

JEE MAIN SEQUENCES AND SERIES — SUM OF SERIES BY DIFFERENCE / TELESCOPING METHOD (JEE) — PYQS

Max. Marks: 28

Questions: 7

Section A (MCQ) — 5 questions

Q.1 $\sum_{n=1}^{10} \left(\frac{528}{n(n+1)(n+2)} \right)$ is equal to:

[JEE Main 2026 (Online) 5th April Morning Shift]

- (1) 65 (2) 130 (3) 220 (4) 440

Scan or tap for the full solution



Q.2 If the sum of the first 10 terms of the series $\frac{1}{1+1^4 \times 4} + \frac{2}{1+2^4 \times 4} + \frac{3}{1+3^4 \times 4} + \frac{4}{1+4^4 \times 4} + \dots$ is $\frac{m}{n}$, $\gcd(m, n) = 1$, then $m + n$ is equal to :

[JEE Main 2026 (Online) 5th April Evening Shift]

- (1) 256 (2) 264 (3) 276 (4) 284

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Q.3 If the sum of the first 20 terms of the series $\frac{4 \cdot 1}{4+3 \cdot 1^2+1^4} + \frac{4 \cdot 2}{4+3 \cdot 2^2+2^4} + \frac{4 \cdot 3}{4+3 \cdot 3^2+3^4} + \frac{4 \cdot 4}{4+3 \cdot 4^2+4^4} + \dots$ is $\frac{m}{n}$, where m and n are coprime, then $m + n$ is equal to :

[JEE Main 2025 (Online) 4th April Evening Shift]

- (1) 423 (2) 421 (3) 422 (4) 420

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Q.4 The sum $1 + 3 + 11 + 25 + 45 + 71 + \dots$ upto 20 terms, is equal to

[JEE Main 2025 (Online) 3rd April Morning Shift]

- (1) 7240 (2) 8124 (3) 7130 (4) 6982

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Q.5 For positive integers n , if $4a_n = (n^2 + 5n + 6)$ and $S_n = \sum_{k=1}^n \left(\frac{1}{a_k} \right)$, then the value of $507S_{2025}$ is :

[JEE Main 2025 (Online) 28th January Evening Shift]

- (1) 540 (2) 675 (3) 1350 (4) 135

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Section B (Numerical) — 2 questions

Q.6 If $\sum_{r=1}^{25} \left(\frac{r}{r^4 + r^2 + 1} \right) = \frac{p}{q}$, where p and q are positive integers such that $\gcd(p, q) = 1$, then $p + q$ is equal to _____.

[JEE Main 2026 (Online) 28th January Evening Shift]

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Q.7 If the sum of the first 10 terms of the series $\frac{4 \cdot 1}{1+4 \cdot 1^4} + \frac{4 \cdot 2}{1+4 \cdot 2^4} + \frac{4 \cdot 3}{1+4 \cdot 3^4} + \dots$ is $\frac{m}{n}$, where $\gcd(m, n) = 1$, then $m + n$ is equal to _____.

[JEE Main 2025 (Online) 2nd April Evening Shift]

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ANSWER KEY

Section A (MCQ) — 5 questions

Ques.	1	2	3	4	5						
Ans.	2	3	2	1	2						

Section B (Numerical) — 2 questions

Ques.	6	7						
Ans.	976	441						