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MATHEMATICS · EAPCET (EAMCET)

Binomial Theorem

Previous Year Questions with answers

295 questions · **128** papers · **2010–2026** · newest paper first

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

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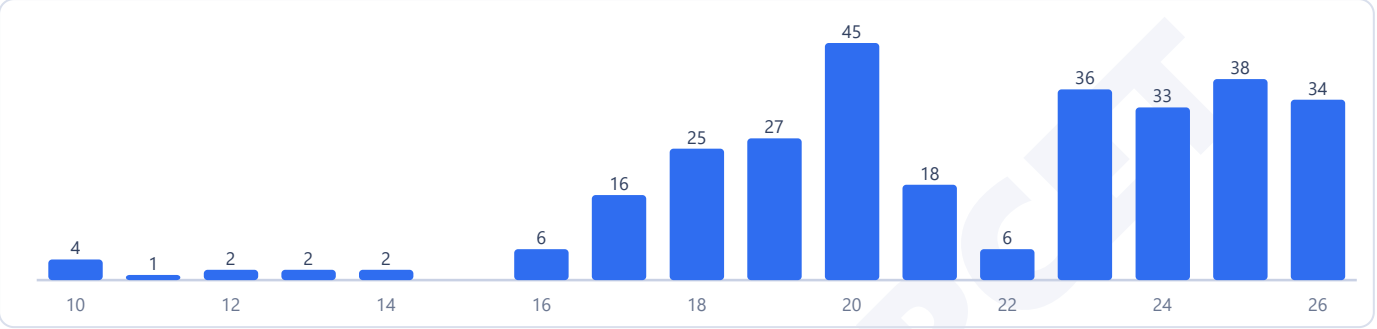
Chapter at a glance

2.4%	295	67 of 77	295 / 0
of Mathematics questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Rising: 2.3 questions per paper in 2024–2026 against 1.4 in 2022–2023.

Questions per year



Counts are the questions we hold: 295 in 128 papers. 4 questions in this chapter came back in more than one paper.

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

General & Middle Terms	114
Other Expansions	108
Binomial Coefficients	73

How often it comes up

Binomial Theorem serves as a core expansion tool providing steady algebraic questions across the testing schedule. Looking across the long-range testing record from 2010 through 2026, Binomial Theorem generated 295 questions across 149 evaluated exam papers, appearing in 128 of those sittings to record an average of 2.0 questions per paper and a 2.5 percent subject share. Modern test cycles between 2022 and 2026 reflect sustained weight: examiners set 147 questions across 77 sittings, with questions appearing in 67 papers to yield 1.9 questions per test and a 2.4 percent share. This volume places the chapter at rank 18 of 29 mathematics chapters.

While the topic has appeared in every calendar year, it was absent from ten papers out of 77 between 2022 and 2026, though in the last three years it appeared in every sitting. Across the latest three exam years from 2024 to 2026, candidates answered 105 questions across 46 papers (appearing in all 46 papers, averaging 2.3 questions per test and a 2.9 percent share). During the older examination period from 2010 to 2021, the chapter contributed 148 questions across 72 sittings (present in 61 papers, averaging 2.1 per test and a 2.6 percent share). Evaluating longitudinal shifts, comparing early testing with the last three years shows the share is about the same, while comparing recent testing with the last three years shows the share is up. Across the two regional boards from 2022 to 2026, Andhra Pradesh administered 86 questions across 48 papers (38 papers with questions, 1.8 per test, 2.2 percent share), while Telangana administered 61 questions across 29 papers (all 29 papers, 2.1 per test, 2.6 percent share).

Most-asked topics

The chapter branches into three primary algebraic expansion categories:

- **Other Expansions**: Generating 108 total questions, with 57 delivered in recent sessions (tested through 2026). Coverage includes negative and rational index expansions of one plus x, multinomial theorem expansions, approximations of high-index surds, and infinite binomial series.

- **General & Middle Terms**: Comprising 114 total questions, with 52 appearing in modern testing (last asked in 2026). Key concepts encompass finding the general term T sub r plus one, the term independent of x, middle terms, numerically greatest terms, and counts of rational or integral terms in radical expansions.
- **Binomial Coefficients**: Delivering 73 total questions, with 38 set in recent examinations (tested through 2026). Problems focus on series summation identities of nCr, calculus-based derivations involving derivatives and integrals of binomial expansions, and alternating coefficient sums evaluated via complex roots.

What the questions look like

Examiners test both standard binomial power extraction and non-integer binomial expansions.

A standard problem requires finding the term independent of x in an expansion of the form a x to the power p plus b x to the power negative q raised to integer power n. Students set the exponent of x in the general term to zero, solve for integer r, and compute the numerical coefficient. Another common format asks for the count of integral terms when expanding two radical terms raised to a large power, requiring candidates to find values of r that simultaneously satisfy two divisibility conditions. Non-integer expansions also feature prominently, requiring students to expand negative or fractional powers like one minus x raised to negative two or negative one-half to match low-degree polynomial coefficients.

How to practise it

Master the general term formula: for x plus y to the power n, T sub r plus one equals n choose r times x to the power n minus r times y to the power r. To extract the constant term or any specific power x to the power k, collect all powers of x into a single linear function of r and solve for r.

For fractional and negative powers, note that the expansion of one plus x raised to the power alpha requires modulus of x strictly less than one. Memorize standard infinite series like one minus x to the negative one, one minus x to the negative two, and one minus x to the negative three. When finding the numerically greatest term in x plus y to the power n, compute m equals n plus one times modulus of y divided by modulus of x plus modulus of y: if m is an integer, terms T sub m and T sub m plus one are equal and greatest; if m is non-integer, T sub floor of m plus one is the unique greatest term.

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

The coefficient of x^{12} in the expansion of $(x^2+x+2)^8$ is

(A) 518
(B) 448
(C) 406
(D) 182

Answer: (A) 518 · The council's preliminary key

Q2 AP EAPCET 2026 · 18 May · Shift 1 MCQ

$-1+\frac{7}{10}\cdot 2^2-\frac{7\cdot 9}{10\cdot 15}\cdot 2^3+\frac{7\cdot 9\cdot 11}{10\cdot 15\cdot 20}\cdot 2^4-\cdots\infty=$

(A) $\left(\frac{25}{81}\right)^{\frac{1}{5}}$
(B) $\frac{25\sqrt{5}}{243}$
(C) $\left(\frac{81}{25}\right)^{\frac{1}{5}}$
(D) $\frac{243}{25\sqrt{5}}$

Answer: (B) $\frac{25\sqrt{5}}{243}$ · The council's preliminary key

Q3 AP EAPCET 2026 · 18 May · Shift 1 MCQ

The coefficient of x^3 in the power series expansion of $\frac{x}{x^2-x-2}$ is

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

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

Q4 AP EAPCET 2026 · 18 May · Shift 2 MCQ

If $0<x<1$, then first negative term in the expansion of $(1+x)^{\frac{47}{5}}$ is

(A) 10th term
(B) 11th term
(C) 12th term
(D) 13th term

Answer: (C) 12th **term** · The council's preliminary key

Q5 AP EAPCET 2026 · 18 May · Shift 2 MCQ

If $C_o, C_1, C_2, \ldots, C_n$ represent the coefficients in the binomial expansion of $(1+x)^n$, then $C_o+\frac{C_2}{3}+\frac{C_4}{5}+\cdots+\frac{C_{16}}{17}=$

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(A) $\frac{2^{14}}{17}$
(B) $\frac{2^{15}}{17}$
(C) $\frac{2^{16}}{17}$
(D) $\frac{2^{17}}{17}$

Answer: (C) $\frac{2^{16}}{17}$ · The council's preliminary key

Q6 AP EAPCET 2026 · 15 May · Shift 1 MCQ

$$\sum_{r=1}^{\infty} \frac{1 \cdot 3 \cdot 5 \cdots (2r-1)}{2^{2r}\, r!} \left(\sqrt{3}\right)^{r} =$$

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

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

Q7 AP EAPCET 2026 · 15 May · Shift 1 MCQ

If the expansion of $\left(\frac{1+15x}{1-3x}\right)$ is valid and the coefficient of x^3 in its expansion is $k(3^3)$, then $k =$

(A) 7
(B) 6
(C) 12
(D) 13

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

Q8 AP EAPCET 2026 · 15 May · Shift 2 MCQ

The sum of the coefficients of fractional powers of 'x' in the expansion of $\left(1 - 3x^{\frac{1}{2}}\right)^{2026}$ is

(A) $2^{2025} - 2^{2026}$
(B) $2^{2025}(2^{2026} - 1)$
(C) $2^{2025}(1 - 2^{2026})$
(D) $2^{2026} - 2^{2025}$

Answer: (C) $2^{2025}(1 - 2^{2026})$ · The council's preliminary key

Q9 AP EAPCET 2026 · 15 May · Shift 2 MCQ

If $a > 0$ and the expansion of $(a - 5x)^{5/2}$ is valid for all $x \in \left(-\frac{4}{5}, \frac{4}{5}\right)$, then the third term in the expansion of $(a - 5x)^{5/2}$ is

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(A) $-\frac{625}{32}x^2$
(B) $\frac{125}{8}x^2$
(C) $\frac{475}{16}x^2$
(D) $\frac{375}{4}x^2$

Answer: (D) $\frac{375}{4}x^2$ · The council's preliminary key

Q10 AP EAPCET 2026 · 14 May · Shift 1 MCQ

The coefficient of x^{12} in the expansion of $(3+2x)^{-5}$ is

(A) ${}^{17}C_5\, 3^{12}2^5$
(B) ${}^{16}C_4 \frac{2^{12}}{3^{17}}$
(C) ${}^{16}C_{12} \frac{2^{17}}{3^{12}}$
(D) ${}^{17}C_5 \frac{3^{12}}{2^{17}}$

Answer: (B) ${}^{16}C_4 \frac{2^{12}}{3^{17}}$ · The council's preliminary key

Q11 AP EAPCET 2026 · 14 May · Shift 1 MCQ

If x is so small that the values of $x^n, n \geq 2$ are negligible, then the approximate value of $\frac{\sqrt{2-3x}}{(3+2x)}(x+1)$ is

(A) $\frac{\sqrt{2}}{3}\left(1-\frac{5x}{12}\right)$
(B) $\frac{\sqrt{2}}{3}(1+5x)$
(C) $\frac{\sqrt{2}}{3}(1-7x)$
(D) $\frac{\sqrt{2}}{3}(1+6x)$

Answer: (A) $\frac{\sqrt{2}}{3}\left(1-\frac{5x}{12}\right)$ · The council's preliminary key

Q12 AP EAPCET 2026 · 14 May · Shift 2 MCQ

The divisor of $3^{6n}+56n-1\ \forall\ n \in N$ is

(A) 729
(B) 625
(C) 676
(D) 784

Answer: (D) 784 · The council's preliminary key

Q13 AP EAPCET 2026 · 14 May · Shift 2 MCQ

If $|x|$ is so small that x^2 and higher powers of x may be neglected, then the approximate value of $\left(\frac{3x+64}{3x+8}\right)^{2/3}$ is

(A) $4+\frac{9x}{8}$
(B) $1-\frac{7x}{32}$
(C) $1+\frac{9x}{32}$
(D) $4-\frac{7x}{8}$

Answer: (D) $4-\frac{7x}{8}$ · The council's preliminary key

Q14 AP EAPCET 2026 · 13 May · Shift 1 MCQ

The value of n for which the sum $\frac{{}^nC_0}{2^n}+2.\frac{{}^nC_1}{2^n}+3.\frac{{}^nC_2}{2^n}+\cdots+(n+1)\frac{{}^nC_n}{2^n}=16$ is

(A) 10
(B) 20
(C) 25
(D) 30

Answer: (D) 30 · The council's preliminary key

Q15 AP EAPCET 2026 · 13 May · Shift 1 MCQ

In the binomial expansion of $(x+a)^{15}$, if the eleventh term is the geometric mean of the eighth and twelfth terms, then the numerically greatest term in its expansion is

(A) 8
(B) 9
(C) 10
(D) 11

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

Q16 AP EAPCET 2026 · 13 May · Shift 2 MCQ

The coefficient of x^5 in the expansion of $\left(x+\sqrt{x^2-x}\right)^6+\left(x-\sqrt{x^2-x}\right)^6$ is

(A) 96
(B) 48
(C) -48
(D) -96

Answer: (D) -96 · The council's preliminary key

Q17 AP EAPCET 2026 · 13 May · Shift 2 MCQ

If $f(x)$ is the third term in the expansion of $\frac{1}{\sqrt[3]{9-48x+64x^2}}$, when $|x|>\frac{3}{8}$, then $f(1)=$

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(A) $\frac{5}{128}$
(B) $\frac{5}{256}$
(C) $-\frac{1}{128}$
(D) $-\frac{1}{256}$

Answer: (B) $\frac{5}{256}$ · The council's preliminary key

Q18 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If $(1+x)^n = C_o + C_1x + C_2x^2 + \cdots + C_nx^n$, then $C_o - C_2 + C_4 - C_6 + \cdots =$

(A) $2^{\frac{n}{2}} \cos\frac{n\pi}{4}$
(B) $2^n \cos\frac{n\pi}{4}$
(C) $2^{\frac{n}{2}} \sin\frac{n\pi}{4}$
(D) $2^n \sin\frac{n\pi}{4}$

Answer: (A) $2^{\frac{n}{2}} \cos\frac{n\pi}{4}$ · The council's preliminary key

Q19 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If in the expansion of $(1+px)^q, q \in N$, the coefficients of x and x^2 are 21 and 189 respectively, then p and q are respectively

(A) $7, 3$
(B) $3, 7$
(C) $-7, 3$
(D) $-3, 7$

Answer: (B) $3, 7$ · The council's preliminary key

Q20 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If the term independent of x in the expansion of $\left(x^{1/3} - x^{-1/2}\right)^{10}$ is α , then the number of proper divisors of α is

(A) 16
(B) 14
(C) 15
(D) 17

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

Q21 AP EAPCET 2026 · 12 May · Shift 2 MCQ

The number of integral terms in the expansion of $\left(5^{\frac{1}{2}} + 7^{\frac{1}{8}}\right)^{1024}$ is

(A) 128
(B) 129
(C) 130
(D) 131

Answer: (B) 129 · The council's preliminary key

Q22 TS EAPCET 2026 · 11 May · Shift 1 MCQ

If $C_r = {}^nC_r$ and $n = 10$, then $C_0 + C_1 + C_2 \cdot \frac{2^2}{3} + C_3 \cdot \frac{2^3}{4} + \ldots + C_n \cdot \frac{2^n}{n+1} =$

(A) $\frac{3^{11}-1}{11}$
(B) $\frac{3^{11}-1}{22}$
(C) $\frac{3^{10}-1}{22}$
(D) $\frac{3^{10}-1}{11}$

Answer: (B) $\frac{3^{11}-1}{22}$ · The council's preliminary key

Q23 TS EAPCET 2026 · 11 May · Shift 1 MCQ

The approximate value of $(0.98)^{0.2}$, rounded to 4 decimal places, found by using binomial expansion is

(A) 0.9860
(B) 0.9950
(C) 0.9960
(D) 1.0060

Answer: (C) 0.9960 · The council's preliminary key

Q24 TS EAPCET 2026 · 11 May · Shift 2 MCQ

Term independent of x in the expansion of $\left(5x + \frac{6}{x}\right)^4 \left(\frac{1}{1-2x}\right)$ is

(A) $(201)6^3$
(B) $(27)6^4$
(C) $(157)5^4$
(D) $(27)5^6$

Answer: (A) $(201)6^3$ · The council's preliminary key

Q25 TS EAPCET 2026 · 11 May · Shift 2 MCQ

In the binomial expansion of $(1+x)^n$, the coefficients of x^{K-1}, x^K, x^{K+1} and also the coefficients of x^{l-1}, x^l, x^{l+1} are in A.P. Then numerically greatest term in the expansion of $(1+x)^{l+K}$ when $x = \frac{2}{3}$ and $n = 14$ is

(A) $^{14}C_5\left(\frac{2}{3}\right)^5$

(B) $^{14}C_4\left(\frac{2}{3}\right)^4$

(C) $^{15}C_7\left(\frac{2}{3}\right)^8$

(D) $^{15}C_6\left(\frac{2}{3}\right)^9$

Answer: (A) $^{14}C_5\left(\frac{2}{3}\right)^5$ · The council's preliminary key

Q26 TS EAPCET 2026 · 10 May · Shift 1 MCQ

If 'a' is the coefficient of x^7 and 'b' is the term independent of x in the expansion of $\left(\frac{3x^4}{4}-\frac{4}{3x^3}\right)^7$, then $\frac{b}{a}=$

(A) -1

(B) 1

(C) $-\frac{16}{9}$

(D) $\frac{16}{9}$

Answer: (C) $-\frac{16}{9}$ · The council's preliminary key

Q27 TS EAPCET 2026 · 10 May · Shift 1 MCQ

If $|x|$ is so small that x^2 and higher powers of x may be neglected and hence

$$\frac{(8-3x)^{1/3}}{(2+3x)^3}\approx\frac{1}{a}(1+bx)$$

then $2ab=$

(A) $-\frac{37}{2}$

(B) $-\frac{35}{2}$

(C) -37

(D) -35

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

Q28 TS EAPCET 2026 · 10 May · Shift 1 MCQ

The coefficient of x^2 in the power series expansion of $\frac{2x}{(x-1)(x+2)^2}$ when $|x|<1$ is

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(A) 0
(B) $-\frac{2}{3}$
(C) $\frac{4}{9}$
(D) $\frac{1}{3}$

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

Q29 TS EAPCET 2026 · 10 May · Shift 2 MCQ

Numerically greatest term in the expansion of $(2x-3y)^n$ when $x=\frac{3}{2}$, $y=\frac{1}{3}$ and $n=6$ is

(A) 1215
(B) 1458
(C) 1024
(D) 2187

Answer: (B) 1458 · The council's preliminary key

Q30 TS EAPCET 2026 · 10 May · Shift 2 MCQ

If $x=2+\frac{7}{8}+\frac{7\cdot10}{8\cdot12}+\frac{7\cdot10\cdot13}{8\cdot12\cdot16}+\ldots\infty$, then $x^3=$

(A) 81
(B) 625
(C) 256
(D) 216

Answer: (C) 256 · The council's preliminary key

Q31 TS EAPCET 2026 · 9 May · Shift 1 MCQ

Let $[t]$ represent the greatest integer less than or equal to t. If $x=\left(7\sqrt{5}+15\right)^9$ and $y=\left(5\sqrt{7}+13\right)^{11}$ then $[x]$ and $[y]$ are

(A) even integer and odd integer respectively
(B) odd integer and even integer respectively
(C) both odd integers
(D) both even integers

Answer: (D) both even integers · The council's preliminary key

Q32 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If α_n is the coefficient of x^n in the expansion of $(1-x)^{-5}$ and β_n is the coefficient of x^n in the expansion of $(1-x)^{-4}$, then $\alpha_{12}+\beta_{13}=$

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(A) α_{13}
(B) β_{13}
(C) α_{25}
(D) β_{25}

Answer: (A) α_{13} · The council's preliminary key

Q33 TS EAPCET 2026 · 9 May · Shift 2 MCQ

The term independent of x in the expansion of $\left(\frac{\sqrt{x}}{2}-\frac{3}{x}\right)^{12}$ is

(A) $55\left(\frac{3}{2}\right)^6$
(B) $495\left(\frac{9}{16}\right)^2$
(C) $55\left(\frac{9}{16}\right)^2$
(D) $45\left(\frac{3}{2}\right)^4$

Answer: (B) $495\left(\frac{9}{16}\right)^2$ · The council's preliminary key

Q34 TS EAPCET 2026 · 9 May · Shift 2 MCQ

Coefficient of x^3 in the expansion of $\frac{(1-2x^2)^{1/3}}{(2+x)^{1/2}}$ is

(A) $\frac{17\sqrt{2}}{384}$
(B) $\frac{17\sqrt{2}}{768}$
(C) $\frac{49\sqrt{2}}{768}$
(D) $\frac{49\sqrt{2}}{384}$

Answer: (C) $\frac{49\sqrt{2}}{768}$ · The council's preliminary key

Q35 AP EAPCET 2025 · 27 May · Shift 1 MCQ

The remainder obtained when $(2m+1)^{2n}$ $(m,n\in N)$ is divided by 8 is

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

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

Q36 AP EAPCET 2025 · 27 May · Shift 1 MCQ

$\sum_{r=1}^{15} r^2\left(\frac{^{15}C_r}{^{15}C_{r-1}}\right)=$

(A) 560
(B) 680
(C) 840
(D) 1020

Answer: (B) 680 · The council's preliminary key

Q37 AP EAPCET 2025 · 27 May · Shift 1 MCQ

$$\frac{1}{81^n} - {}^{2n}C_1\frac{10}{81^n} + {}^{2n}C_2\frac{10^2}{81^n} - \ldots + \frac{10^{2n}}{81^n} =$$

(A) 0
(B) $(-1)^n$
(C) 1
(D) 81

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

Q38 AP EAPCET 2025 · 27 May · Shift 1 MCQ

If x is positive real number and the first negative term in the expansion of $(1+x)^{27/5}$ is t_k then k =

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

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

Q39 AP EAPCET 2025 · 26 May · Shift 1 MCQ

In the binomial expansion of $(p-q)^{14}$, if the sum of 7th term and 8th term is zero, then $\frac{p+q}{p-q} =$

(A) 14
(B) 15
(C) 16
(D) 13

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

Q40 AP EAPCET 2025 · 26 May · Shift 1 MCQ

The numerically greatest term in the expansion of $(x+3y)^{13}$, when $x = \frac{1}{2}$ and $y = \frac{1}{3}$ is

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(A) ${}^{13}C_9 \left(\frac{1}{3}\right)^4$
(B) ${}^{13}C_4 \left(\frac{1}{2}\right)^9$
(C) ${}^{13}C_9 \left(\frac{1}{2}\right)^4$
(D) ${}^{13}C_{10} \frac{1}{2^4}$

Answer: (C) ${}^{13}C_9 \left(\frac{1}{2}\right)^4$ · The council's preliminary key

Q41 AP EAPCET 2025 · 26 May · Shift 2 MCQ

The coefficient of x^{10} in the expansion of $\left(x + \frac{2}{x} - 5\right)^{12}$ is

(A) 1674
(B) 2132
(C) 1892
(D) 862

Answer: (A) 1674 · The council's preliminary key

Q42 AP EAPCET 2025 · 26 May · Shift 2 MCQ

Let $S_1 = \sum_{j=1}^{10} j(j-1) \cdot {}^{10}C_j$, $S_2 = \sum_{j=1}^{10} j \cdot {}^{10}C_j$ and $S_3 = \sum_{j=1}^{10} j^2 \cdot {}^{10}C_j$.

Assertion (A) : $S_3 = 55 \times 2^9$

Reason (R) : $S_1 = 90 \times 2^8$ and $S_2 = 10 \times 2^8$

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

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

Q43 AP EAPCET 2025 · 24 May · Shift 1 MCQ

If $y = \frac{3}{4} + \frac{3.5}{4.8} + \frac{3.5.7}{4.8.12} + \ldots \infty$, then

(A) $y^2 - 2y + 5 = 0$
(B) $y^2 + 2y - 7 = 0$
(C) $y^2 - 3y + 4 = 0$
(D) $y^2 + 4y - 6 = 0$

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

Q44 AP EAPCET 2025 · 24 May · Shift 1 MCQ

Sum of the coefficients of x^4 and x^6 in the expansion of $(1 + x - x^2)^6$ is

(A) 121
(B) -91
(C) 11
(D) 31

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

Q45 AP EAPCET 2025 · 23 May · Shift 1 MCQ

If the coefficients of x^{10} and x^{11} in the expansion of $(1+\alpha x+\beta x^2)(1+x)^{11}$ are 396 and 144 respectively, then $\alpha^2+\beta^2=$

(A) 10
(B) 13
(C) 25
(D) 20

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

Q46 AP EAPCET 2025 · 23 May · Shift 1 MCQ

If $-\frac{2}{3}<\mathrm{x}<\frac{2}{3}$, then the value of the 5th term in the expansion of $\frac{1}{\sqrt[3]{2-3\mathrm{x}}}$ when $\mathrm{x}=\frac{1}{2}$ is

(A) $\frac{35}{256(\sqrt[3]{2})}$
(B) $\frac{35}{768(\sqrt[3]{2})}$
(C) $\frac{7}{768(\sqrt[3]{2})}$
(D) $\frac{105}{256(\sqrt[3]{2})}$

Answer: (B) $\frac{35}{768(\sqrt[3]{2})}$ · The council's preliminary key

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Q47 AP EAPCET 2025 · 23 May · Shift 1 MCQ

If $x>\sqrt{3}$ and $\frac{x^2+1}{(x^2+2)(x^2+3)}$ is expanded in terms of powers of x, then the coefficient of x^{-8} is

(A) 0
(B) -81
(C) 46
(D) -46

Answer: (D) -46 · The council's preliminary key

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Q48 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If $11^{12} - 11^2 = k(5 \times 10^9 + 6 \times 10^9 + 33 \times 10^8 + 110 \times 10^7 + \ldots + 33)$, then $k =$

(A) 20
(B) 50
(C) 100
(D) 200

Answer: (D) 200 · The council's preliminary key

Q49 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If $C_0, C_1, C_2, \ldots, C_n$ are the binomial coefficients in the expansion of $(1+x)^n$, then $(C_0 + C_1) - (C_2 + C_3) + (C_4 + C_5) - (C_6 + C_7) + \ldots =$

(A) $2^{n/2}\left(\cos\frac{n\pi}{4} + i\sin\frac{n\pi}{4}\right)$
(B) $2^{n/2}\left(\cos\frac{n\pi}{3} + \sin\frac{n\pi}{3}\right)$
(C) $2^{n/2}\left(\cos\frac{n\pi}{3} + i\sin\frac{n\pi}{3}\right)$
(D) $2^{n/2}\left(\cos\frac{n\pi}{4} + \sin\frac{n\pi}{4}\right)$

Answer: (D) $2^{n/2}\left(\cos\frac{n\pi}{4} + \sin\frac{n\pi}{4}\right)$ · The council's preliminary key

Q50 AP EAPCET 2025 · 23 May · Shift 2 MCQ

$1 + \frac{4}{15} + \frac{4.10}{15.30} + \frac{4.10.16}{15.30.45} + \ldots \infty =$

(A) $\left(\frac{3}{5}\right)^{2/3}$
(B) $\left(\frac{5}{3}\right)^{2/3}$
(C) $\left(\frac{3}{5}\right)^{3/2}$
(D) $\left(\frac{5}{3}\right)^{3/2}$

Answer: (B) $\left(\frac{5}{3}\right)^{2/3}$ · The council's preliminary key

Q51 AP EAPCET 2025 · 22 May · Shift 1 MCQ

If k is a positive integer and 10^k is a divisor of the number $9^{11} + 11^9$, then the greatest value of k is

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

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

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Q52 AP EAPCET 2025 · 22 May · Shift 1 MCQ

The number of all possible values of k for which the expansion $(\sqrt{x}+\sqrt[k]{y})^{10}$ will have exactly nine irrational terms is

(A) 3
(B) 4
(C) 5
(D) 6

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

Q53 AP EAPCET 2025 · 22 May · Shift 2 MCQ

The terms containing $x^r y^s$ (for certain r and s) are present in both the expansions of $(x+y^2)^{13}$ and $(x^2+y)^{14}$. If α is the number of such terms, then the sum $\sum_{r,s}^{\alpha}(r+s)=$

(A) 27
(B) 40
(C) 18
(D) 35

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

Q54 AP EAPCET 2025 · 22 May · Shift 2 MCQ

The coefficient of x^3 in the power series expansion of $\frac{1+4x-3x^2}{(1+3x)^3}$ is

(A) -27
(B) 27
(C) 153
(D) -153

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

Q55 AP EAPCET 2025 · 21 May · Shift 1 MCQ

If $(1+x)^n=\sum_{r=0}^{n}C_r x^r$, then the value of $C_0+(C_0+C_1)+(C_0+C_1+C_2)+\ldots+(C_0+C_1+C_2+\ldots+C_n)$ is

(A) $n\,2^{n-1}$
(B) 2^n+n
(C) $(n+2)2^n$
(D) $(n+2)\,2^{n-1}$

Answer: (D) $(n+2)\,2^{n-1}$ · The council's preliminary key

Q56 AP EAPCET 2025 · 21 May · Shift 1 MCQ

If x is so large that terms containing $x^{-3}, x^{-4}, x^{-5}, \ldots$ can be neglected, then the approximate value of $\left(\frac{3x-5}{4x^2+3}\right)^{-4/5}$ is

(A) $\left(\frac{3}{4x}\right)^{4/5}\left(1-\frac{4}{3x}-\frac{7}{5x^2}\right)$
(B) $\left(\frac{4x}{3}\right)^{4/5}\left(1+\frac{4}{3x}+\frac{13}{5x^2}\right)$
(C) $\left(\frac{4x}{3}\right)^{4/5}\left(1+\frac{4}{3x}-\frac{13}{5x^2}\right)$
(D) $\left(\frac{3}{4x}\right)^{4/5}\left(1-\frac{4}{3x}+\frac{7}{5x^2}\right)$

Answer: (B) $\left(\frac{4x}{3}\right)^{4/5}\left(1+\frac{4}{3x}+\frac{13}{5x^2}\right)$ · The council's preliminary key

Q57 AP EAPCET 2025 · 21 May · Shift 2 MCQ

If $\binom{p}{q} = {}^pC_q$ and $\sum_{i=0}^{m}\binom{10}{i}\binom{20}{m-i}$ is maximum, then $m =$

(A) 10
(B) 12
(C) 15
(D) 20

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

Q58 AP EAPCET 2025 · 21 May · Shift 2 MCQ

Coefficient of x^2 in the expansion of $(x^2+x-2)^5$ is

(A) 800
(B) 756
(C) 0
(D) 512

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

Q59 AP EAPCET 2025 · 21 May · Shift 2 MCQ

If P_n denotes the product of the binomial coefficients in the expansion of $(1+x)^n$, then $\frac{P_{n+1}}{P_n} =$

(A) $\frac{n+1}{n!}$
(B) $\frac{n^n}{n!}$
(C) $\frac{(n+1)^n}{(n+1)!}$
(D) $\frac{(n+1)^{n+1}}{(n+1)!}$

Answer: (D) $\frac{(n+1)^{n+1}}{(n+1)!}$ · The council's preliminary key

EdLoop EAPCET

Q60 AP EAPCET 2025 · 21 May · Shift 2 MCQ

The coefficient of x^3 in the expansion of $\frac{x^4+1}{(x^2+1)(x-1)}$ when it is expressed in terms of positive integral powers of x, is

(A) 0
(B) 1
(C) 16
(D) 24

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

Q61 TS EAPCET 2025 · 4 May · Shift 1 MCQ

If $C_0, C_1, C_2, ..., C_{10}$ represent the binomial coefficients in the expansion of $(1+x)^{10}$, then $C_0C_6 + C_1C_7 + C_2C_8 + C_3C_9 + C_4C_{10} =$

(A) 9690
(B) 4845
(C) 1615
(D) 3230

Answer: (B) 4845 · The council's preliminary key

Q62 TS EAPCET 2025 · 4 May · Shift 1 MCQ

When $|x| < \frac{1}{2}$ the coefficient of x^6 in the expansion of $\left(\frac{2-x}{1+2x}\right)^2$ is

(A) 1320
(B) 2640
(C) 1088
(D) 1980

Answer: (B) 2640 · The council's preliminary key

Q63 TS EAPCET 2025 · 4 May · Shift 2 MCQ

Numerically greatest term in the expansion of $(3x-4y)^{23}$ when $x = \frac{1}{6}$ and $y = \frac{1}{8}$ is

(A) $\frac{^{23}C_{11}}{6^{23}}$
(B) $^{23}C_{11}\left(\frac{8}{6}\right)^{23}$
(C) $^{23}C_{11}\left(\frac{6}{8}\right)^{23}$
(D) $^{23}C_{11}\left(\frac{1}{2}\right)^{23}$

Answer: (D) $^{23}C_{11}\left(\frac{1}{2}\right)^{23}$ · The council's preliminary key

EdLoop EAPCET

Q64 TS EAPCET 2025 · 4 May · Shift 2 MCQ

Let K be the number of rational terms in the expansion of $\left(\sqrt{2}+\sqrt[3]{3}\right)^{6144}$. If the coefficient of x^P $(P \in N)$ in the expansion of $\frac{1}{(1+x)(1+x^2)(1+x^4)(1+x^8)(1+x^{16})}$ is α_P, then $\alpha_K - \alpha_{K+1} - \alpha_{K-1} =$

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

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

Q65 TS EAPCET 2025 · 3 May · Shift 1 MCQ

Numerically greatest term in the expansion of $(2x-3y)^n$ when $x=\frac{7}{2}$, $y=\frac{3}{7}$ and $n=13$ is

(A) $13.3^5.7^9$
(B) $13.3^4.7^9$
(C) $26.3^5.7^9$
(D) $26.3^4.7^9$

Answer: (C) $26.3^5.7^9$ · The council's preliminary key

Q66 TS EAPCET 2025 · 3 May · Shift 1 MCQ

If $C_0, C_1, C_2, ..., C_8$ are the binomial coefficients in the expansion of $(1+x)^8$ then

$$\sum_{r=1}^{8} r^3 \frac{C_r}{C_{r-1}} =$$

(A) 540
(B) 336
(C) 105
(D) 270

Answer: (A) 540 · The council's preliminary key

Q67 TS EAPCET 2025 · 3 May · Shift 2 MCQ

If $C_0, C_1, C_2, ..., C_n$ are the binomial coefficients in the expansion of $(1+x)^n$ then the value of $\sum r^3 \cdot C_r$ when $n=5$ is

(A) 320
(B) 560
(C) 720
(D) 800

Answer: (D) 800 · The council's preliminary key

Q68 TS EAPCET 2025 · 3 May · Shift 2 MCQ

The coefficient of x^{12} in the expansion of $(x^2+2x+2)^8$ is

(A) 1120
(B) 2240
(C) 2576
(D) 4152

Answer: (C) 2576 · The council's preliminary key

Q69 TS EAPCET 2025 · 2 May · Shift 1 MCQ

If the coefficient of 3rd term from the beginning in the expansion of $\left(ax^2-\frac{8}{bx}\right)^9$ is equal to the coefficient of 3rd term from the end in the expansion of $\left(ax-\frac{2}{bx^2}\right)^9$ then the relation between a and b is

(A) $ab=-1$
(B) $ab=1$
(C) $a^5b^5=-2$
(D) $a^5b^5=2$

Answer: (C) $a^5b^5=-2$ · The council's preliminary key

Q70 TS EAPCET 2025 · 2 May · Shift 1 MCQ

If the expression $5^{2n}-48n+\mathrm{k}$ is divisible by 24 for all $n\in\mathbb{N}$, then the least positive integral value of k is

(A) 47
(B) 48
(C) 24
(D) 23

Answer: (D) 23 · The council's preliminary key

Q71 TS EAPCET 2025 · 2 May · Shift 2 MCQ

The constant term in the expansion of $\left(1+\frac{1}{x}\right)^{20}\left(30x(1+x)^{29}+(1+x)^{30}\right)$ is

(A) ${}^{50}C_{20} + 30.{}^{50}C_{29}$
(B) ${}^{50}C_{19} + 30.{}^{49}C_{19}$
(C) ${}^{50}C_{20} + 30.{}^{49}C_{20}$
(D) ${}^{50}C_{20} + 30.{}^{49}C_{19}$

Answer: (D) ${}^{50}C_{20} + 30.{}^{49}C_{19}$ · The council's preliminary key

Q72 TS EAPCET 2025 · 2 May · Shift 2 MCQ

When $|x| > 3$, the coefficient of $\frac{1}{x^n}$ in the expansion of $x^{3/2}(3+x)^{1/2}$ is

(A) $(-1)^n \frac{1.3.5...(2n-1)}{2^n\, n!} 3^n$
(B) $(-1)^{n+1} \frac{1.3.5...(2n+1)}{2^{n+2}(n+2)!} 3^{n+2}$
(C) $(-1)^{n+1} \frac{1.3.5...(2n-1)}{2^n\, n!} 3^{n+1}$
(D) $(-1)^{n+1} \frac{1.3.5...(2n+1)}{2^{n+3}(n+2)!} 3^{n+1}$

Answer: (B) $(-1)^{n+1} \frac{1.3.5...(2n+1)}{2^{n+2}(n+2)!} 3^{n+2}$ · The council's preliminary key

Q73 AP EAPCET 2024 · 23 May · Shift 1 MCQ

The independent term in the expansion of $(1+x+2x^2)\left(\frac{3x^2}{2} - \frac{1}{3x}\right)^9$ is

(A) $\frac{18}{7}$
(B) $\frac{7}{18}$
(C) $-\frac{7}{18}$
(D) $-\frac{18}{7}$

Answer: (B) $\frac{7}{18}$ · The council's preliminary key

Q74 AP EAPCET 2024 · 23 May · Shift 1 MCQ

For $|x| < \frac{1}{\sqrt{2}}$, the coefficient of x in the expansion of $\frac{(1-4x)^2(1-2x^2)^{1/2}}{(4-x)^{3/2}}$ is

(A) $\frac{61}{64}$
(B) $-\frac{61}{64}$
(C) $\frac{69}{64}$
(D) $-\frac{69}{64}$

Answer: (B) $-\frac{61}{64}$ · The council's preliminary key

Q75 AP EAPCET 2024 · 22 May · Shift 1 MCQ

If the 2nd, 3rd and 4th terms in the expansion of $(x+a)^n$ are 96, 216, 216 respectively and n is a positive integer then $a + x =$

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

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

Q76 AP EAPCET 2024 · 22 May · Shift 1 MCQ

If $|x|<1$, then the number of terms in the expansion of $\left[\frac{1}{2}(1.2+2.3x+3.4x^2+\cdots\infty)\right]^{-25}$ is

(A) Infinite
(B) 101
(C) 76
(D) 51

Answer: (C) 76 · The council's preliminary key

Q77 AP EAPCET 2024 · 22 May · Shift 1 MCQ

$|x|<1$, The coefficient of x^2 in the power series expansion of $\frac{x^4}{(x+1)(x-2)}$ is

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

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

Q78 AP EAPCET 2024 · 22 May · Shift 2 MCQ

If P is the greatest divisor of $49^n+16n-1$ for all $n\in N$, then the number of factors of P is

(A) 12
(B) 15
(C) 7
(D) 13

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

Q79 AP EAPCET 2024 · 22 May · Shift 2 MCQ

If the coefficients of rth, $(r+1)^{th}$ and $(r+2)^{th}$ terms in the expansion of $(1+x)^n$ are in the ratio of 4:15:42, then $n-r=$

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(A) 18
(B) 15
(C) 14
(D) 17

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

Q80 AP EAPCET 2024 · 22 May · Shift 2 MCQ

If the coefficients of $(2r+6)^{th}$ and $(r-1)^{th}$ terms in the expansion of $(1+x)^{21}$ are equal, then the value of $r=$

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

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

Q81 AP EAPCET 2024 · 21 May · Shift 1 MCQ

If the eleventh term in the binomial expansion of $(x+a)^{15}$ is the geometric mean of the eighth and twelfth terms, then the greatest term in the expansion is

(A) 7th term
(B) 8th term
(C) 9th term
(D) 10th term

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

Q82 AP EAPCET 2024 · 21 May · Shift 1 MCQ

The sum of the rational terms in the binomial expansion of $\left(\sqrt{2}+3^{1/5}\right)^{10}$ is

(A) 41
(B) 39
(C) 32
(D) 30

Answer: (A) 41 · The council's preliminary key

Q83 AP EAPCET 2024 · 21 May · Shift 2 MCQ

If the ratio of the terms equidistant from the middle term in the expansion of $(1+x)^{12}$ is $\frac{1}{256}$ $(x \in N)$ then sum of all the terms of the expansion $(1+x)^{12}$ is

(A) 4^{12} or 6^{12}
(B) 3^{12} or 5^{12}
(C) 6^{12} or 7^{12}
(D) 12^{12}

Answer: (B) 3^{12} or 5^{12} · The council's preliminary key

Q84 AP EAPCET 2024 · 21 May · Shift 2 MCQ

In the expansion of $\frac{2x+1}{(1+x)(1-2x)}$, the sum of the coefficients of the first 5 odd powers of x is

(A) $\frac{5}{3}+\frac{8}{9}(4^5-1)$
(B) $\frac{5}{3}+\frac{8}{3}(4^5-1)$
(C) $\frac{-5}{3}+\frac{8}{9}(4^5-1)$
(D) $\frac{5}{3}+\frac{8}{12}(4^5+1)$

Answer: (A) $\frac{5}{3}+\frac{8}{9}(4^5-1)$ · The council's preliminary key

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Q85 AP EAPCET 2024 · 20 May · Shift 1 MCQ

If $a_n=\sum_{r=0}^{n}\frac{1}{{}^nC_r}$ then $\sum_{r=0}^{n}\frac{r}{{}^nC_r}=$

(A) $(n-1)a_o$
(B) $n.a_n$
(C) $\frac{n}{2}.a_n$
(D) a_{n+1}

Answer: (C) $\frac{n}{2}.a_n$ · The council's preliminary key

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Q86 AP EAPCET 2024 · 20 May · Shift 1 MCQ

The coefficient of x^5 in the expansion of $\left(2x^3-\frac{1}{3x^2}\right)^5$ is

(A) 8
(B) 9
(C) $\frac{80}{9}$
(D) $\frac{29}{3}$

Answer: (C) $\frac{80}{9}$ · The council's preliminary key

Q87 AP EAPCET 2024 · 20 May · Shift 1 MCQ

$1+\frac{1}{3}+\frac{1.3}{3.6}+\frac{1.3.5}{3.6.9}+\cdots$ to $\infty=$

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(A) $\sqrt{5}$
(B) $\sqrt{6}$
(C) $\sqrt{15}$
(D) $\sqrt{3}$

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

Q88 AP EAPCET 2024 · 20 May · Shift 2 MCQ

If the coefficients of x^5 and x^6 are equal in the expansion of $\left(a+\frac{x}{5}\right)^{65}$, then the coefficient of x^2 in the expansion of $\left(a+\frac{x}{5}\right)^4$ is

(A) 1
(B) $\frac{32}{25}$
(C) 2
(D) $\frac{24}{25}$

Answer: (D) $\frac{24}{25}$ · The council's preliminary key

Q89 AP EAPCET 2024 · 20 May · Shift 2 MCQ

If $|x|<\frac{2}{3}$, then the 4th term in the expansion of $(3x-2)^{2/3}$ is

(A) $\frac{\sqrt[3]{4}}{6}x^3$
(B) $-\frac{\sqrt[3]{4}}{6}x^3$
(C) $\frac{\sqrt[3]{4}}{8}x^3$
(D) $-\frac{\sqrt[3]{4}}{8}x^3$

Answer: (B) $-\frac{\sqrt[3]{4}}{6}x^3$ · The council's preliminary key

Q90 AP EAPCET 2024 · 19 May · Shift 2 MCQ

Numerically greatest term in the expansion of $(5+3x)^6$, when $x=1$, is

(A) $3^5\times5^3$
(B) $3^3\times5^5$
(C) $3^2\times5^5$
(D) $3^4\times5^4$

Answer: (B) $3^3\times5^5$ · The council's preliminary key

Q91 AP EAPCET 2024 · 19 May · Shift 2 MCQ

$1-\frac{2}{3}+\frac{2.4}{3.6}-\frac{2.4.6}{3.6.9}+\cdots\infty=$

(A) $\frac{3}{5}$
(B) $\left(\frac{2}{5}\right)^{2/3}$
(C) $\frac{2}{5}$
(D) $\left(\frac{3}{5}\right)^{2/3}$

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

Q92 AP EAPCET 2024 · 18 May · Shift 1 MCQ

The square root of independent term in the expansion of $\left(\frac{2x^2}{5}+\sqrt{\frac{5}{x}}\right)^{10}$ is

(A) $15\sqrt{10}$
(B) $10\sqrt{15}$
(C) $30\sqrt{5}$
(D) $20\sqrt{5}$

Answer: (C) $30\sqrt{5}$ · The council's preliminary key

Q93 AP EAPCET 2024 · 18 May · Shift 1 MCQ

The co-efficient of x^5 in $(3+x+x^2)^6$ is

(A) 18
(B) 540
(C) 1620
(D) 2178

Answer: (D) 2178 · The council's preliminary key

Q94 TS EAPCET 2024 · 11 May · Shift 1 MCQ

The coefficient of xy^2z^3 in the expansion of $(x-2y+3z)^6$ is

(A) 6480
(B) 3240
(C) 1620
(D) 810

Answer: (A) 6480 · The council's preliminary key

Q95 TS EAPCET 2024 · 11 May · Shift 1 MCQ

The set of all real values of x for which the expansion of $\left(125x^2-\frac{27}{x}\right)^{-2/3}$ is valid, is

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

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

Q96 TS EAPCET 2024 · 10 May · Shift 1 MCQ

If p and q are the real numbers such that the 7th term in the expansion of $\left(\frac{5}{p^3} - \frac{3q}{7}\right)^8$ is 700 then $49p^2 =$

(A) $4q^2$
(B) $9q^2$
(C) $16q^2$
(D) $25q^2$

Answer: (B) $9q^2$ · The council's preliminary key

Q97 TS EAPCET 2024 · 10 May · Shift 1 MCQ

If T_4 represents the 4th term in the expansion of $\left(5x + \frac{7}{x}\right)^{-3/2}$ and $x \notin \left[-\sqrt{\frac{7}{5}}, \sqrt{\frac{7}{5}}\right]$, then $\left(x^7\sqrt{5x}\right) T_4 =$

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

Answer: (C) $-\frac{7^4}{2^4 5^3}$ · The council's preliminary key

Q98 TS EAPCET 2024 · 10 May · Shift 2 MCQ

If $3^{2n+2} - 8n - 9$ is divisible by $2^P \ \forall n \in N$, then the maximum value of P is

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

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

Q99 TS EAPCET 2024 · 10 May · Shift 2 MCQ

If the coefficient of x^r in the expansion of $(1 + x + x^2 + x^3)^{100}$ is a_r and $S = \sum_{r=0}^{300} a_r$, then $\sum_{r=0}^{300} r.a_r =$

(A) $(50)\,S$
(B) $(25)\,S$
(C) $(150)\,S$
(D) $(100)\,S$

Answer: (C) $(150)\,S$ · The council's preliminary key

Q100 TS EAPCET 2024 · 10 May · Shift 2 MCQ

Assertion (A): $1+\frac{2.1}{3.2}+\frac{2.5}{3.6}\cdot\frac{1}{4}+\frac{2.5.8}{3.6.9}\cdot\frac{1}{8}+\ldots\infty=\sqrt[3]{4}$

Reason (R): $|x|<1,\ (1-x)^{-n}=1+nx+\frac{n(n+1)}{1.2}x^2+\frac{n(n+1)(n+2)}{1.2.3}x^3+\ldots$

The correct answer is

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

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

Q101 TS EAPCET 2024 · 9 May · Shift 1 MCQ

For $n\in N$, the largest positive integer that divides $81^n+20n-1$ is k. If S is the sum of all positive divisors of k then S − k =

(A) 117
(B) 130
(C) 115
(D) 127

Answer: (A) 117 · The council's preliminary key

Q102 TS EAPCET 2024 · 9 May · Shift 1 MCQ

If ${}^nC_r=C_r$ and $2\frac{C_1}{C_0}+4\frac{C_2}{C_1}+6\frac{C_3}{C_2}+\ldots+2n\frac{C_n}{C_{n-1}}=650$, then ${}^nC_2=$

(A) 25
(B) 300
(C) 225
(D) 625

Answer: (B) 300 · The council's preliminary key

Q103 TS EAPCET 2024 · 9 May · Shift 1 MCQ

When $|x|<2$ coefficient of x^2 in the power series expansion of $\frac{x}{(x-2)(x-3)}$ is

(A) $\frac{1}{6}$
(B) $\frac{5}{36}$
(C) $\frac{25}{216}$
(D) $\frac{5}{18}$

Answer: (B) $\frac{5}{36}$ · The council's preliminary key

Q104 TS EAPCET 2024 · 9 May · Shift 2 MCQ

If the coefficients of 3 consecutive terms in the expansion of $(1+x)^{23}$ are in arithmetic progression, then those terms are

(A) T_{10}, T_{11}, T_{12}
(B) T_8, T_9, T_{10}
(C) T_{13}, T_{14}, T_{15}
(D) T_{14}, T_{15}, T_{16}

Answer: (D) T_{14}, T_{15}, T_{16} · The council's preliminary key

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Q105 TS EAPCET 2024 · 9 May · Shift 2 MCQ

The numerically greatest term in the expansion of $(3x-16y)^{15}$ when $x=\frac{2}{3}$ and $y=\frac{3}{2}$ is

(A) 13th term
(B) 14th term
(C) 15th term
(D) 16th term

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

Q106 AP EAPCET 2023 · 19 May · Shift 1 MCQ

When x is so small that its square and its higher powers may be neglected, then the value of

$$\frac{\left(1+\frac{3}{4}x\right)^{-4}\sqrt{(3+x)}}{\sqrt{(3-x)^3}}$$

is approximately equal to

(A) $\frac{1}{3}-\frac{7x}{9}$
(B) $\frac{1}{3}+\frac{7x}{9}$
(C) $\frac{1}{3}+\frac{11x}{18}$
(D) $\frac{1}{3}-\frac{11x}{18}$

Answer: (A) $\frac{1}{3}-\frac{7x}{9}$ · The council's preliminary key

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Q107 AP EAPCET 2023 · 19 May · Shift 1 MCQ

The coefficient of x^2 in the expansion of $(1-3x)^{\frac{-1}{4}}$ is

(A) $\frac{45}{64}$
(B) $\frac{45}{8}$
(C) $\frac{45}{16}$
(D) $\frac{45}{32}$

Answer: (D) $\frac{45}{32}$ · The council's preliminary key

Q108 AP EAPCET 2023 · 19 May · Shift 1 MCQ

The greatest term in the expansion of $(1+x)^{15}$, when $x=\frac{1}{2}$ is

(A) $\frac{1}{32}\,{}^{15}C_5$
(B) $\frac{1}{64}\,{}^{15}C_6$
(C) $\frac{1}{32}\,{}^{15}C_6$
(D) $\frac{1}{64}\,{}^{15}C_5$

Answer: (A) $\frac{1}{32}\,{}^{15}C_5$ · The council's preliminary key

Q109 AP EAPCET 2023 · 18 May · Shift 1 MCQ

If $(3+\sqrt{2})^6-(3-\sqrt{2})^6=a+b\sqrt{2}$, then $a+b=$

(A) 5220
(B) 5230
(C) 5240
(D) 5250

Answer: (A) 5220 · The council's preliminary key

Q110 AP EAPCET 2023 · 18 May · Shift 2 MCQ

The coefficient of x^3 in the expansion of $(1-x)^{\frac{3}{2}}$, $(|x|<1)$ is

(A) $-\frac{3}{16}$
(B) $\frac{1}{16}$
(C) $\frac{1}{8}$
(D) $\frac{3}{16}$

Answer: (B) $\frac{1}{16}$ · The council's preliminary key

Q111 AP EAPCET 2023 · 18 May · Shift 2 MCQ

If the sum of the coefficients of even powers of x in the expansion of $\left(1-x+x^2\right)^{2n}$ is 3281, then n =

(A) 4
(B) 5
(C) 6
(D) 3

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

Q112 AP EAPCET 2023 · 18 May · Shift 2 MCQ

Let x be a real number and $-2 < x < 2$. When $\frac{x+1}{(x+3)(x-2)}$ is expanded in powers of x, then the coefficient of x^3 is

(A) $-\frac{55}{1296}$
(B) $-\frac{97}{216}$
(C) $-\frac{13}{216}$
(D) $-\frac{119}{1800}$

Answer: (A) $-\frac{55}{1296}$ · The council's preliminary key

Q113 AP EAPCET 2023 · 17 May · Shift 1 MCQ

If the numerically greatest term in the expansion of $(2-3x)^9$ when $x=1$ is $P_1^{\alpha}P_2^{\beta}P_3^{\gamma}P_4^{\delta}$ ($P_1 < P_2 < P_3 < P_4$ are the first four prime numbers), then $\alpha+\beta+\gamma+\delta =$

(A) 13
(B) 12
(C) 14
(D) 11

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

Q114 AP EAPCET 2023 · 17 May · Shift 2 MCQ

The coefficient of x^2 in the expansion of $(1-3x)^{\frac{1}{3}}(1+2x)^{-\frac{1}{2}}$ is

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

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

Q115 AP EAPCET 2023 · 17 May · Shift 2 MCQ

$\left(3+\sqrt{8}\right)^5+\left(3-\sqrt{8}\right)^5 =$

(A) 6926
(B) 6826
(C) 6726
(D) 6626

Answer: (C) 6726 · The council's preliminary key

Q116 AP EAPCET 2023 · 17 May · Shift 2 MCQ

If C_j stands for ${}^nC_j$, then $\frac{C_0}{2}+\frac{C_1}{2.2^2}+\frac{C_2}{3.2^3}+\ldots+\frac{C_n}{(n+1)2^{n+1}}=$

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

Answer: (B) $\frac{3^{n+1}}{2^{n+1}(n+1)}$ · The council's preliminary key

Q117 AP EAPCET 2023 · 16 May · Shift 1 MCQ

The coefficient of x^r in the expansion of $\frac{1}{\sqrt[3]{(1-2x)^2}}$ is

(A) $\frac{2.5.8\ldots(3r-1)}{r!}(-1)^r\left(\frac{2}{3}\right)^r$
(B) $\frac{2.5.8\ldots(3r-1)}{r!}(-1)^r\left(\frac{3}{2}\right)^r$
(C) $\frac{2.5.8\ldots(3r-1)}{r!}\left(\frac{2}{3}\right)^r$
(D) $\frac{2.5.8\ldots(3r-1)}{r!}\left(\frac{3}{2}\right)^r$

Answer: (C) $\frac{2.5.8\ldots(3r-1)}{r!}\left(\frac{2}{3}\right)^r$ · The council's preliminary key

Q118 AP EAPCET 2023 · 16 May · Shift 1 MCQ

If $3\times{}^5C_0+8\times{}^5C_1+13\times{}^5C_2+18\times{}^5C_3+23\times{}^5C_4+28\times{}^5C_5=k\times2^4$, then $k=$

(A) 33
(B) 37
(C) 31
(D) 30

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

Q119 AP EAPCET 2023 · 16 May · Shift 2 MCQ

The coefficient of x^3 in the expansion of $(1-2x)^{\frac{1}{2}}(1+3x)^{-\frac{1}{3}}$ is

(A) $-\frac{20}{3}$
(B) $\frac{20}{3}$
(C) $\frac{17}{3}$
(D) $-\frac{17}{3}$

Answer: (A) $-\frac{20}{3}$ · The council's preliminary key

Q120 AP EAPCET 2023 · 15 May · Shift 1 MCQ

If C_j stands for ${}^nC_j$, then $\frac{C_1}{C_0}+\frac{2\times C_2}{C_1}+\frac{3\times C_3}{C_2}+\ldots+\frac{n\times C_n}{C_{n-1}}=$

(A) $\sum_{k=1}^{n} k^2$
(B) $\sum_{k=1}^{n} \frac{k}{2}$
(C) $\sum_{k=1}^{n} 2k$
(D) $\sum_{k=1}^{n} k$

Answer: (D) $\sum_{k=1}^{n} k$ · The council's preliminary key

Q121 AP EAPCET 2023 · 15 May · Shift 1 MCQ

If $(2-5x)^{\frac{-1}{5}}=a_0+a_1x+a_2x^2+\ldots$, then $\frac{a_1}{a_2}=$

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

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

Q122 AP EAPCET 2023 · 15 May · Shift 2 MCQ

If $C_j={}^nC_j$, then $C_0C_r+C_1C_{r+1}+C_2C_{r+2}+\ldots+C_{n-r}C_n=$

(A) $\frac{(2n)!}{(n-2r)!(n+2r)!}$
(B) $\frac{(2n)!}{(n-r)!(n+r)!}$
(C) ${}^{2n}C_r$
(D) ${}^{2n}C_{r+1}$

Answer: (B) $\frac{(2n)!}{(n-r)!(n+r)!}$ · The council's preliminary key

Q123 AP EAPCET 2023 · 15 May · Shift 2 MCQ

The coefficient of the highest power of x in the expansion of $\left(x+\sqrt{x^2-1}\right)^8+\left(x-\sqrt{x^2-1}\right)^8$ is

(A) 64
(B) 128
(C) 256
(D) 512

Answer: (C) 256 · The council's preliminary key

Q124 TS EAMCET 2023 · 14 May · Shift 1 MCQ

If $(-c, c)$ is the set of all values of x for which the expansion of $(7-5x)^{-2/3}$ is valid, then $5c+7=$

(A) 0
(B) 12
(C) 41
(D) 14

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

Q125 TS EAMCET 2023 · 14 May · Shift 1 MCQ

If n is a positive integer and $f(n)$ is the coefficient of x^n in the expansion of $(1+x)(1-x)^n$, then $f(2023)=$

(A) -2021
(B) 2022
(C) 2023
(D) -2023

Answer: (B) 2022 · The council's preliminary key

Q126 TS EAMCET 2023 · 14 May · Shift 1 MCQ

If $y=\frac{3}{4}+\frac{3.5}{4.8}+\frac{3.5.7}{4.8.12}+\ldots$ to ∞, then

(A) $y^2-2y+5=0$
(B) $y^2+2y-7=0$
(C) $y^2-3y+4=0$
(D) $y^2+4y-6=0$

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

Q127 TS EAMCET 2023 · 14 May · Shift 2 MCQ

The term independent of x in the expansion of $(1-3x+2x^3)\left(\frac{3x^2}{2}-\frac{1}{3x}\right)^9$ is

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(A) $\frac{7}{18}$
(B) $\frac{5}{18}$
(C) $\frac{19}{54}$
(D) $\frac{17}{54}$

Answer: (D) $\frac{17}{54}$ · The council's preliminary key

Q128 TS EAMCET 2023 · 14 May · Shift 2 MCQ

If $\sum_{r=0}^{20} {}^{20+r}C_r = \frac{p}{q}\,{}^{40}C_{20}$ and GCD of $(p, q) = 1$, then $p^2 - q^2 =$

(A) 1302
(B) 1220
(C) 1240
(D) 1364

Answer: (C) 1240 · The council's preliminary key

Q129 TS EAMCET 2023 · 14 May · Shift 2 MCQ

If $x = \frac{2.5}{2!3} + \frac{2.5.7}{3!3^2} + \frac{2.5.7.9}{4!3^3} + \ldots$, then $x^2 + 8x + 8 =$

(A) 108
(B) 54
(C) 100
(D) 144

Answer: (C) 100 · The council's preliminary key

Q130 TS EAMCET 2023 · 13 May · Shift 1 MCQ

In the expansion of $(x - 2y + 3z)^5$, if the total number of terms is p and the coefficient of x^2yz^2 is q, then $\frac{q}{p} =$

(A) 60
(B) $-\frac{180}{7}$
(C) 72
(D) $-\frac{1080}{7}$

Answer: (B) $-\frac{180}{7}$ · The council's preliminary key

Q131 TS EAMCET 2023 · 13 May · Shift 1 MCQ

Let $c_0, c_1, c_2, \ldots, c_n$ be the binomial coefficients in the expansion of $(1 + x)^n$.

If $S_{n+1} = 5.c_0 + 8.c_1 + 11.c_2 + \ldots (n + 1)$ terms, then $S_{11} =$

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(A) 18944
(B) 17920
(C) 20480
(D) 40960

Answer: (C) 20480 · The council's preliminary key

Q132 TS EAMCET 2023 · 13 May · Shift 1 MCQ

If $|x|$ is so small that x^3 and higher powers of x can be neglected, then an approximate value of $\frac{1}{\sqrt{4-x}(2+x)^3}$ is

(A) $\frac{1}{16}\left(1+\frac{13x}{8}+\frac{219}{128}x^2\right)$
(B) $\frac{1}{8}\left(1+\frac{11x}{8}-\frac{165}{128}x^2\right)$
(C) $\frac{1}{32}\left(1-\frac{11x}{8}+\frac{219}{128}x^2\right)$
(D) $\frac{1}{16}\left(1-\frac{11x}{8}+\frac{171}{128}x^2\right)$

Answer: (D) $\frac{1}{16}\left(1-\frac{11x}{8}+\frac{171}{128}x^2\right)$ · The council's preliminary key

Q133 TS EAMCET 2023 · 13 May · Shift 2 MCQ

The numerically greatest term in the binomial expansion of $(2x-3y)^5$ when $x=\frac{3}{2}$ and $y=\frac{2}{3}$ is

(A) 360
(B) 1080
(C) 720
(D) 2160

Answer: (B) 1080 · The council's preliminary key

Q134 TS EAMCET 2023 · 13 May · Shift 2 MCQ

When 3^{2023} is divided by 16, the remainder obtained is

(A) 15
(B) 11
(C) 9
(D) 7

Answer: (B) 11 · The council's preliminary key

Q135 TS EAMCET 2023 · 13 May · Shift 2 MCQ

If $3x=1+\frac{5}{8}+\frac{5.9}{8.13}+\frac{5}{16}+\cdots$, then $x^4+4x^3+6x^2+4x=$

(A) 0
(B) 1
(C) 4
(D) 8

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

Q136 TS EAMCET 2023 · 12 May · Shift 1 MCQ

If the term independent of x in the expansion of $\left(\sqrt{x}-\frac{k}{x^2}\right)^{10}$ is 405, then $k=$

(A) ± 1
(B) 0
(C) ± 3
(D) ± 5

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

Q137 TS EAMCET 2023 · 12 May · Shift 1 MCQ

The number of rational terms in the binomial expansion of $\left(\sqrt[4]{5}+\sqrt[5]{4}\right)^{100}$ is

(A) 10
(B) 20
(C) 6
(D) 5

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

Q138 TS EAMCET 2023 · 12 May · Shift 1 MCQ

The coefficient of x^{50} in the expansion of $(1+x)^{101}\left(1-x+x^2\right)^{100}$ is

(A) 0
(B) -1
(C) 50
(D) 100

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

Q139 TS EAMCET 2023 · 12 May · Shift 2 MCQ

The number of integral terms in the expansion of $\left(\sqrt{3}+\sqrt[8]{5}\right)^{256}$ is

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(A) 32
(B) 33
(C) 34
(D) 35

Answer: (B) 33 · The council's preliminary key

Q140 TS EAMCET 2023 · 12 May · Shift 2 MCQ

The expansion of $(1+x+x^2)^{-3/2}$ in powers of x is valid if

(A) $|x|<1$
(B) $|x|<\frac{1}{2}$
(C) $\left|x+\frac{1}{2}\right|<\frac{\sqrt{5}}{2}$
(D) $-\frac{1}{2}-\frac{\sqrt{5}}{2}<x<1$

Answer: (C) $\left|x+\frac{1}{2}\right|<\frac{\sqrt{5}}{2}$ · The council's preliminary key

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Q141 TS EAMCET 2023 · 12 May · Shift 2 MCQ

If $(1+x)^n=C_0+C_1x+C_2x^2+\ldots+C_nx^n$ for $n\in N$, then $C_0+\frac{C_1}{2}+\frac{C_2}{3}+\ldots+\frac{C_n}{n+1}=$

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

Answer: (C) $\frac{2^{n+1}-1}{n+1}$ · Checked by our team

Q142 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

$\frac{1}{8}-\frac{7}{8.12}+\frac{7.10}{8.12.16}-\ldots=$

(A) $\sqrt[3]{\frac{4}{7}}$
(B) $\sqrt[3]{\frac{4}{7}}-\frac{3}{4}$
(C) $\sqrt[3]{\frac{4}{7}}+\frac{3}{4}$
(D) $\sqrt[3]{\frac{7}{4}}-\frac{3}{4}$

Answer: (B) $\sqrt[3]{\frac{4}{7}}-\frac{3}{4}$ · The council's preliminary key

Q143 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

Numerically greatest term in the expansion of $(2x-3y)^{11}$ when $x=\frac{1}{3}$ and $y=\frac{1}{2}$ is

(A) ${}^{11}C_8\left(\frac{2}{3}\right)^5$

(B) ${}^{11}C_3\left(\frac{3}{2}\right)^5$

(C) ${}^{11}C_2\left(\frac{3}{2}\right)^7$

(D) ${}^{11}C_2\left(\frac{2}{3}\right)^7$

Answer: (B) ${}^{11}C_3\left(\frac{3}{2}\right)^5$ · The council's preliminary key

Q144 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

If k is the coefficient of x^5 in the expansion of $\left(2x^2-\frac{1}{3x^3}\right)^5$ then $\frac{3k}{2}=$

(A) -20

(B) -40

(C) 20

(D) 40

Answer: (B) -40 · The council's preliminary key

Q145 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

The expansion of $(a+x)^n$ contains 15 terms. When $x=1$ the ratio of the neighbouring terms to the middle term in this expansion is 16. Then the positive integral value of 'a' is

(A) 1

(B) 3

(C) 4

(D) 2

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

Q146 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

If L and M are respectively the coefficient of x^{-7} in $\left(ax+\frac{b}{x^2}\right)^{11}$ and the coefficient of x^7 in $\left(bx^2+\frac{a}{x}\right)^{11}$ then $\mathrm{L}+\mathrm{M}=$

(A) $\frac{1}{b}\left[\text{coefficient of } x^{-6} \text{ in } \left(ax+\frac{b}{x^2}\right)^{12}\right]$

(B) $\frac{1}{a}\left[\text{coefficient of } x^{6} \text{ in } \left(ax^2+\frac{b}{x}\right)^{12}\right]$

(C) $a\left[\text{coefficient of } x^{-10} \text{ in } \left(ax+\frac{b}{x^2}\right)^{11}\right]$

(D) $b\left[\text{coefficient of } x^{4} \text{ in } \left(ax^2+\frac{b}{x}\right)^{11}\right]$

Answer: (B) $\frac{1}{a}\left[\text{coefficient of } x^{6} \text{ in } \left(ax^2+\frac{b}{x}\right)^{12}\right]$ · The council's preliminary key

Q147 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

If the 4th term in the expansion of $\left(\frac{x}{2}-\frac{2y}{3}\right)^6$ is -20, then $xy=$

(A) 2

(B) 3

(C) 8

(D) 27

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

Q148 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

The term independent of x in the expansion of $\left(x-\frac{2}{\sqrt{x}}\right)^{21}$ is

(A) $21_{C_{15}}(-2)^{15}$

(B) $21_{C_{14}}2^{14}$

(C) $-21_{C_7}(2)^7$

(D) $-21_{C_7}2^{14}$

Answer: (B) $21_{C_{14}}2^{14}$ · The council's preliminary key

Q149 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

If the set of all values of x for which the expansion of $(7-5x)^{-2/3}$ valid is equal to $(-a\ a)$, then $5a+7=$

(A) 14

(B) 21

(C) 0

(D) 12

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

Q150 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

The coefficient of x^3 in the expansion of $\left(1-\frac{3}{4}x\right)^{1/2}$ is

(A) $\frac{27}{1024}$
(B) $\frac{-27}{1024}$
(C) $\frac{81}{1024}$
(D) $\frac{-81}{1024}$

Answer: (B) $\frac{-27}{1024}$ · The council's preliminary key

Q151 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

If the coefficient of x^3 in the binomial expansion of $x^3\left(2\sqrt{3}x^2+\frac{1}{kx}\right)^{12}$ is 880, then $k=$

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

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

Q152 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

The middle term in the expansion of $\left(4x^3-\frac{15}{4x}\right)^8$ is

(A) $70(15x)^4$
(B) $1820x^8$
(C) $70(15x^2)^4$
(D) $2560x^4$

Answer: (C) $70(15x^2)^4$ · The council's preliminary key

Q153 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

If $5|b|<2|a|$, then the 4th term in the expansion of $(2a+5b)^{-4}$ is

(A) ${}^4C_3\,2^5\,5^3\,a^5\,b^3$
(B) $-{}^6C_3\frac{5^3\,b^3}{2^7\,a^7}$
(C) $-{}^6C_3\frac{5^4\,b^4}{2^8\,a^8}$
(D) ${}^4C_3\,2^4\,5^4\,a^4\,b^4$

Answer: (B) $-{}^6C_3\frac{5^3\,b^3}{2^7\,a^7}$ · The council's preliminary key

Q154 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

If $f(n)$ is the coefficient of x^n in the expansion of $(1+x)(1-x)^n$, then $f(2021) =$

(A) -2019

(B) 2020

(C) 2021

(D) -2022

Answer: (B) 2020 · The council's preliminary key

Q155 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

If p and q are respectively the coefficient of x^{-3} and x^{-5} in the expansion of $\left(x^{1/3}+\frac{1}{2x^{1/3}}\right)^{21}$, $x>0$, then $\frac{5p}{4q} =$

(A) 102

(B) 408

(C) 182

(D) 468

Answer: (B) 408 · The council's preliminary key

Q156 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

For $n, p \in \mathbb{N} - \{1\}$, the coefficient of x^3 in $\frac{(1-x)^{-1/p}}{(1-x)^n} =$

(A) $\frac{(np+1)(np+p+1)(np+2p+1)}{p^3 \times 3!}$

(B) $\frac{(np+1)(np+p)(np+2p)}{3!\,p^3}$

(C) $\frac{(np+p)(np+2p)(np+3p)}{3!\,p^3}$

(D) $\frac{(np+1)(np+2)(np+3)}{3!\,p^3}$

Answer: (A) $\frac{(np+1)(np+p+1)(np+2p+1)}{p^3 \times 3!}$ · The council's preliminary key

Q157 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

In the Binomial expansion of $(1+x)^{2k}$, if its middle term is the only numerically greatest term, then x lies in the interval

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

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

Q158 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

Sum of the coefficients of x^r $(r = 0, 1, 2, 3, \ldots 15)$ in the expansion of $(3x - 1)^{15}$ is equal to the sum of the binomial coefficients of which of the following expansions?
(a) $(1 + x)^{15}$ (b) $(1 + x)^{16} + (1 - x)^{16}$ (c) $(1 + x)^{16} - (1 - x)^{16}$

(A) (a), (b) and (c)
(B) (a) and (c) only
(C) (b) and (c) only
(D) (a) and (b) only

Answer: (A) (a), (b) and (c) · The council's preliminary key

Q159 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

The 13th term in the expansion of $(1 - 4x)^{-4}$ is

(A) ${}^{15}C_4\, 4^{12} x^{12}$
(B) $728x^{12}$
(C) ${}^{15}C_3\, 4^{12} x^{12}$
(D) $1092x^{12}$

Answer: (C) ${}^{15}C_3\, 4^{12} x^{12}$ · The council's preliminary key

Q160 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

The value of the numerically greatest term in the expansion of $(2x + 3y)^{11}$ when $x = \frac{1}{2}$ and $y = \frac{1}{3}$ is

(A) 462
(B) ${}^{11}C_5 \left(\frac{2}{3}\right)^6$
(C) ${}^{11}C_6 \left(\frac{3}{2}\right)^5$
(D) 576

Answer: (A) 462 · The council's preliminary key

Q161 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

The coefficient of x^4 in the expansion of $(1 - x - x^2 + x^3)^6$ is

(A) 120
(B) 15
(C) -75
(D) -60

Answer: (D) -60 · The council's preliminary key

Q162 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

The sum of the coefficients in the expansion of $\left(1+\frac{x}{2}\right)^{12}$ is

(A) 0
(B) 2^{11}
(C) $\left(\frac{3}{2}\right)^{12}$
(D) 2^{12}

Answer: (C) $\left(\frac{3}{2}\right)^{12}$ · The council's preliminary key

Q163 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

If $\left(2+\sqrt{3}\right)^{49}+\left(\sqrt{3}-2\right)^{49}=a+b\sqrt{3}$, then

(A) $a \neq 0,\ b \neq 0$
(B) $b \neq 0,\ a = 0$
(C) $b = 0,\ a \neq 0$
(D) $a = b$

Answer: (B) $b \neq 0,\ a = 0$ · The council's preliminary key

Q164 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

In the expansion of $\left(1+\frac{3x}{2}\right)^{-5}$, the coefficient of x^{10} is equal to the coefficient of x^{10} in $(1+ax)^n,\ n \in N$, then $na =$

(A) 15
(B) 18
(C) 24
(D) 21

Answer: (D) 21 · The council's preliminary key

Q165 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

For $x > 0$, if p^{th} term is the first negative term in the expansion of $\left(1+\frac{3x}{5}\right)^{22/3}$ and in the expansion of $\left(1-\frac{3x}{5}\right)^{22/3}$ from r^{th} term onwards all the terms are positive, then the number of terms in the

expansion of $\left(px+\frac{r}{x}\right)^{pr}$ is

(A) 101
(B) 119
(C) 200
(D) 99

Answer: (A) 101 · The council's preliminary key

Q166 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

If $n \geq 100$ and the coefficient of x^{100} in $1+(1+x)+(1+x)^2+\cdots+(1+x)^n$ is ${}^{201}C_{101}$, then $n=$

(A) 100
(B) 200
(C) 101
(D) 190

Answer: (B) 200 · The council's preliminary key

Q167 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

Let n be a positive integer. If the coefficients of 2nd, 3rd and 4th terms in the expansion of $(1+x)^n$ are in A.P., then the value of $n=$

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

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

Q168 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

In the binomial expansion of $(a-b)^n$, $n \geq 5$, the sum of the 5th and 6th terms is zero. Then the value of $\frac{a}{b}$ is _____

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

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

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Q169 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

Let $R = (5\sqrt{5} + 11)^{2n+1}$ and $f = R - [R]$, where $[x]$ denotes the greatest integer less than or equal to x, then $Rf =$

(A) 2^{n+1}
(B) 2^{2n+1}
(C) 4^{n+1}
(D) 4^{2n+1}

Answer: (D) 4^{2n+1} · The council's preliminary key

Q170 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

If the term independent of x in the expansion of $\left(\sqrt{x} - \frac{k}{x^2}\right)^{10}$ is 405, then $k =$

(A) 3 only
(B) -3 only
(C) ± 3
(D) 0

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

Q171 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

The index of the power of x occurring in the 5th term from the end in the expansion of $\left(\frac{x^3}{2} - \frac{2}{x^2}\right)^{12}$ is

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

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

Q172 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

If $[x]$ represents the greatest integer not greater than x, then $\left[\left(1 + \frac{1}{100000}\right)^{100000}\right] =$

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

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

Q173 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

Assuming x to be so small that x^2 and higher powers of x can be neglected, the coefficient of x in $\frac{(1-x)^{1/3}+(1-5x)^2}{(16-x)^{1/4}}$ is equal to

(A) $\frac{989}{96}$
(B) $\frac{989}{192}$
(C) $-\frac{989}{96}$
(D) $-\frac{989}{192}$

Answer: (D) $-\frac{989}{192}$ · The council's preliminary key

Q174 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

If the sum of all the coefficients of $(\alpha x^2-2x+1)^{2019}$ is equal to the sum of all the coefficients of $(x-\alpha y)^{2019}$ then $\alpha=$

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

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

Q175 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

If the 6th term in $\left(\frac{2p}{3}+\frac{3q}{2}\right)^9$ is "ap^bq^c", then a, b and c respectively are

(A) 189, 5, 4
(B) 189, 4, 5
(C) 212, 4, 5
(D) 212, 5, 4

Answer: (B) 189, 4, 5 · The council's preliminary key

Q176 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

What is the constant term in the binomial expansion of $(1+3x)^n\left(1+\frac{1}{3x}\right)^n$?

(A) $\binom{2n}{n}$
(B) $\binom{2n}{n-1}$
(C) $\binom{2n}{n+1}$
(D) No such term exists

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

Q177 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

$(102)^4 = ?$

(A) 108242316
(B) 108423216
(C) 102843216
(D) 108243216

Answer: (D) 108243216 · The council's preliminary key

Q178 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

If the coefficients of x^9 and x^{10} in the binomial expansion of $\left(3+\frac{x}{2}\right)^n$ are equal, then $n =$

(A) 69
(B) 96
(C) 66
(D) 99

Answer: (A) 69 · The council's preliminary key

Q179 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

By neglecting x^4 and higher powers of x, find approximate value of $\sqrt[3]{x^2+64} - \sqrt[3]{x^2+27}$

(A) $1-\frac{7}{234}x^2$
(B) $1-\frac{7}{432}x^2$
(C) $1-\frac{7}{32}x^2$
(D) $1-\frac{7}{42}x^2$

Answer: (B) $1-\frac{7}{432}x^2$ · The council's preliminary key

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Q180 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

The coefficients of x^{50} in $(1+x)^{101}(1-x+x^2)^{100}$ is ___

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

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

Q181 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

What is the coefficient of $\frac{y^3}{x^8}$ in $(x+y)^{-5}$, when $\left|\frac{y}{x}\right| < 1$?

(A) -35
(B) -30
(C) -25
(D) 10

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

Q182 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

If 'n' is a positive integer, then $\sum_{r=1}^{n} r^2 \cdot C_r = (\quad_____\quad)2^{n-2}$

(A) $n(n-1)$
(B) n
(C) $n(n+1)$
(D) $n+1$

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

Q183 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

Choose the correct option regarding the following statements
(i) $C_0 + C_2 + C_4 + \cdots + C_n = 2^{n-1}$ if n is even
(ii) $C_1 + C_3 + C_5 + \cdots + C_{n-1} = 2^{n-1}$ if n is even

(A) (i) is true, (ii) is false
(B) (i) is false, (ii) is true
(C) Both (i) and (ii) are false
(D) Both (i) and (ii) are true

Answer: (D) Both (i) and (ii) are true · The council's preliminary key

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Q184 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

$a^n + b^n$ is divisible by _____, if n is any odd positive integer

(A) $a-b$
(B) a^2-b^2
(C) a^2+b^2
(D) $a+b$

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

Q185 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

In the expansion of $\left(\sqrt[5]{3}+\sqrt[3]{2}\right)^{15}$

(A) Number of rational terms is 3
(B) Sum of all rational terms is 58
(C) Sum of all rational terms is greater than the sum of all irrational terms
(D) Sum of all irrational terms is greater than the sum of all rational terms

Answer: (D) Sum of all irrational terms is greater than the sum of all rational terms · The council's preliminary key

Q186 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

Find the coefficient of x^5 in $(1+x+x^2)^8$.

(A) 405
(B) 508
(C) 404
(D) 504

Answer: (D) 504 · The council's preliminary key

Q187 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

In the expansion of $\left(a+1+\frac{1}{a}\right)^n$, where $n \in N$ there are 2029 terms. Then $n=$

(A) 1015
(B) 1013
(C) 1014
(D) 1012

Answer: (C) 1014 · The council's preliminary key

Q188 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

The constant term in the expansion of $\left(\frac{x}{2}+\frac{1}{x}+\sqrt{2}\right)^5$ is $\frac{a\sqrt{2}}{2}$, then $a=$

(A) 7
(B) 69
(C) 63
(D) 65

Answer: (C) 63 · The council's preliminary key

Q189 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

Assuming $|x|$ to be so small, that x^2 and higher powers of x can be neglected, then $\frac{\sqrt{1+x}+(1-x)^{3/2}}{(1+x)+\sqrt{1+x}} =$

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

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

Q190 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

If $[x]$ denotes the greatest integer function on x, then the number of positive integral divisors of $\left[(2+\sqrt{3})^5\right]$ is

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

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

Q191 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

If $(1-x+x^2)^{10} = a_0 + a_1x + a_2x^2 + \cdots + a_{20}x^{20}$ then $2a_2 + 3a_3 + 4a_4 + \cdots + 20a_{20} =$

(A) 0
(B) 10
(C) 20
(D) -20

Answer: (C) 20 · The council's preliminary key

Q192 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

If n is a positive integer then $\sum_{r=1}^{n} r \cdot C_r =$ _____

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(A) 2^{n-1}

(B) $n\,2^{n-1}$

(C) $n\,2^{n+1}$

(D) 2^{n+1}

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

Q193 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

If the mth term is the middle term in expansion of $\left(x^2-\frac{1}{2x}\right)^{20}$, find co-efficient of T_{m+3}.

(A) ${}^{20}C_{13}\,2^{-13}$

(B) $-{}^{20}C_{13}\,2^{13}$

(C) $-{}^{20}C_{13}\,2^{-13}$

(D) ${}^{20}C_{13}\,2^{13}$

Answer: (C) $-{}^{20}C_{13}\,2^{-13}$ · The council's preliminary key

Q194 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

If $x=\frac{1}{5}+\frac{1\times3}{5\times10}+\frac{1\times3\times5}{5\times10\times15}+\cdots\cdots$ then $3x^2+6x=$

(A) 1

(B) 2

(C) -1

(D) -2

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

Q195 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

The coefficient of x^{50} in the expansion of $(1+x)^{1000}+x(1+x)^{999}+x^2(1+x)^{998}+\cdots\cdots+x^{1000}$ is

(A) ${}^{1000}C_{50}$

(B) ${}^{999}C_{50}$

(C) ${}^{1000}C_{51}$

(D) ${}^{1001}C_{50}$

Answer: (D) ${}^{1001}C_{50}$ · The council's preliminary key

Q196 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

p, q are two prime numbers. For $n=pq$, if the expansion $\left(\sqrt[4]{x^{-5}}+2\sqrt[5]{x^4}\right)^n$ contains non-zero coefficient of x^{-n} and x^0, then the least value of such n is

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(A) 82
(B) 41
(C) 123
(D) 62

Answer: (A) 82 · Official TGCHE final key

Q197 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

The binomial expansion $(7+3x)^{-2/5}$ is valid for all x in the interval $\left(\frac{-7}{3}, \frac{7}{3}\right)$ and if the 4th term of its expansion is kx^3, then $\left(7^{12/5}k\right) =$

(A) $\frac{-2}{125}$
(B) $\frac{-108}{125}$
(C) $\frac{-72}{125}$
(D) $\frac{-36}{125}$

Answer: (B) $\frac{-108}{125}$ · Official TGCHE final key

Q198 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

If x is so small that all terms containing x^2 and higher powers of x can be neglected, then the approximate value of $\frac{\left(1+\frac{2x}{3}\right)^{-4}(4+5x)^{1/2}}{(9+x)^{3/2}}$, when $x = \frac{6}{371}$, is

(A) $\frac{1}{27}$
(B) $\frac{29}{378}$
(C) $\frac{3}{27}$
(D) $\frac{1}{14}$

Answer: (D) $\frac{1}{14}$ · Official TGCHE final key

Q199 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

The sum of the coefficients of $x^{-3/2}$ and x^3 in the expansion of $\sqrt{3+x}+\sqrt{5+x}$ when $3 < x < 5$, is

(A) $\frac{-9+\sqrt{5}}{16}$
(B) $\frac{5^{-5/2}-18}{16}$
(C) $\frac{-6+\sqrt{5}}{6}$
(D) $\frac{5-\sqrt{6}}{6}$

Answer: (B) $\frac{5^{-5/2}-18}{16}$ · Official TGCHE final key

Q200 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

Suppose l, m, n respectively represent the coefficient of x^{10}, the constant term and the coefficient of x^{-10} in the expansion of $\left(ax^2+\frac{b}{x^3}\right)^{15}$. If $\frac{l}{m}+\frac{m}{n}=\frac{26}{11}$, then $a^2 : b^2 =$

(A) $16 : 9$
(B) $9 : 4$
(C) $4 : 1$
(D) $1 : 25$

Answer: (B) $9 : 4$ · Official TGCHE final key

Q201 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

For $z \in \mathbb{C}$, if $(1+z)^n = 1 + nc_1 z + nc_2 z^2 + \ldots + nc_n z^n$ and $\sum_{r=0}^{100} 100c_r(\sin rx) = \left(2\cos\frac{x}{2}\right)^{100} \sin kx$, then $k =$

(A) 25
(B) 100
(C) 50
(D) 75

Answer: (C) 50 · Official TGCHE final key

Q202 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

If $n_{C_0}, n_{C_1}, n_{C_2}, \ldots\ldots\ldots, n_{C_n}$ respectively are the binomial coefficients in the expansion of $(1+x)^n$, then when $n = 10$, $\sum_{r=1}^{10} n_{C_r} \cdot r(r-4) =$

(A) 5120
(B) 7680
(C) 20480
(D) 28160

Answer: (B) 7680 · Official TGCHE final key

Q203 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

If sum of the coefficients of x^r $(r = 0, 1, 2, \ldots\ldots 2n)$ in the expansion of $(1 + 3x - 2x^2)^n$, is 128, then $\sum_{r=1}^{2n} r \frac{(2n)_{C_r}}{(2n)_{C_{r-1}}} =$

(A) 120
(B) 135
(C) 90
(D) 105

Answer: (D) 105 · Official TGCHE final key

Q204 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

Let $x \in \mathbb{R}$ be so small that the powers of x beyond two are insignificant and negligibly small. For such x, if $(1-x)^3(2+x)^6$ is approximated by $a + bx + cx^2$, then $a + b + c =$

(A) -80
(B) 144
(C) 80
(D) 127

Answer: (A) -80 · Official TGCHE final key

Q205 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

For $0 < x < 1$, the expansion of $\left(1+\frac{1}{x}\right)^{1/2}$ is

(A) $1+\frac{1}{2x}-\frac{1}{2!}\left(\frac{1}{2x}\right)^2+\frac{1.3}{3!}\left(\frac{1}{2x}\right)^3-\frac{1.3.5}{4!}\left(\frac{1}{2x}\right)^4+\ldots\ldots\infty$
(B) $\frac{1}{\sqrt{x}}+\frac{1}{2}\sqrt{x}-\frac{1}{2!}\frac{x\sqrt{x}}{2^2}+\frac{1.3}{3!}\frac{x^2\sqrt{x}}{2^3}-\ldots\ldots\infty$
(C) $1+\frac{1}{\sqrt{x}}+\frac{1}{2}x\sqrt{x}+\frac{1}{2!}\frac{x^2\sqrt{x}}{2^3}+\frac{1.3}{3!}\frac{x^3\sqrt{x}}{2^4}+\ldots\ldots\infty$
(D) $\frac{1}{\sqrt{x}}+\frac{1}{2x\sqrt{x}}-\frac{1}{2!}\left(\frac{1}{2x}\right)^2\frac{1}{\sqrt{x}}+\frac{1.3}{3!}\left(\frac{1}{2x}\right)^3\frac{1}{\sqrt{x}}-\ldots\ldots\infty$

Answer: (B) $\frac{1}{\sqrt{x}}+\frac{1}{2}\sqrt{x}-\frac{1}{2!}\frac{x\sqrt{x}}{2^2}+\frac{1.3}{3!}\frac{x^2\sqrt{x}}{2^3}-\ldots\ldots\infty$ · Official TGCHE final key

Q206 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

If the 9th and 10th terms are the numerically greatest terms in the expansion of $(5x-6y)^n$ when $x=\frac{2}{5}$ and $y=\frac{1}{2}$, then the absolute value of the middle term of that expansion is

(A) ${}^{14}C_8\,6^7$
(B) ${}^{14}C_7\,6^7$
(C) ${}^{15}C_7\,6^7$
(D) ${}^{15}C_8\,6^8$

Answer: (B) ${}^{14}C_7\,6^7$ · Official TGCHE final key

Q207 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

$1-\frac{3}{16}+\frac{1\cdot4}{1\cdot2}\left(\frac{3}{16}\right)^2-\frac{1\cdot4\cdot7}{1\cdot2\cdot3}\left(\frac{3}{16}\right)^3+\ldots\ldots=$

(A) $\left(\frac{15}{6}\right)^{3/8}$
(B) $\left(\frac{4}{5}\right)^{2/3}$
(C) $\left(\frac{7}{4}\right)^{1/16}$
(D) $\left(\frac{4}{15}\right)^{-2/5}$

Answer: (B) $\left(\frac{4}{5}\right)^{2/3}$ · Official TGCHE final key

Q208 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

If $y = \frac{3}{4} + \frac{3\cdot5}{4\cdot8} + \frac{3\cdot5\cdot7}{4\cdot8\cdot12} + \ldots\infty$ then

(A) $y^2 - 2y + 5 = 0$

(B) $y^2 + 2y - 7 = 0$

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

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

Answer: (B) $y^2 + 2y - 7 = 0$ · Official TGCHE final key

Q209 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

If the coefficient of x^{13} in the expansion of $\frac{(1+x)^2}{(1-2x)^3}$ is $A \times 2^{10}$, then A =

(A) 862

(B) 1304

(C) 1360

(D) 1724

Answer: (D) 1724 · Official TGCHE final key

Q210 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

The number of irrational terms in the expansion of $\left(5^{1/2} + 7^{1/8}\right)^{1024} + \left(5^{1/2} - 7^{1/8}\right)^{1024}$ is

(A) 896

(B) 129

(C) 513

(D) 384

Answer: (D) 384 · Official TGCHE final key

Q211 TS EAMCET 2019 · 6 May · Shift 1 MCQ

If p is an integral multiple of 4 lying in between the coefficients of x^4 and x in the expansion of $\left(x^2 + \frac{1}{x}\right)^8$, then the number of such values of p is

(A) 3

(B) 4

(C) 5

(D) 6

Answer: (A) 3 · Official TGCHE final key

Q212 TS EAMCET 2019 · 6 May · Shift 1 MCQ

If the ratio of the 7th term from the beginning to the 7th term from the end in the expansion of $\left(\sqrt[3]{2}+\frac{1}{\sqrt[3]{3}}\right)^{n}$ is $\frac{1}{6}$, then $n=$

(A) 6
(B) 8
(C) 9
(D) 12

Answer: (C) 9 · Official TGCHE final key

Q213 TS EAMCET 2019 · 4 May · Shift 1 MCQ

If the greatest divisor of $30.5^{2n}+4.2^{3n}$ is $p\ \forall n\in\mathrm{N}$ and that of $2^{2n+1}-6n-2$ is $q\ \forall n\in\mathrm{N}$, then $p+q=$

(A) 26
(B) 52
(C) 104
(D) 13

Answer: (B) 52 · Official TGCHE final key

Q214 TS EAMCET 2019 · 4 May · Shift 1 MCQ

If the 17th and the 18th terms in the expansion of $(2+a)^{50}$ are equal, then the coefficient of x^{35} in the expansion of $(a+x)^{-2}$ is

(A) -35
(B) 35
(C) 36
(D) -36

Answer: (D) -36 · Official TGCHE final key

Q215 TS EAMCET 2019 · 4 May · Shift 1 MCQ

If the kth term in the expansion of $\left(\frac{3}{2}x^2-\frac{1}{3x}\right)^6$ is independent of x, then the numerically greatest term in the expansion of $\left(\frac{3}{2}x^2-\frac{1}{3x}\right)^k$ when $x=\frac{2}{3}$, is

(A) $\frac{40}{81}$
(B) $\left(\frac{7}{6}\right)^5$
(C) $\frac{20}{27}$
(D) $\left(\frac{7}{6}\right)^4$

Answer: (C) $\frac{20}{27}$ · Official TGCHE final key

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Q216 TS EAMCET 2019 · 4 May · Shift 2 MCQ

Let $(1+x+x^2)^n = a_0 + a_1x + a_2x^2 + \cdots + a_{2n}x^{2n}$. Then match the items of List - I with those of List - II.

List - I

A) $a_0 + a_2 + \cdots + a_{2n}$

B) $a_1 + a_3 + \cdots + a_{2n-1}$

C) $a_1 + 2a_2 + 3a_3 + \cdots + 2na_{2n}$

List - II

I) $n\,3^{n-1}$

II) $n\,3^n$

III) $\frac{1}{2}(3^n+1)$

IV) $\frac{1}{2}(3^n-1)$

The correct match is

(A) A-IV, B-I, C-III

(B) A-IV, B-III, C-I

(C) A-III, B-I, C-II

(D) A-III, B-IV, C-II

Answer: (D) A-III, B-IV, C-II · Official TGCHE final key

Q217 TS EAMCET 2019 · 4 May · Shift 2 MCQ

For $x = \frac{5}{7}$, if t_k is the first negative term in the expansion of $(1+x)^{7/5}$, then $t_1 + t_2 + \cdots + t_k =$

(A) $\frac{13}{7}$

(B) $\frac{107}{14}$

(C) $\frac{104}{49}$

(D) $\frac{921}{28}$

Answer: (C) $\frac{104}{49}$ · Official TGCHE final key

Q218 TS EAMCET 2019 · 4 May · Shift 2 MCQ

The coefficient of x^6 in the power series expansion of $\frac{x^4 - 12x^2 + 7}{(x^2+1)^3}$ is

(A) 149
(B) -253
(C) -145
(D) 253

Answer: (C) -145 · Official TGCHE final key

Q219 TS EAMCET 2019 · 3 May · Shift 1 MCQ

Assertion (A) : If $|x| < 1$, then $\sum_{n=0}^{\infty}(-1)^n x^{n+1} = \frac{x}{x+1}$
Reason (R) : If $|x| < 1$, then $(1+x)^{-1} = 1 - x + x^2 - x^3 + \ldots$
Which one of the following is true?

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

Answer: (A) (A) and (R) are true, (R) is a correct explanation of (A) · Official TGCHE final key

Q220 TS EAMCET 2019 · 3 May · Shift 1 MCQ

The greatest integer less than or equal to $(\sqrt{3}+2)^5$ is

(A) 721
(B) 722
(C) 723
(D) 724

Answer: (C) 723 · Official TGCHE final key

Q221 TS EAMCET 2019 · 3 May · Shift 1 MCQ

The sixth term in the expansion of $\left(3 - \sqrt{\frac{17}{4} + 3\sqrt{2}}\right)^{10}$ is a

(A) positive rational number
(B) negative rational number
(C) positive irrational number
(D) negative irrational number

Answer: (D) negative irrational number · Official TGCHE final key

Q222 TS EAMCET 2019 · 3 May · Shift 2 MCQ

For $|x| < \frac{4}{3}$, the approximate value of $\frac{1}{(4-3x)^{\frac{1}{2}}}$ is

(A) $\frac{1}{4}-\frac{2x}{3}+\frac{12x^2}{39}$
(B) $1-\frac{3x}{16}-\frac{15}{256}x^2$
(C) $\frac{1}{2}+\frac{3x}{16}+\frac{27x^2}{256}$
(D) $\frac{1}{2}-\frac{3x}{16}+\frac{15}{256}x^2$

Answer: (C) $\frac{1}{2}+\frac{3x}{16}+\frac{27x^2}{256}$ · Official TGCHE final key

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Q223 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

If the coefficients of rth and $(r+1)^{\text{th}}$ terms in the expansion of $(1+x)^{24}$ are in the ratio $12:13$, then r is the root of the quadratic equation

(A) $x^2-5x+6=0$
(B) $x^2-11x+30=0$
(C) $x^2-14x+13=0$
(D) $x^2-14x+24=0$

Answer: (D) $x^2-14x+24=0$ · Official APSCHE final key

Q224 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

If $x=\frac{2}{5}+\frac{1\cdot3}{2!}\left(\frac{2}{5}\right)^2+\frac{1\cdot3\cdot5}{3!}\left(\frac{2}{5}\right)^3+\ldots$, then $x+\frac{1}{x}=$

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

Answer: (D) $\frac{5\sqrt{5}-3}{4}$ · Official APSCHE final key

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Q225 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

The coefficient of x^4 in the expansion of $\frac{1}{(1-x)(1-2x)(1-3x)}$ is

(A) 602
(B) 301
(C) $\frac{601}{2}$
(D) 302

Answer: (B) 301 · Official APSCHE final key

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Q226 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

The coefficient of x^5 in the expansion of $(x^2+2x+3)^5$ is

(A) 1052
(B) 540
(C) 480
(D) 1020

Answer: (A) 1052 · Official APSCHE final key

Q227 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

If x is so small, that x^5 and higher power of x may be neglected, then the coefficient of x^4 in the expansion of $\sqrt{x^2+4}-\sqrt{x^2+9}$ is

(A) $\frac{19}{1728}$
(B) $\frac{-19}{1728}$
(C) $\frac{43}{1728}$
(D) $\frac{-43}{1728}$

Answer: (B) $\frac{-19}{1728}$ · Official APSCHE final key

Q228 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

If the coefficients of rth, $(r+1)^{\text{th}}$ and $(r+2)^{\text{th}}$ terms in the expansion of $(1+x)^{14}$ are in an arithmetic progression, then $r=$

(A) 4 or 10
(B) 5 or 9
(C) 8 or 6
(D) 7

Answer: (B) 5 or 9 · Official APSCHE final key

Q229 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

If $x=\frac{5}{2!\,3}+\frac{5\cdot7}{3!\,3^2}+\frac{5\cdot7\cdot9}{4!\,3^3}+\ldots$, then $x^2+4x=$

(A) 17
(B) 23
(C) 27
(D) 39

Answer: (B) 23 · Official APSCHE final key

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Q230 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

Let $a_0, a_1, a_2, \ldots, a_n \in \mathbb{R}$ be in an arithmetic progression and let $C_0, C_1, C_2, \ldots, C_n$ be the binomial coefficients. Then $\sum_{k=0}^{n} a_k \cdot C_k =$

(A) $\frac{1}{2}(a_0 + a_n)$
(B) $(a_0 + a_n) \cdot 2^{n-1}$
(C) $(a_0 + a_n)$
(D) 0

Answer: (B) $(a_0 + a_n) \cdot 2^{n-1}$ · Official APSCHE final key

Q231 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

If 'a' is the middle term in the expansion of $(2x - 3y)^8$ and b, c are the middle terms in the expansion of $(3x + 4y)^7$, then the value of $\frac{b+c}{a}$, when $x = 2$ and $y = 3$, is

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

Answer: (D) 2 · Official APSCHE final key

Q232 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

The first negative coefficient in the terms occurring in the expansion of $(1 + x)^{\frac{21}{5}}$ is

(A) $\frac{-6160}{15625}$
(B) $\frac{-416}{3125}$
(C) $\frac{-616}{5^7}$
(D) $\frac{-616}{5^6}$

Answer: (C) $\frac{-616}{5^7}$ · Official APSCHE final key

Q233 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

The sum of all the coefficients in the binomial expansion of $(1 + 2x)^n$ is 6561. Let $R = (1 + 2x)^n = I + F$ where $I \in N$ and $0 < F < 1$. If $x = \frac{1}{\sqrt{2}}$, then $1 - \frac{F}{1 + (\sqrt{2} - 1)^4} =$

(A) $(3\sqrt{2}-4)$
(B) $4(3\sqrt{2}+4)$
(C) $(\sqrt{2}-1)^4$
(D) 1

Answer: (C) $(\sqrt{2}-1)^4$ · Official APSCHE final key

Q234 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

If $\frac{(1-px)^{-1}}{(1-qx)} = a_0 + a_1x + a_2x^2 + a_3x^3 + \ldots\ldots$, then $a_n =$

(A) $\frac{p^{n+1}-q^{n+1}}{q-p}$
(B) $\frac{p^{n+1}-q^{n+1}}{p-q}$
(C) $\frac{p^n-q^n}{q-p}$
(D) $\frac{p^n-q^n}{p-q}$

Answer: (B) $\frac{p^{n+1}-q^{n+1}}{p-q}$ · Official APSCHE final key

Q235 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

If $(1+x)^n = a_0 + a_1x + a_2x^2 + \cdots + a_nx^n$ and $a_0 - a_2 + a_4 - a_6 + \cdots = k\cos\frac{n\pi}{4}$, then $k =$

(A) 2^n
(B) 2^{2n}
(C) $\frac{2^n}{2}$
(D) $2^{n/2}$

Answer: (D) $2^{n/2}$ · Official APSCHE final key

Q236 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

If $(1+x+x^2)^n = c_0 + c_1x + c_2x^2 + \ldots$, then the value of $c_0c_1 - c_1c_2 + c_2c_3 - \ldots$ is

(A) $(-1)^n$
(B) 0
(C) 2^n
(D) 3^n

Answer: (B) 0 · Official APSCHE final key

Q237 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

If x is so small that x^2 and higher powers of x can be neglected, then the approximate value of $\left(1+\frac{3}{4}x\right)^{\frac{1}{2}}\left(1-\frac{2x}{3}\right)^{-2}$ is

(A) $\frac{41+24x}{41}$
(B) $\frac{41-24x}{41}$
(C) $\frac{24+41x}{24}$
(D) $\frac{24-41x}{24}$

Answer: (C) $\frac{24+41x}{24}$ · Official APSCHE final key

Q238 TS EAMCET 2018 · 7 May · Shift 1 MCQ

The coefficient of x^3 in the expansion of $\frac{1-2x}{(2x+1)(2-x)}$ is

(A) $-\frac{509}{80}$
(B) $\frac{509}{80}$
(C) $-\frac{103}{16}$
(D) $\frac{103}{16}$

Answer: (C) $-\frac{103}{16}$ · The council's preliminary key

Q239 TS EAMCET 2018 · 7 May · Shift 1 MCQ

If the coefficient of rth, $(r+1)^{\text{th}}$ and $(r+2)^{\text{th}}$ terms in the expansion of $(1+x)^n$ are respectively in the ratio $2:4:5$, then $(r,n)=$

(A) $(2,7)$
(B) $(3,8)$
(C) $(3,9)$
(D) $(4,9)$

Answer: (B) $(3,8)$ · The council's preliminary key

Q240 TS EAMCET 2018 · 7 May · Shift 1 MCQ

If n is a positive integer greater than 1 then,
$3({}^nC_0)-8({}^nC_1)+13({}^nC_2)-18({}^nC_3)+\ldots$ upto $(n+1)$ terms $=$

(A) -5
(B) $\frac{2^{n+1}-1}{n}$
(C) $\frac{2^n-1}{2}$
(D) 0

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

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Q241 TS EAMCET 2018 · 5 May · Shift 1 MCQ

For all positive integers k, if the greatest divisor of $25^k + 12k - 1$ is d then $4\sqrt{d} =$

(A) 36
(B) 8
(C) 20
(D) 24

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

Q242 TS EAMCET 2018 · 5 May · Shift 1 MCQ

If n is a positive integer and the coefficient of x^{10} in the expansion of $(1+x)^{15}$ is equal to the coefficient of x^5 in the expansion of $(1-x)^{-n}$, then $n =$

(A) 15
(B) 12
(C) 11
(D) 10

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

Q243 TS EAMCET 2018 · 5 May · Shift 1 MCQ

If $x = \frac{2\cdot5}{3\cdot6} - \frac{2\cdot5\cdot8}{3\cdot6\cdot9}\left(\frac{2}{5}\right) + \frac{2\cdot5\cdot8\cdot11}{3\cdot6\cdot9\cdot12}\left(\frac{2}{5}\right)^2 - \ldots\infty$, then $7^2(12x+55)^3 =$

(A) $3^8\,5^3$
(B) $3^8\,5^5$
(C) $3^3\,5^5$
(D) $3^3\,5^8$

Answer: (D) $3^3\,5^8$ · The council's preliminary key

Q244 TS EAMCET 2018 · 5 May · Shift 2 MCQ

If the coefficients of $(2\alpha+4)^{th}$ and $(\alpha-2)^{th}$ terms in the expansion $(1+x)^{2019}$ are equal, then $\alpha =$

(A) 673
(B) 674
(C) 675
(D) 676

Answer: (A) 673 · The council's preliminary key

Q245 TS EAMCET 2018 · 5 May · Shift 2 MCQ

If n is a positive integer then the coefficient of x^6 in the expansion of $(1-2x+3x^2-4x^3+\ldots\ldots)^{-n}$ is

(A) ${}^{(2n)}C_4$
(B) ${}^{n}C_{12}$
(C) ${}^{(2n)}C_6$
(D) ${}^{n}C_6$

Answer: (C) ${}^{(2n)}C_6$ · The council's preliminary key

Q246 TS EAMCET 2018 · 4 May · Shift 1 MCQ

If α and β are the greatest divisors of $n(n^2-1)$ and $2n(n^2+2)$ respectively for all $n \in N$ then $\alpha\beta =$

(A) 18
(B) 36
(C) 27
(D) 9

Answer: (B) 36 · The council's preliminary key

Q247 TS EAMCET 2018 · 4 May · Shift 1 MCQ

If the coefficient of x^5 in the expansion of $\left(ax^2+\frac{1}{bx}\right)^{13}$ is equal to the coefficient of x^{-5} in the expansion of $\left(ax-\frac{1}{bx^2}\right)^{13}$, then $ab =$

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

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

Q248 TS EAMCET 2018 · 4 May · Shift 1 MCQ

For $n \in N$, in the expansion of $\left(\sqrt[4]{x^{-3}}+a\sqrt[4]{x^5}\right)^n$, the sum of all binomial coefficients lies between 200 and 400 and the term independent of x is 448. Then the value of a is

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

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

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Q249 TS EAMCET 2018 · 4 May · Shift 2 MCQ

The absolute value of the numerically greatest term in the expansion of $(2x-3y)^{12}$ when $x=3,\ y=2$ is

(A) ${}^{12}C_5\,6^{12}$
(B) ${}^{12}C_6\,6^{12}$
(C) ${}^{12}C_4\,6^{12}$
(D) ${}^{12}C_9\,6^{12}$

Answer: (B) ${}^{12}C_6\,6^{12}$ · The council's preliminary key

Q250 TS EAMCET 2018 · 4 May · Shift 2 MCQ

The sum to infinite terms of the series $\frac{3}{10}+\frac{3.7}{10.15}+\frac{3.7.9}{10.15.20}+\cdots$ to ∞ is

(A) $\sqrt[4]{125}-1$
(B) $\frac{5\sqrt{5}}{3\sqrt{3}}-\frac{8}{5}$
(C) $\sqrt[3]{4}-\frac{4}{3}$
(D) $\sqrt{\frac{5}{3}}-\frac{6}{5}$

Answer: (B) $\frac{5\sqrt{5}}{3\sqrt{3}}-\frac{8}{5}$ · The council's preliminary key

Q251 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

If $C_r={}^nC_r$, then $C_0+C_4+C_8+C_{12}+\ldots=$

(A) $\frac{2^{\frac{n}{2}}\left[\sin\frac{n\pi}{4}+2^{\frac{n}{2}-1}\right]}{2}$
(B) $2^{\frac{n}{2}}\sin\frac{n\pi}{4}$
(C) $2^{n-1}\cos\frac{n\pi}{4}$
(D) $\frac{2^{\frac{n}{2}}\left[\cos\frac{n\pi}{4}+2^{\frac{n}{2}-1}\right]}{2}$

Answer: (D) $\frac{2^{\frac{n}{2}}\left[\cos\frac{n\pi}{4}+2^{\frac{n}{2}-1}\right]}{2}$ · The council's preliminary key

Q252 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

The coefficient of x^4 in the expansion of $(1+x-x^2-x^3)^{11}$ is

(A) 990
(B) 220
(C) -220
(D) -385

Answer: (C) -220 · The council's preliminary key

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Q253 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

If $|x|$ is so small that x^2 and higher powers of x may be neglected, then the approximate value of $\frac{\sqrt{4+x}+\sqrt[3]{8-x}}{\left(1-\frac{2x}{3}\right)^{\frac{3}{2}}}$ when $x=\frac{6}{25}$ is

(A) 6

(B) 5

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

(D) $\frac{5}{6}$

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

Q254 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

The coefficient of x^4 in the power series expansion of $\frac{x^2-1}{(x^2+1)(x^2+2)}$ is

(A) $\frac{15}{16}$

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

(C) $-\frac{13}{8}$

(D) $\frac{77}{324}$

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

Q255 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

The sum of the coefficients of x^{32} and x^{-31} in $\left(x^4-\frac{1}{x^3}\right)^{15}$ is

(A) 1470

(B) 1260

(C) -1260

(D) -1470

Answer: (B) 1260 · The council's preliminary key

Q256 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

The coefficient of x^{15} in the product $(1-x)(1-2x)(1-2^2x)(1-2^3x)\ldots(1-2^{15}x)$ is

(A) $2^{121}-2^{104}$

(B) $2^{105}+2^{124}$

(C) $2^{105}-2^{121}$

(D) $2^{120}-2^{104}$

Answer: (C) $2^{105}-2^{121}$ · The council's preliminary key

Q257 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

The number of rational terms in the expansion of $\left(3^{\frac{1}{4}}+7^{\frac{1}{6}}\right)^{144}$ is

(A) 33
(B) 23
(C) 12
(D) 13

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

Q258 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

The coefficient of x^{50} in the expansion of $(1+x)^{100}+2x(1+x)^{99}+3x^2(1+x)^{98}+\ldots+101x^{100}$, is

(A) ${}^{100}C_{50}$
(B) ${}^{101}C_{50}$
(C) ${}^{102}C_{50}$
(D) ${}^{103}C_{50}$

Answer: (C) ${}^{102}C_{50}$ · The council's preliminary key

Q259 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

The number of rational terms in the binomial expansion of $\left(\sqrt[4]{5}+\sqrt[5]{4}\right)^{100}$ is

(A) 50
(B) 5
(C) 6
(D) 51

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

Q260 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

The numerically greatest term in the binomial expansion of $(2a-3b)^{19}$ when $a=\frac{1}{4}$ and $b=\frac{2}{3}$ is

(A) ${}^{19}C_5\cdot 2^{11}$
(B) ${}^{19}C_3\cdot\frac{1}{2^{11}}$
(C) ${}^{19}C_4\cdot\frac{1}{2^{13}}$
(D) ${}^{19}C_3\cdot 2^{13}$

Answer: (D) ${}^{19}C_3\cdot 2^{13}$ · The council's preliminary key

Q261 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

If $a>0$ and the coefficient of x^2 in the expansion of $\left(ax^3+\frac{c}{x}\right)^6$ is 60, then $ac^2=$

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

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

Q262 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

If $x = \frac{3}{4 \cdot 8} + \frac{3 \cdot 5}{4 \cdot 8 \cdot 12} + \frac{3 \cdot 5 \cdot 7}{4 \cdot 8 \cdot 12 \cdot 16} + \ldots$, then $2x^2 + 5x =$

(A) $\frac{7}{8}$
(B) 7
(C) $\frac{7}{16}$
(D) $\frac{7}{4}$

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

Q263 TS EAMCET 2017 · 12 May · Offline MCQ

If the coefficients of $(2r+1)^{\text{th}}$ term and $(r+1)^{\text{th}}$ term in the expansion of $(1+x)^{42}$ are equal then r can be

(A) 12
(B) 14
(C) 16
(D) 20

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

Q264 TS EAMCET 2017 · 12 May · Offline MCQ

In the expansion of $(1+x)^n$, the coefficients of pth and $(p+1)^{\text{th}}$ terms are respectively p and q, then $p+q =$

(A) $n+3$
(B) $n+2$
(C) n
(D) $n+1$

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

Q265 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

The coefficient of x^5 in the expansion of $(1+x)^{21} + (1+x)^{22} + \cdots + (1+x)^{30}$ is

(A) ${}^{51}C_5$

(B) ${}^{9}C_5$

(C) ${}^{31}C_6 - {}^{21}C_6$

(D) ${}^{30}C_5 + {}^{20}C_5$

Answer: (C) ${}^{31}C_6 - {}^{21}C_6$ · The council's preliminary key

Q266 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

If $x = \frac{1 \cdot 3}{3 \cdot 6} + \frac{1 \cdot 3 \cdot 5}{3 \cdot 6 \cdot 9} + \frac{1 \cdot 3 \cdot 5 \cdot 7}{3 \cdot 6 \cdot 9 \cdot 12} + \ldots$ to infinte terms (sic), then $9x^2 + 24x =$

(A) 11

(B) 21

(C) 31

(D) 41

Answer: (A) 11 · The council's preliminary key

Q267 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

For any integer $n \geq 1$, the remainder when the expression $n^5 - 5n^3 + 4n + 139$ is divided by 120 is

(A) 9

(B) 19

(C) 29

(D) 39

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

Q268 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

The sum of the coefficients of the last 19 terms in the binomial expansion of $(1 + x)^{37}$

(A) 2^{36}

(B) 2^{37}

(C) 2^{38}

(D) $2^{36} - 1$

Answer: (A) 2^{36} · The council's preliminary key

Q269 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

If t_r is the rth term in the expansion of $(2^x + 4^{-x})^8$ and if $t_3 = 7t_2$, then $x =$

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

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

Q270 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

The remainder obtained when 5^{99} is divided by 13 is

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

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

Q271 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

$3.C_0 + 7.C_1 + 11.C_2 + ... + (3 + 4n)C_n =$

(A) $(2n + 3)2^n$
(B) $(2n + 1)2^{n-1}$
(C) $(2n + 3)2^{n-1}$
(D) $(2n + 1)2^n$

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

Q272 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The coefficient of x^{10} in the expansion of $(1 + x^2 - x^3)^8$ is

(A) 506
(B) 496
(C) 486
(D) 476

Answer: (D) 476 · The council's preliminary key

Q273 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

If $(1 + x + x^2)^n = a_0 + a_1x + a_2x^2 + \ldots + a_{2n}x^{2n}$, then $a_0 + a_2 + a_4 + \ldots + a_{2n} =$

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(A) 3^n
(B) $3^n + 1$
(C) $\frac{3^n - 1}{2}$
(D) $\frac{3^n + 1}{2}$

Answer: (D) $\frac{3^n + 1}{2}$ · The council's preliminary key

Q274 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

The coefficient of x^2 in the expansion of $(1+x)^2(8-x)^{-\frac{1}{3}}$ is

(A) $\frac{2167}{4032}$
(B) $\frac{2265}{4132}$
(C) $\frac{313}{576}$
(D) $\frac{3691}{6792}$

Answer: (C) $\frac{313}{576}$ · The council's preliminary key

Q275 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

The sum of the rational terms in the expansion of $\left(\sqrt{2} + \sqrt[5]{3}\right)^{10}$ is

(A) 41
(B) 42
(C) 32
(D) 39

Answer: (A) 41 · The council's preliminary key

Q276 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

If $(1+x)^n = p_0 + p_1 x + p_2 x^2 + \cdots + p_n x^n$, then $p_0 + p_3 + p_6 + \cdots =$

(A) $\frac{1}{3}\left[2^{n-1} + \cos\frac{n\pi}{3}\right]$
(B) $\frac{2}{3}\left[2^{n-1} + \cos\frac{n\pi}{3}\right]$
(C) $\frac{1}{3}\left[2^{n-2} + \sin\frac{n\pi}{3}\right]$
(D) $\frac{2}{3}\left[2^{n-2} + \sin\frac{n\pi}{6}\right]$

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

Q277 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

If $|x|$ is so small that all terms containing x^2 and higher powers of x can be neglected, then the approximate value of $\frac{(3-5x)^{\frac{1}{2}}}{(5-3x)^2}$, when $x = \frac{1}{\sqrt{363}}$, is

(A) $\frac{\sqrt{3}}{25}$
(B) $\frac{1+30\sqrt{3}}{75}$
(C) $\frac{1-30\sqrt{3}}{75}$
(D) $\frac{1+30\sqrt{3}}{750}$

Answer: (D) $\frac{1+30\sqrt{3}}{750}$ · The council's preliminary key

Q278 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

If the first three terms in the binomial expansion of $(1+bx)^n$ in ascending powers of x are 1, $6x$ and $16x^2$ respectively then $b+n=$

(A) $\frac{28}{3}$
(B) $\frac{15}{2}$
(C) $\frac{29}{3}$
(D) $\frac{17}{3}$

Answer: (C) $\frac{29}{3}$ · The council's preliminary key

Q279 TS EAMCET 2016 · 15 May · Offline MCQ

The remainder when $7^n - 6n - 50$ ($n \in \mathbb{N}$) is divided by 36, is

(A) 22
(B) 23
(C) 1
(D) 21

Answer: (B) 23 · Official TGCHE final key

Q280 TS EAMCET 2016 · 15 May · Offline MCQ

The sum of the series $1+\frac{2}{3}\left(\frac{1}{8}\right)+\frac{2\times5}{3\times6}\left(\frac{1}{8}\right)^2+\frac{2\times5\times8}{3\times6\times9}\left(\frac{1}{8}\right)^3+\ldots$ is

(A) $\frac{4}{\sqrt[3]{49}}$
(B) $\frac{\sqrt[3]{49}}{4}$
(C) $\frac{4}{\sqrt[3]{81}}$
(D) $\frac{\sqrt[3]{81}}{4}$

Answer: (A) $\frac{4}{\sqrt[3]{49}}$ · Official TGCHE final key

Q281 TS EAMCET 2016 · 15 May · Offline MCQ

If C_r denotes the binomial coefficient ${}^nC_r$ then $(-1)C_0^2 + 2C_1^2 + 5C_2^2 + \ldots + (3n-1)C_n^2 =$

(A) $(3n-2)\,{}^{2n}C_n$
(B) $\left(\frac{3n-2}{2}\right)^{2n} C_n$
(C) $(5+3n)\,{}^{2n}C_n$
(D) $\left(\frac{3n-5}{2}\right)^{2n} C_{n+1}$

Answer: (B) $\left(\frac{3n-2}{2}\right)^{2n} C_n$ · Official TGCHE final key

Q282 AP EAMCET 2016 · 29 Apr · Offline MCQ

The coefficient of x^4 in the expansion of $(1-x+x^2-x^3)^4$ is

(A) 31
(B) 30
(C) 25
(D) -14

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

Q283 AP EAMCET 2016 · 29 Apr · Offline MCQ

If the middle term in the expansion of $(1+x)^{2n}$ is the greatest term, then x lies in the interval

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

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

Q284 AP EAMCET 2016 · 29 Apr · Offline MCQ

To find the coefficient of x^4 in the expansion of $\frac{3x}{(x-2)(x-1)}$, the interval in which the expansion is valid, is

(A) $-2 < x < \infty$
(B) $-\frac{1}{2} < x < \frac{1}{2}$
(C) $-1 < x < 1$
(D) $-\infty < x < \infty$

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

Q285 AP EAMCET 2014 · 22 May · Offline MCQ

If $(a+bx)^{-3} = \frac{1}{27} + \frac{1}{3}x + \ldots\ldots\ldots$ then the ordered pair $(a,b) =$

(A) $(3,-27)$
(B) $(1,\frac{1}{3})$
(C) $(3,9)$
(D) $(3,-9)$

Answer: (D) $(3,-9)$ · The council's preliminary key

Q286 AP EAMCET 2014 · 22 May · Offline MCQ

The term independent of x in the expansion of $\left(\sqrt{x} - \frac{2}{\sqrt{x}}\right)^{18}$ is

(A) $-\binom{18}{9}2^9$
(B) $\binom{18}{9}2^{12}$
(C) $\binom{18}{6}2^6$
(D) $\binom{18}{6}2^8$

Answer: (A) $-\binom{18}{9}2^9$ · The council's preliminary key

Q287 AP EAMCET 2013 · 10 May · Offline MCQ

The term independent of x $(x>0,\, x\neq 1)$ in the expansion of $\left[\frac{x+1}{x^{2/3}-x^{1/3}+1} - \frac{x-1}{x-\sqrt{x}}\right]^{10}$ is

(A) 105
(B) 210
(C) 315
(D) 420

Answer: (B) 210 · The council's preliminary key

Q288 AP EAMCET 2013 · 10 May · Offline MCQ

If x is small so that x^2 and higher powers can be neglected, then the approximate value for $\frac{(1-2x)^{-1}(1-3x)^{-2}}{(1-4x)^{-3}}$ is

(A) $1-2x$
(B) $1-3x$
(C) $1-4x$
(D) $1-5x$

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

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Q289 AP EAMCET 2012 · 12 May · Offline MCQ

$\sum_{k=1}^{\infty}\sum_{r=0}^{k}\frac{1}{3^k}({}^kC_r) =$

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

Answer: (D) 2 · Official APSCHE final key

Q290 AP EAMCET 2012 · 12 May · Offline MCQ

If $ab \neq 0$ and the sum of the coefficients of x^7 and x^4 in the expansion of $\left(\frac{x^2}{a}-\frac{b}{x}\right)^{11}$ is zero, then

(A) $a = b$
(B) $a + b = 0$
(C) $ab = -1$
(D) $ab = 1$

Answer: (D) $ab = 1$ · Official APSCHE final key

Q291 AP EAMCET 2011 · 8 May · Offline MCQ

If the coefficients of rth and $(r+1)$th terms in the expansion of $(3+7x)^{29}$ are equal, then $r =$

(A) 14
(B) 15
(C) 18
(D) 21

Answer: (D) 21 · The council's preliminary key

Q292 AP EAMCET 2010 · 30 May · Offline MCQ

The numbers $a_n = 6^n - 5n$ for $n = 1, 2, 3, \ldots$ when divided by 25 leave the remainder :

(A) 9
(B) 7
(C) 3
(D) 1

Answer: (D) 1 · Official APSCHE final key

Q293 AP EAMCET 2010 · 30 May · Offline MCQ

Let $a_n = \dfrac{10^n}{n!}$ for $n = 1, 2, 3, \ldots\ldots$ Then the greatest value of n for which a_n is the greatest is :

(A) 11
(B) 20
(C) 10
(D) 8

Answer: (C) 10 · Official APSCHE final key

Q294 AP EAMCET 2010 · 30 May · Offline MCQ

$(1+2x+3x^2)^{10} = a_0 + a_1x + a_2x^2 + \ldots + a_{20}x^{20} \Rightarrow \frac{a_2}{a_1} =$

(A) 10.5
(B) 21
(C) 10
(D) 5.5

Answer: (A) 10.5 · Official APSCHE final key

Q295 AP EAMCET 2010 · 30 May · Offline MCQ

For $|x| < \frac{1}{5}$, the coefficient of x^3 in the expansion of $\frac{1}{(1-5x)(1-4x)}$ is :

(A) 369
(B) 370
(C) 371
(D) 372

Answer: (A) 369 · Official APSCHE final key

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