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MATHEMATICS · EAPCET (EAMCET)

Sequences & Series

Previous Year Questions with answers

81 questions · **69** papers · **2010–2026** · newest paper first

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

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

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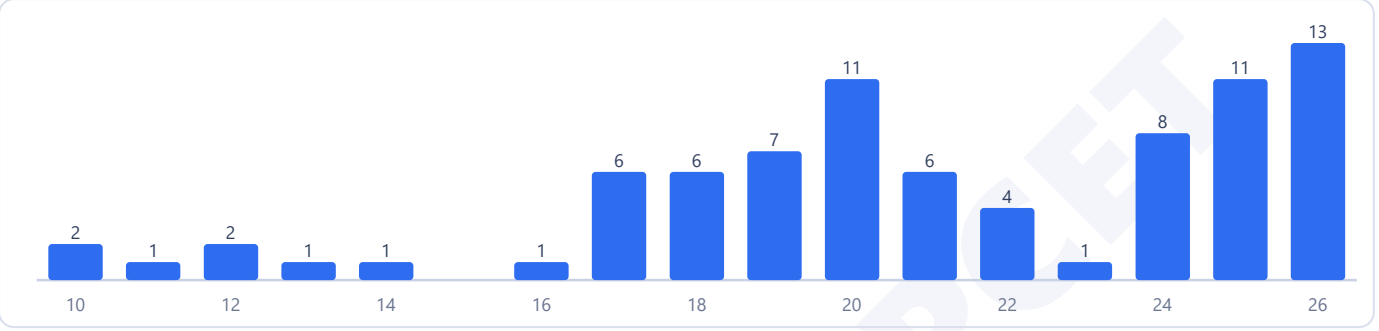
Chapter at a glance

0.6%	81	33 of 77	81 / 0
of Mathematics questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Rising: 0.7 questions per paper in 2024–2026 against 0.2 in 2022–2023.

Questions per year



Counts are the questions we hold: 81 in 69 papers. No question in this chapter was found repeated across papers.

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

Special Series	63
Arithmetic Progression	7
HP & Means	6
Geometric Progression	5

How often it comes up

Sequences & Series forms a compact algebra chapter that contributes occasional focused questions on progressions and summation techniques. Across the historical archive spanning 2010 to 2026, Sequences & Series provided 81 questions across 149 evaluated exam papers, appearing in 69 sittings to record an average of 0.5 questions per paper and a 0.7 percent subject share. In contemporary testing between 2022 and 2026, the unit accounted for 37 questions across 77 sittings, with questions appearing in 33 papers to average 0.5 questions per paper and a 0.6 percent subject share. This ranks Sequences & Series at position 28 among the 29 mathematics chapters.

The chapter is represented each calendar year, but it is omitted from forty-four papers out of 77 in the recent testing window. Over the three most recent exam cycles from 2024 to 2026, question writers set 32 questions across 46 papers (present in 29 papers, averaging 0.7 questions per test and a 0.9 percent share). In the previous testing era from 2010 through 2021, the chapter supplied 44 questions across 72 sittings (appearing in 36 papers, averaging 0.6 per test and a 0.8 percent share). Looking across historical windows, comparing early testing with the last three years shows the share is about the same, and comparing recent testing with the last three years also shows the share is about the same. At the regional level from 2022 to 2026, Andhra Pradesh sittings provided 26 questions across 48 papers (24 papers with questions, 0.5 per test, 0.7 percent share), while Telangana sittings delivered 11 questions across 29 papers (9 papers with questions, 0.4 per test, 0.5 percent share).

Most-asked topics

Questions in this unit fall into four progressions and summation areas:

- **Special Series**: Supplying 63 total questions, with 30 appearing in modern examinations (tested through 2026). Key concepts encompass sigma notation sums for linear, quadratic, and cubic terms (sum of n, sum of n squared,

sum of n cubed), telescoping differences, method of partial fractions on arithmetic products, and arithmetic-geometric series.

- **HP & Means**: Generating 6 total questions, with 4 set in recent papers (last tested in 2025). Focus areas include harmonic progression definitions, harmonic means, and arithmetic-geometric-harmonic mean inequalities.
- **Arithmetic Progression**: Accounting for 7 total questions, with 2 appearing in recent cycles (tested through 2026). Problems explore nth terms, arithmetic means insertion, sum of n terms, and ratios of simultaneous AP sums.
- **Geometric Progression**: Comprising 5 total questions, with 1 delivered recently (tested up to 2026). Coverage includes common ratio determination, finite and infinite GP sums, and geometric means.

What the questions look like

Examiners test closed-form summation formulas and telescoping cancelation methods.

The single most frequent question format asks for the sum of n terms of a sequence whose nth term is the product of two arithmetic terms, such as n times three n plus two. Candidates express the general term as a polynomial in n and apply standard sigma summation formulas. Another classic problem presents a telescoping sum where each term is the reciprocal of the product of two numbers in arithmetic progression with a constant common difference d. Students rewrite each term as one over d times the difference of reciprocals, causing intermediate terms to telescope and cancel out completely.

How to practise it

Commit the standard power sum formulas to memory: sum of first n natural numbers is n times n plus one divided by two; sum of squares is n times n plus one times two n plus one divided by six; sum of cubes is the square of the sum of the first n numbers.

For telescoping reciprocal series like one divided by a sub k times a sub k plus one where a sub k forms an arithmetic progression with common difference d, multiply and divide by d to express the general term as one over d times the quantity one over a sub k minus one over a sub k plus one. When adding all terms from k equals one to n, every internal fraction cancels, leaving one over d times the quantity one over a sub one minus one over a sub n plus one. Finally, review the AM-GM inequality, which states that for positive real numbers, the arithmetic mean is greater than or equal to the geometric mean, providing an immediate path to finding minimum values of reciprocal algebraic sums.

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

Assertion (A): If $2+6+16+40+\cdots$ to k terms $=4608$, then $k=9$

Reason (R): $2+3\cdot 2+4\cdot 2^2+\cdots$ to n terms $=n\cdot 2^n\ \forall\ n\in N$

which one of the following option is correct?

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

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

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

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

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

Q2 AP EAPCET 2026 · 15 May · Shift 1 MCQ

If $x_1+x_2+x_3+\cdots+x_n=pn(n-1)\ \forall\ n\in N$ and $x_{J+1}-x_J=\text{constant}\ (J=1,2,\cdots(n-1))$, then $\left(\frac{x_n}{n-1}\right)^2=$

(A) $4p^2$

(B) $2p^2$

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

(D) $\frac{p^2+1}{p^2-1}$

Answer: (A) $4p^2$ · The council's preliminary key

Q3 AP EAPCET 2026 · 14 May · Shift 1 MCQ

For $n\in N,\ 1^2+2^2+3^2+\cdots+n^2>$

(A) n^3

(B) $\frac{n^3}{2}$

(C) $\frac{n^3}{3}$

(D) $3n^3$

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

Q4 AP EAPCET 2026 · 14 May · Shift 2 MCQ

The sum S_n of the n terms of the series $1^2+2\times 2^2+3^2+2\times 4^2+5^2+2\times 6^2+\cdots$ is given by

(A) $S_n = \frac{n^2(n+1)^2}{2}$, n is even ; $S_n = \frac{n(n+1)}{2}$, n is odd

(B) $S_n = \frac{n(n^2+1)}{2}$, n is even ; $S_n = \frac{n^2(n+1)}{2}$, n is odd

(C) $S_n = \frac{n(n+1)^2}{2}$, n is even ; $S_n = \frac{n^2(n+1)}{2}$, n is odd

(D) $S_n = \frac{n^2(n^2+1)}{2}$, n is even ; $S_n = \frac{n(n+1)^2}{2}$, n is odd

Answer: (C) $S_n = \frac{n(n+1)^2}{2}$, n is even ; $S_n = \frac{n^2(n+1)}{2}$, n is odd · The council's preliminary key

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Q5 AP EAPCET 2026 · 13 May · Shift 1 MCQ

If $\frac{3}{4} + \frac{15}{16} + \frac{63}{64} + \cdots n$ terms $= \frac{939}{256}$, then $5n =$

(A) 55

(B) 20

(C) 15

(D) 35

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

Q6 AP EAPCET 2026 · 13 May · Shift 2 MCQ

For all $n \in N$, $\frac{1}{a(a+d)} + \frac{1}{(a+d)(a+2d)} + \frac{1}{(a+2d)(a+3d)} + \cdots$ upto n terms =

(A) $\frac{nd}{a+d}$

(B) $\frac{nd}{a(a+nd)}$

(C) $\frac{n}{a(a+nd)}$

(D) $\frac{d}{a+nd}$

Answer: (C) $\frac{n}{a(a+nd)}$ · The council's preliminary key

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Q7 AP EAPCET 2026 · 12 May · Shift 1 MCQ

Assertion (A): $1 + (2+3) + (4+5+6) + \cdots n$ terms $= \sum_{r=1}^{n} \frac{r(r^2+1)}{2}, n \in \mathbb{N}$

Reason (R): n^{th} term of sequence $1 + 2 + 4 + 7 + \cdots$ is $\frac{n^2-n+2}{2}$, $n \in \mathbb{N}$ and

sum to n terms of an arithmetic progression $\{T_n : a + (n-1)d\}$ is $\frac{n}{2}[2a + (n-1)d]$

(A) (A) is true , (R) is true and (R) is the correct explanation to (A)

(B) (A) is true , (R) is true but (R) is not the correct explanation to (A)

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

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

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

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Q8 AP EAPCET 2026 · 12 May · Shift 2 MCQ

$1.5 + 2.8 + 3.11 + \cdots$ n terms $=$

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

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

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

(D) $\frac{n(n+1)(n+3)}{3}$

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

Q9 TS EAPCET 2026 · 11 May · Shift 1 MCQ

If $1 + 3 + 5 + \ldots + l_1 = 1521$ and $2 + 4 + 6 + \ldots + l_2 = 1722$ then $l_1 + l_2 =$

(A) 160

(B) 159

(C) 80

(D) 79

Answer: (B) 159 · The council's preliminary key

Q10 TS EAPCET 2026 · 11 May · Shift 2 MCQ

$\frac{1}{1.6} + \frac{1}{6.11} + \frac{1}{11.16} + \ldots\ldots$ n terms =

(A) $\frac{n}{5n+1}$

(B) $\frac{5}{5n+1}$

(C) $\frac{5n}{5n+1}$

(D) $\frac{n}{5(5n+1)}$

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

Q11 TS EAPCET 2026 · 10 May · Shift 1 MCQ

Consider the following

Assertion (A) : $1^2 + 3^2 + 5^2 + \ldots + 39^2 = 10760$

Reason (R) : Sum of the squares of the first n odd numbers $= \frac{n\left(4n^2 - 1\right)}{3}$

The correct answer is

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

Answer: (D) A is incorrect, but R is correct · The council's preliminary key

Q12 TS EAPCET 2026 · 10 May · Shift 1 MCQ

If θ is an acute angle, $x = \sum_{n=0}^{\infty} \cos^{2n}\theta$, $y = \sum_{n=0}^{\infty} \sin^{2n}\theta$ then $\frac{1}{x^2} + \frac{1}{y^2} =$

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

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

Q13 TS EAPCET 2026 · 9 May · Shift 2 MCQ

Consider the following

Assertion (A): $\frac{1}{5.9} + \frac{1}{9.13} + \frac{1}{13.17} + \ldots$ to 10 terms $= \frac{9}{41}$

Reason (R): For all $n \in N$, $\frac{1}{5.9} + \frac{1}{9.13} + \frac{1}{13.17} + \ldots$ to n terms $= \frac{n}{5(4n+5)}$

The correct answer is

(A) Both (A) and (R) are true, (R) is the correct explanation of (A)
(B) Both (A) and (R) are true, (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: (D) (A) is false, but (R) is true · The council's preliminary key

Q14 AP EAPCET 2025 · 26 May · Shift 1 MCQ

If $S_n = 1^3 + 2^3 + \ldots.. + n^3$ and $T_n = 1 + 2 + \ldots.. + n$, then

(A) $S_n = T_{n^3}$
(B) $S_n = T_n^3$
(C) $S_n = T_{n^2}$
(D) $S_n = T_n^2$

Answer: (D) $S_n = T_n^2$ · The council's preliminary key

Q15 AP EAPCET 2025 · 26 May · Shift 2 MCQ

$\frac{1}{3 \cdot 5} + \frac{1}{5 \cdot 7} + \frac{1}{7 \cdot 9} + \ldots$ to 24 terms $=$

(A) $\frac{23}{147}$
(B) $\frac{6}{35}$
(C) $\frac{6}{37}$
(D) $\frac{8}{153}$

Answer: (D) $\frac{8}{153}$ · The council's preliminary key

Q16 AP EAPCET 2025 · 23 May · Shift 1 MCQ

If $t_n = \frac{1}{4}(n+2)(n+3)$, $n \in N$, then which one of the following is true ?

Assertion (A) : $\frac{1}{t_1} + \frac{1}{t_2} + \ldots + \frac{1}{t_{2003}} = \frac{2003}{3009}$

Reason (R) : $\frac{1}{t_1} + \frac{1}{t_2} + \ldots + \frac{1}{t_n} = \frac{4n}{(2n+3)}$

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

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

Q17 AP EAPCET 2025 · 23 May · Shift 1 MCQ

The sum of all integers between 1 and 100 (both inclusive) which are divisible by 5 or 13 is

(A) 1349
(B) 1536
(C) 1237
(D) 1479

Answer: (A) 1349 · The council's preliminary key

Q18 AP EAPCET 2025 · 22 May · Shift 2 MCQ

$\sum_{k=1}^{n} k(k+1)(k+2)\ldots(k+r-1) =$

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

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

Q19 AP EAPCET 2025 · 21 May · Shift 1 MCQ

For all $n \in N$, if $1^3 + 2^3 + 3^3 + \ldots.. + n^3 > x$, then a value of x among the following is

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

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

Q20 AP EAPCET 2025 · 21 May · Shift 2 MCQ

If $2.5 + 5.9 + 8.13 + 11.17 + \ldots$ to n terms $= an^3 + bn^2 + cn + d$, then $a - b + c - d =$

(A) 7
(B) 5
(C) -3
(D) -1

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

Q21 TS EAPCET 2025 · 4 May · Shift 1 MCQ

$t_1, t_2, t_3, ..., t_n$ are positive integers, $S_n = t_1 + t_2 + t_3 + ... + t_n$, $S_1 = 1^2$, $S_2 = 3^2$, $S_3 = 6^2$, $S_4 = 10^2$, $S_5 = 15^2$ and similarly other terms are there. Following this pattern, if $S_{10} = k^2$ then $k =$

(A) 55
(B) 45
(C) 36
(D) 21

Answer: (A) 55 · The council's preliminary key

Q22 TS EAPCET 2025 · 4 May · Shift 1 MCQ

If x and y are two positive real numbers such that $xy = 4$ then the minimum value of $\left(\sqrt{x} + \frac{y^2}{2}\right)$ is

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

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

Q23 TS EAPCET 2025 · 3 May · Shift 1 MCQ

If $\frac{1}{2.7} + \frac{1}{7.12} + \frac{1}{12.17} + \frac{1}{17.22} + \ldots$ to 10 terms $= k$, then $k =$

(A) $\frac{2}{51}$
(B) $\frac{5}{51}$
(C) $\frac{5}{52}$
(D) $\frac{1}{26}$

Answer: (C) $\frac{5}{52}$ · The council's preliminary key

Q24 TS EAPCET 2025 · 2 May · Shift 1 MCQ

$1 + (1 + 3) + (1 + 3 + 5) + (1 + 3 + 5 + 7) + \ldots$ to 10 terms $=$

(A) 385
(B) 285
(C) 506
(D) 406

Answer: (A) 385 · The council's preliminary key

Q25 AP EAPCET 2024 · 23 May · Shift 1 MCQ

The nth term of the series $1 + (3 + 5 + 7) + (9 + 11 + 13 + 15 + 17) + \ldots$

(A) $(2n + 1)\left[n^2 - (n - 1)^2\right]$
(B) $(2n - 1)\left[(n - 1)^2 - n^2\right]$
(C) $(2n + 1)\left[(n - 1)^2 - n^2\right]$
(D) $(2n - 1)\left[(n - 1)^2 + n^2\right]$

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

Q26 AP EAPCET 2024 · 22 May · Shift 1 MCQ

$2 + 3 + 5 + 6 + 8 + 9 + \cdots + 2n$ terms $=$

(A) $3n^2 + 2n$
(B) $4n^2 + 2n$
(C) $4n^2$
(D) $5n^2 + 2n$

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

Q27 AP EAPCET 2024 · 21 May · Shift 1 MCQ

$\frac{1}{1.5} + \frac{1}{5.9} + \frac{1}{9.13} + \cdots$ upto n terms =

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

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

Q28 AP EAPCET 2024 · 21 May · Shift 2 MCQ

If $1.3.5 + 3.5.7 + 5.7.9 + \cdots n$ terms $= n(n+1)f(n) - 3n$, then $f(1) =$

(A) 9
(B) 11
(C) 12
(D) 8

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

Q29 AP EAPCET 2024 · 20 May · Shift 1 MCQ

$\frac{1}{3.7} + \frac{1}{7.11} + \frac{1}{11.15} + \cdots$ to 50 terms $=$

(A) $\frac{50}{203}$
(B) $\frac{50}{609}$
(C) $\frac{150}{203}$
(D) $\frac{25}{609}$

Answer: (B) $\frac{50}{609}$ · The council's preliminary key

Q30 AP EAPCET 2024 · 19 May · Shift 2 MCQ

$2.5 + 5.9 + 8.13 + 11.17 + \cdots$ to 10 terms $=$

(A) 3355
(B) 4555
(C) 1375
(D) 1380

Answer: (B) 4555 · The council's preliminary key

Q31 TS EAPCET 2024 · 11 May · Shift 1 MCQ

If $1.3.5 + 3.5.7 + 5.7.9 + \ldots$ to n terms $= n(n+1)f(n)$, then $f(2) =$

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(A) 12
(B) 42
(C) 18
(D) 20

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

Q32 TS EAPCET 2024 · 9 May · Shift 2 MCQ

$\frac{1}{3.6} + \frac{1}{6.9} + \frac{1}{9.12} + \ldots\ldots$ to 9 terms $=$

(A) $\frac{10}{99}$
(B) $\frac{11}{108}$
(C) $\frac{1}{10}$
(D) $\frac{1}{90}$

Answer: (C) $\frac{1}{10}$ · The council's preliminary key

Q33 AP EAPCET 2023 · 16 May · Shift 1 MCQ

If $\cos(\theta-\alpha), \cos\theta$ and $\cos(\theta+\alpha)$ are in harmonic progression, then $2\tan^2\theta =$

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

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

Q34 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

What is the sum of the first n-terms of the series, whose k-term is $k! \times k$?

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

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

Q35 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

$\lim_{n\to\infty} \sum_{r=1}^{n} \frac{r+2}{r(r+1)(r+3)} =$

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(A) $\frac{29}{36}$
(B) $\frac{1}{36}$
(C) $\frac{5}{36}$
(D) $\frac{23}{36}$

Answer: (A) $\frac{29}{36}$ · The council's preliminary key

Q36 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

If a, b, c are distinct positive real numbers and $a^2 + b^2 + c^2 = 1$, the the value of $ab + bc + ca$ is

(A) less than 1
(B) greater than 1
(C) equals to 1
(D) any real number

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

Q37 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

Let P be a real number and $|P| \geq 2$. If A, B, C are variable angles such that $(\sqrt{P^2 - 4}) \tan A + P \tan B + (\sqrt{P^2 + 4}) \tan C = 6P$, then the minimum value of $\tan^2 A + \tan^2 B + \tan^2 C =$

(A) 6
(B) 8
(C) 12
(D) 18

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

Q38 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

The sum of integers from 1 to 50 that are divisible by 2 and 3 is

(A) 316
(B) 6^3
(C) 36
(D) 48

Answer: (B) 6^3 · The council's preliminary key

Q39 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

If $1^4 + 2^4 + 3^4 + \cdots + n^4 = f(n)\left(1^2 + 2^2 + \cdots + n^2\right)$, $\forall n \in N$, then $f(4) =$

(A) $\frac{58}{5}$
(B) $\frac{57}{5}$
(C) $\frac{59}{5}$
(D) $\frac{56}{5}$

Answer: (C) $\frac{59}{5}$ · The council's preliminary key

Q40 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

Using mathematical induction, the numbers a_n's are defined by $a_0 = 1,\ a_{n+1} = 3n^2 + n + a_n\ (n \geq 0)$, then $a_n =$

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

Answer: (B) $n^3 - n^2 + 1$ · The council's preliminary key

Q41 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

If $f(1) = 0$ and $f(n+1) - f(n) = 5n\ \forall n \in \mathbb{N}$ then $f(n) =$

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

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

Q42 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

If $\frac{1}{1\cdot5} + \frac{1}{5\cdot9} + \frac{1}{9\cdot13} + \ldots$ to n terms $= \frac{27}{109}$ then $n =$

(A) 21
(B) 27
(C) 63
(D) 189

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

Q43 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

For any $n \in \mathbb{N}$, $\frac{1}{2.5} + \frac{1}{5.8} + \ldots + \frac{1}{(3n-1)(3n+2)} =$

(A) $\frac{n}{6n+4}$
(B) $\frac{n^2}{6n+4}$
(C) $\frac{1}{2} \cdot \frac{n^2}{6n+4}$
(D) $\frac{n}{6n^2+4}$

Answer: (A) $\frac{n}{6n+4}$ · The council's preliminary key

Q44 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

For $n \in N$, what is the value of $1 + 4 + 7 + \cdots + (3n - 2)$

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

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

Q45 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

How many multiples of 5 are there from 10 to 95 including both 10 and 95?

(A) 17
(B) 18
(C) 16
(D) 19

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

Q46 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

The population of a city grows at the annual rate of 3%. What percentage increase is expected in 5 years?

(A) $12.9\ \%$
(B) $13.9\ \%$
(C) $14.9\ \%$
(D) $15.9\ \%$

Answer: (D) $15.9\ \%$ · The council's preliminary key

Q47 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

Geometric mean of $\tan 1^\circ, \tan 2^\circ, \ldots, \tan 89^\circ$ is

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(A) $\frac{1}{89}$
(B) 1
(C) $\frac{1}{3}$
(D) $\sqrt{3}$

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

Q48 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

$\frac{10001\times100!}{2\times1!+5\times2!+10\times3!+\cdots+10001\times100!} =$

(A) $\frac{1001}{1100}$
(B) $\frac{10001}{10100}$
(C) $\frac{101}{110}$
(D) $\frac{100001}{101000}$

Answer: (B) $\frac{10001}{10100}$ · The council's preliminary key

Q49 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

If $f(1)=3$, and $f(n+1)-f(n)=3(4^n-1)$, then $\forall\, n\in N$, $f(n)=$

(A) 4^n-1
(B) 4^n-5n+4
(C) 4^n-3n+2
(D) 4^n+4n-5

Answer: (C) 4^n-3n+2 · Official TGCHE final key

Q50 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

Let $f(n)=A(-2)^n+B(-3)^n\ \forall A,B\in\mathbb{R}$ and $n\in\mathbb{N}-\{1,2\}$. If $f(n)+af(n-1)+bf(n-2)=0$, then $(a+b)(b-a)=$

(A) 0
(B) 5
(C) 7
(D) 11

Answer: (D) 11 · Official TGCHE final key

Q51 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

If $1+\frac{\cos\theta}{2}+\frac{\cos2\theta}{4}+\frac{\cos3\theta}{8}+\ldots\cdots=\frac{a-2\cos\theta}{5+b\cos\theta}$ for some $a,b\in\mathbb{R}$, then $(a-b)^2=$

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(A) 0
(B) 64
(C) 36
(D) 125

Answer: (B) 64 · Official TGCHE final key

Q52 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

Let the greatest common divisor of m, n be 1. If $\frac{1}{1.7} + \frac{1}{7.13} + \frac{1}{13.19} + \ldots\ldots\ldots$ up to 20 terms $= \frac{m}{n}$, then $5m + 2n =$

(A) 325
(B) 330
(C) 342
(D) 337

Answer: (C) 342 · Official TGCHE final key

Q53 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

If S_n is the sum of the first n terms of the series $1^2 + 2 \times 2^2 + 3^2 + 2 \times 4^2 + 5^2 + 2 \times 6^2 + \ldots \infty$, then, when n is even $S_n =$

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

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

Q54 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

The expression for a_n which satisfies $a_0 = 0$, $a_1 = 1$ and $a_n = a_{n-1} + a_{n-2}\ \forall n \in \mathbb{N} - \{0, 1\}$ from the following is

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(A) $\frac{1}{\sqrt{5}}\left(\frac{1+\sqrt{5}}{2}\right)^n - \frac{1}{\sqrt{5}}\left(\frac{1-\sqrt{5}}{2}\right)^n$

(B) $\frac{1}{\sqrt{7}}\left(\frac{1+\sqrt{7}}{2}\right)^n - \frac{1}{\sqrt{7}}\left(\frac{1-\sqrt{7}}{2}\right)^n$

(C) $\frac{1}{\sqrt{2}}\left(\frac{1+\sqrt{2}}{2}\right)^n - \frac{1}{\sqrt{2}}\left(\frac{1-\sqrt{2}}{2}\right)^n$

(D) $\frac{1}{\sqrt{3}}\left(\frac{1+\sqrt{3}}{2}\right)^n - \frac{1}{\sqrt{3}}\left(\frac{1-\sqrt{3}}{2}\right)^n$

Answer: (A) $\frac{1}{\sqrt{5}}\left(\frac{1+\sqrt{5}}{2}\right)^n - \frac{1}{\sqrt{5}}\left(\frac{1-\sqrt{5}}{2}\right)^n$ · Official TGCHE final key

Q55 TS EAMCET 2019 · 4 May · Shift 2 MCQ

If $\alpha \in \mathbb{R}$, $n \in \mathbb{N}$ and $n + 2(n-1) + 3(n-2) + \cdots + (n-1)2 + n \cdot 1 = \alpha\, n(n+1)(n+2)$, then $\alpha =$

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

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

(C) $\frac{1}{5}$

(D) $\frac{1}{6}$

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

Q56 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

$\frac{1}{2.5} + \frac{1}{5.8} + \frac{1}{8.11} + \ldots 16 \text{ terms} =$

(A) $\frac{4}{25}$

(B) $\frac{8}{25}$

(C) $\frac{16}{25}$

(D) $\frac{1}{25}$

Answer: (A) $\frac{4}{25}$ · Official APSCHE final key

Q57 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

$1^2 + (1^2 + 2^2) + (1^2 + 2^2 + 3^2) + \ldots + (1^2 + 2^2 + \ldots + n^2) =$

(A) $\frac{n(n+1)(n+2)}{12}$

(B) $\frac{n(n+1)(2n+1)}{6}$

(C) $\frac{n(n+1)^2(n+2)}{12}$

(D) $\frac{n(n+1)(n+2)(n+3)}{12}$

Answer: (C) $\frac{n(n+1)^2(n+2)}{12}$ · Official APSCHE final key

Q58 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

If $x = \frac{3}{10} + \frac{3.7}{10.15} + \frac{3.7.9}{10.15.20} + \ldots$, then $5x + 8 =$

(A) $\frac{5\sqrt{5}}{3\sqrt{3}}$
(B) $\frac{5\sqrt{5}}{\sqrt{3}}$
(C) $\frac{3\sqrt{3}}{\sqrt{5}}$
(D) $\frac{25\sqrt{5}}{3\sqrt{3}}$

Answer: (D) $\frac{25\sqrt{5}}{3\sqrt{3}}$ · Official APSCHE final key

Q59 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

$\lim_{n\to\infty}\left(\frac{1}{3.7} + \frac{1}{7.11} + \frac{1}{11.15} + \ldots + (n \text{ terms})\right) =$

(A) $\frac{1}{12}$
(B) $\frac{1}{4}$
(C) $\frac{1}{3}$
(D) 0

Answer: (A) $\frac{1}{12}$ · Official APSCHE final key

Q60 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

Assertion (A): $(1) + (1+2+4) + (4+6+9) + (9+12+16) + \ldots + (81+90+100) = 1000$
Reason (R): $\sum_{r=1}^{n}\left(r^3 - (r-1)^3\right) = n^3$ for any natural number n

(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: (A) Both (A) and (R) are true and (R) is the correct explanation of (A) · Official APSCHE final key

Q61 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

The sum to first n terms of the series $\frac{3}{5} + \frac{21}{25} + \frac{117}{125} + \ldots$ is

(A) $n + \frac{2^{n+1}}{3\times 5^n} - \frac{2}{3}$
(B) $n - \frac{2^{n+1}}{3\times 5^n} - \frac{2}{3}$
(C) $n + \frac{2^{n+1}}{3\times 5^n} + \frac{2}{3}$
(D) $n - \frac{2^{n+1}}{3\times 5^n} + \frac{2}{3}$

Answer: (A) $n + \frac{2^{n+1}}{3\times 5^n} - \frac{2}{3}$ · Official APSCHE final key

Q62 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

$\sum_{n=1}^{5} n\left(n^2 + n + 1\right) =$

(A) 500
(B) 155
(C) 295
(D) 395

Answer: (C) 295 · The council's preliminary key

Q63 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

If $\left(1+\frac{3}{1}\right)\left(1+\frac{5}{4}\right)\left(1+\frac{7}{9}\right)\ldots\left(1+\frac{2n+1}{n^2}\right)=121$, then $n=$

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

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

Q64 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

$\frac{1}{4}-\frac{5}{4.8}+\frac{5.7}{4.8.12}-\ldots=$

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

Answer: (C) $\frac{3\sqrt{3}-2\sqrt{2}}{9\sqrt{3}}$ · The council's preliminary key

Q65 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

If $\alpha=\frac{5}{2!\times3}+\frac{5\times7}{3!\times3^2}+\frac{5\times7\times9}{4!\times3^3}+\ldots$, then $\alpha^2+4\alpha=$

(A) 21
(B) 23
(C) 25
(D) 27

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

Q66 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

If $\cos\left(x-\frac{\pi}{3}\right)$, $\cos x$, $\cos\left(x+\frac{\pi}{3}\right)$ are in a harmonic progression, then $\cos x=$

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

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

Q67 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

If $a_n = \sqrt{7+\sqrt{7+\sqrt{7+\ldots n \text{ times}}}}$, then which one of the following is true?

(A) $a_n > 7\ \forall n \geq 1$
(B) $a_n > 3\ \forall n \geq 1$
(C) $a_n < 4\ \forall n \geq 1$
(D) $a_n < 3\ \forall n \geq 1$

Answer: (C) $a_n < 4\ \forall n \geq 1$ · The council's preliminary key

Q68 TS EAMCET 2017 · 12 May · Offline MCQ

For any integer $n \geq 1$, $\sum_{K=1}^{n} K(K+2) =$

(A) $\frac{n(n+1)(n+2)}{6}$
(B) $\frac{n(n+1)(2n+7)}{6}$
(C) $\frac{n(n+1)(2n+1)}{6}$
(D) $\frac{n(n-1)(2n+8)}{6}$

Answer: (B) $\frac{n(n+1)(2n+7)}{6}$ · The council's preliminary key

Q69 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

The sum to first n terms of $\frac{1}{2.5}+\frac{1}{5.8}+\frac{1}{8.11}+\ldots$ is

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

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

Q70 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

The harmonic mean of two numbers is $-\frac{8}{5}$ and their geometric mean is 2. The quadratic equation whose roots are twice those numbers, is

(A) $x^2 + 10x + 16 = 0$
(B) $x^2 - 10x + 16 = 0$
(C) $x^2 + 5x + 4 = 0$
(D) $x^2 - 5x + 4 = 0$

Answer: (A) $x^2 + 10x + 16 = 0$ · The council's preliminary key

Q71 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

$p, x_1, x_2, \ldots, x_n$ and $q, y_1, y_2, \ldots, y_n$ are two arithmetic progressions with common differences a and b respectively. If α and β are the arithmetic means of $x_1, x_2, \ldots, x_n$ and $y_1, y_2, \ldots, y_n$ respectively, then the locus of $P(\alpha, \beta)$ is

(A) $\alpha(x - p) = \beta(y - q)$
(B) $p(x - \alpha) = q(y - \beta)$
(C) $a(x - p) = b(y - q)$
(D) $b(x - p) = a(y - q)$

Answer: (D) $b(x - p) = a(y - q)$ · The council's preliminary key

Q72 AP EAMCET 2017 · 25 Apr · Shift 1 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) 100
(C) 27
(D) 23

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

Q73 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

If $4^3 + 8^3 + 12^3 + \ldots$ up to n terms $= kn^2(n + 1)^2$ (for all $n \in \mathrm{N}$), then $k =$

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

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

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Q74 TS EAMCET 2016 · 15 May · Offline MCQ

If the average of the first n numbers in the sequence 148, 146, 144, ... , is 125, then $n =$

(A) 18
(B) 24
(C) 30
(D) 36

Answer: (B) 24 · Official TGCHE final key

Q75 AP EAMCET 2014 · 22 May · Offline MCQ

$\sum_{k=1}^{2n+1}(-1)^{k-1}\cdot k^2 =$

(A) $(n-1)(2n-1)$
(B) $(n+1)(2n+1)$
(C) $(n+1)(2n-1)$
(D) $(n-1)(2n+1)$

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

Q76 AP EAMCET 2013 · 10 May · Offline MCQ

$\frac{1}{2.3}+\frac{1}{4.5}+\frac{1}{6.7}+\frac{1}{8.9}+\ldots\ldots$

(A) $\log\left(\frac{2}{e}\right)$
(B) $\log\left(\frac{e}{2}\right)$
(C) $\log(2e)$
(D) $e-1$

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

Q77 AP EAMCET 2012 · 12 May · Offline MCQ

If $\frac{1}{2\times4}+\frac{1}{4\times6}+\frac{1}{6\times8}+\ldots\ldots$ (n - terms) $=\frac{kn}{n+1}$ then k =

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

Answer: (A) $\frac{1}{4}$ · Official APSCHE final key

Q78 AP EAMCET 2012 · 12 May · Offline MCQ

$1+\frac{1}{3\cdot2^2}+\frac{1}{5\cdot2^4}+\frac{1}{7\cdot2^6}+\ldots\cdots =$

(A) $\log_e 2$

(B) $\log_e 3$

(C) $\log_e 4$

(D) $\log_e 5$

Answer: (B) $\log_e 3$ · Official APSCHE final key

Q79 AP EAMCET 2011 · 8 May · Offline MCQ

$$\sum_{n=1}^{\infty} \frac{2n}{(2n+1)!} =$$

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

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

(C) e

(D) $2e$

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

Q80 AP EAMCET 2010 · 30 May · Offline MCQ

If $f(0) = 0, f(1) = 1, f(2) = 2$ and $f(x) = f(x-2) + f(x-3)$ for $x = 3, 4, 5, \ldots\ldots$ then $f(9) =$

(A) 12

(B) 13

(C) 14

(D) 10

Answer: (D) 10 · Official APSCHE final key

Q81 AP EAMCET 2010 · 30 May · Offline MCQ

$\log_4 2 - \log_8 2 + \log_{16} 2 - \ldots =$

(A) e^2

(B) $\log_e 2$

(C) $1 + \log_e 3$

(D) $1 - \log_e 2$

Answer: (D) $1 - \log_e 2$ · Official APSCHE final key

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