{x + y + a}\right) + c$

Answer: (B) $y = \frac{a}{2} \log\left(\frac{x - y - a}{x - y + a}\right) + c$ · The council's preliminary key

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Q344 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The solution of the differential equation $2\frac{dy}{dx} - \frac{y}{x} = \frac{y^2}{x^2}$, given that $y = 2$ when $x = 1$, is

(A) $2y = \frac{x}{1+\sqrt{x}}$

(B) $y = \frac{2x}{2-\sqrt{x}}$

(C) $y = \frac{x}{2(1+\sqrt{x})}$

(D) $y = \frac{2x}{1+\sqrt{x}}$

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

Q345 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

The differential equation corresponding to the family of circles given by $(x-a)^2 + (y-b)^2 = 4$ where a and b are parameters, is

(A) $4\frac{d^2y}{dx^2} + 9y = 0$

(B) $4\left(\frac{d^2y}{dx^2}\right)^2 = \left[1 + \left(\frac{dy}{dx}\right)^2\right]^3$

(C) $4\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^2 = 6y$

(D) $4\left(\frac{d^2y}{dx^2}\right)^2 + \left[1 + \left(\frac{dy}{dx}\right)^2\right]^2 = 0$

Answer: (B) $4\left(\frac{d^2y}{dx^2}\right)^2 = \left[1 + \left(\frac{dy}{dx}\right)^2\right]^3$ · The council's preliminary key

Q346 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

The general solution of $\cos^2 x \frac{dy}{dx} + y = \tan x$ is

(A) $ye^{\tan x} = (\tan x - 1)e^{\tan x} - \tan x + c$

(B) $ye^{\tan x} = (\tan x + 1)e^{\tan x} + \tan x + c$

(C) $ye^{\tan x} = (\tan x - 1)e^{\tan x} + c$

(D) $ye^{\tan x} = (\tan x - 1)e^{\tan x} + \tan x + c$

Answer: (C) $ye^{\tan x} = (\tan x - 1)e^{\tan x} + c$ · The council's preliminary key

Q347 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

The differential equation having the general solution $y = c(x-c)^2$ (c is an arbitrary constant) is

(A) $(y')^2 = 4y^2(xy' - 2y)$
(B) $(y')^3 = 4y(xy' - 2y)$
(C) $(y')^3 = y(x^2y' - y)$
(D) $(y')^3 = 2y(xy' + 2y)$

Answer: (B) $(y')^3 = 4y(xy' - 2y)$ · The council's preliminary key

Q348 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

The solution of the differential equation $(x+1)\frac{dy}{dx} - xy = 1$, satisfying $y(0) = 1$ is

(A) $\frac{1}{(1+x)}(e^x + 1) = y$
(B) $\log_e(1+x) + \frac{1}{2} = y$
(C) $\left(e^x - \frac{1}{2}\right)\frac{1}{x} = y$
(D) $\frac{1}{(1+x)}(2e^x - 1) = y$

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

Q349 TS EAMCET 2016 · 15 May · Offline MCQ

Let $p \in \mathbb{R}$, then the differential equation of the family of curves $y = (\alpha + \beta x)e^{px}$, where α, β are arbitrary constants, is

(A) $y'' + 4py' + p^2y = 0$
(B) $y'' - 2py' + p^2y = 0$
(C) $y'' + 2py' - p^2y = 0$
(D) $y'' + 2py' + p^2y = 0$

Answer: (B) $y'' - 2py' + p^2y = 0$ · Official TGCHE final key

Q350 TS EAMCET 2016 · 15 May · Offline MCQ

The solution of the differential equation $3xy' - 3y + (x^2 - y^2)^{1/2} = 0$, satisfying the condition $y(1) = 1$ is

(A) $3\cos^{-1}\left(\frac{y}{x}\right) = \ln|x|$
(B) $3\cos\left(\frac{y}{x}\right) = \ln|x|$
(C) $3\cos^{-1}\left(\frac{y}{x}\right) = 2\ln|x|$
(D) $3\sin^{-1}\left(\frac{y}{x}\right) = \ln|x|$

Answer: (A) $3\cos^{-1}\left(\frac{y}{x}\right) = \ln|x|$ · Official TGCHE final key

Q351 TS EAMCET 2016 · 15 May · Offline MCQ

The solution of the differential equation $y' = \frac{1}{e^{-y} - x}$, is

(A) $x = e^{-y}(y + c)$

(B) $y + e^{-y} = x + c$

(C) $x = e^{y}(y + c)$

(D) $x + y = e^{-y} + c$

Answer: (A) $x = e^{-y}(y + c)$ · Official TGCHE final key

Q352 AP EAMCET 2016 · 29 Apr · Offline MCQ

The solution of the differential equation $(1 + y^2) + \left(x - e^{\tan^{-1} y}\right)\frac{dy}{dx} = 0$, is

(A) $x\, e^{\tan^{-1} y} = \tan^{-1} y + c$

(B) $x\, e^{2\tan^{-1} y} = e^{-\tan^{-1} y} + c$

(C) $2x\, e^{\tan^{-1} y} = e^{2\tan^{-1} y} + c$

(D) $x^2 e^{\tan^{-1} y} = 4e^{2\tan^{-1} y} + c$

Answer: (C) $2x\, e^{\tan^{-1} y} = e^{2\tan^{-1} y} + c$ · The council's preliminary key

Q353 AP EAMCET 2016 · 29 Apr · Offline MCQ

The solution of the differential equation $(2x - 4y + 3)\frac{dy}{dx} + (x - 2y + 1) = 0$ is

(A) $\log((2x - 4y) + 3) = x - 2y + c$

(B) $\log[2(2x - 4y) + 3] = 2(x - 2y) + c$

(C) $\log[2(x - 2y) + 5] = 2(x + y) + c$

(D) $\log[4(x - 2y) + 5] = 4(x + 2y) + c$

Answer: (D) $\log[4(x - 2y) + 5] = 4(x + 2y) + c$ · The council's preliminary key

Q354 AP EAMCET 2014 · 22 May · Offline MCQ

The differential equation of the family of parabolas with vertex at $(0, -1)$ and having axis along the y-axis is

(A) $yy' + 2xy + 1 = 0$

(B) $xy' + y + 1 = 0$

(C) $xy' - 2y - 2 = 0$

(D) $xy' - y - 1 = 0$

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

Q355 AP EAMCET 2014 · 22 May · Offline MCQ

The solution of $x\frac{dy}{dx} = y + xe^{y/x}$ with $y(1) = 0$ is

(A) $e^{y/x} + \log x = 1$

(B) $e^{-y/x} = \log x$

(C) $e^{-y/x} + 2\log x = 1$

(D) $e^{-y/x} + \log x = 1$

Answer: (D) $e^{-y/x} + \log x = 1$ · The council's preliminary key

Q356 AP EAMCET 2014 · 22 May · Offline MCQ

The solution of $\cos y + (x \sin y - 1)\frac{dy}{dx} = 0$ is

(A) $x \sec y = \tan y + c$

(B) $\tan y - \sec y = cx$

(C) $\tan y + \sec y = cx$

(D) $x \sec y + \tan y = c$

Answer: (A) $x \sec y = \tan y + c$ · The council's preliminary key

Q357 AP EAMCET 2013 · 10 May · Offline MCQ

An integrating factor of the equation $(1 + y + x^2 y)dx + (x + x^3)dy = 0$ is

(A) e^x

(B) x^2

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

(D) x

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

Q358 AP EAMCET 2013 · 10 May · Offline MCQ

The solution of the differential equation $\frac{dy}{dx} - 2y \tan 2x = e^x \sec 2x$ is :

(A) $y \sin 2x = e^x + c$

(B) $y \cos 2x = e^x + c$

(C) $y = e^x \cos 2x + c$

(D) $y \cos 2x + e^x = c$

Answer: (B) $y \cos 2x = e^x + c$ · The council's preliminary key

Q359 AP EAMCET 2012 · 12 May · Offline MCQ

$\frac{dy}{dx} + 2x \tan(x - y) = 1 \Rightarrow \sin(x - y) =$ (Here A is a constant)

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(A) Ae^{-x^2}
(B) Ae^{2x}
(C) Ae^{x^2}
(D) Ae^{-2x}

Answer: (C) Ae^{x^2} · Official APSCHE final key

Q360 AP EAMCET 2012 · 12 May · Offline MCQ

An integrating factor of the differential equation $(1-x^2)\frac{dy}{dx}+xy=\frac{x^4}{(1+x^5)}\left(\sqrt{1-x^2}\right)^3$ is

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

Answer: (D) $\frac{1}{\sqrt{1-x^2}}$ · Official APSCHE final key

Q361 AP EAMCET 2011 · 8 May · Offline MCQ

The solution of the differential equation $\frac{dy}{dx}=\frac{y}{x}+\frac{\varphi(y/x)}{\varphi'(y/x)}$ is

(A) $x\,\varphi\left(\frac{y}{x}\right)=k$
(B) $\varphi\left(\frac{y}{x}\right)=kx$
(C) $y\,\varphi\left(\frac{y}{x}\right)=k$
(D) $\varphi\left(\frac{y}{x}\right)=ky$

Answer: (B) $\varphi\left(\frac{y}{x}\right)=kx$ · The council's preliminary key

Q362 AP EAMCET 2011 · 8 May · Offline MCQ

If $y=y(x)$ is the solution of the differential equation $\left(\frac{2+\sin x}{y+1}\right)\frac{dy}{dx}+\cos x=0$ with $y(0)=1$, then $y\left(\frac{\pi}{2}\right)=$

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

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

Q363 AP EAMCET 2010 · 30 May · Offline MCQ

The solution of $\tan y\frac{dy}{dx}=\sin(x+y)+\sin(x-y)$ is :

(A) $\sec y = 2\cos x + c$

(B) $\sec y = -2\cos x + c$

(C) $\tan y = -2\cos x + c$

(D) $\sec^2 y = -2\cos x + c$

Answer: (B) $\sec y = -2\cos x + c$ · Official APSCHE final key

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Q364 AP EAMCET 2010 · 30 May · Offline MCQ

A family of curves has the differential equation $xy\frac{dy}{dx} = 2y^2 - x^2$. Then the family of curves is :

(A) $y^2 = cx^2 + x^3$

(B) $y^2 = cx^4 + x^3$

(C) $y^2 = x + cx^4$

(D) $y^2 = x^2 + cx^4$

Answer: (D) $y^2 = x^2 + cx^4$ · Official APSCHE final key

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