

JEE MAIN SEQUENCES AND SERIES — INFINITE G.P., EXPONENTIAL AND LOGARITHMIC SERIES (JEE) — PYQS

Max. Marks: 24

Questions: 6

Section A (MCQ) — 5 questions

Q.1 Let $\alpha = \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \dots$ and $\beta = \frac{1}{3} + \frac{1}{9} + \frac{1}{27} + \dots$.

Then the value of $(0.2)^{\log_{\sqrt{5}}(\alpha)} + (0.04)^{\log_5(\beta)}$ is equal to :

[JEE Main 2026 (Online) 4th April Evening Shift]

- (1) 4 (2) 5 (3) 8 (4) 25

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Q.2 The value of $\sum_{k=1}^{\infty} (-1)^{k+1} \left(\frac{k(k+1)}{k!} \right)$ is

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

- (1) $e/2$ (2) $\sqrt{e}$ (3) $2/e$ (4) $1/e$

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Q.3 $\left(\frac{1}{3} + \frac{4}{7}\right) + \left(\frac{1}{3^2} + \frac{1}{3} \times \frac{4}{7} + \frac{4^2}{7^2}\right) + \left(\frac{1}{3^3} + \frac{1}{3^2} \times \frac{4}{7} + \frac{1}{3} \times \frac{4^2}{7^2} + \frac{4^3}{7^3}\right) + \dots$ up to infinite terms, is equal to

[JEE Main 2026 (Online) 24th January Evening Shift]

- (1) $\frac{7}{4}$ (2) $\frac{4}{3}$ (3) $\frac{6}{5}$ (4) $\frac{5}{2}$

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Q.4 The sum $1 + \frac{1+3}{2!} + \frac{1+3+5}{3!} + \frac{1+3+5+7}{4!} + \dots$ up to ∞ terms, is equal to

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

- (1) $3e$ (2) $2e$ (3) $4e$ (4) $6e$

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Q.5 The value of $\lim_{n \rightarrow \infty} \left(\sum_{k=1}^n \frac{k^3 + 6k^2 + 11k + 5}{(k+3)!} \right)$ is :

[JEE Main 2025 (Online) 29th January Morning Shift]

- (1) $5/3$ (2) 2 (3) $4/3$ (4) $7/3$

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Section B (Numerical) — 1 question

Q.6 Let $a_1 = 1$ and for $n \geq 1$, $a_{n+1} = \frac{1}{2}a_n + \frac{n^2 - 2n - 1}{n^2(n+1)^2}$.

Then $\left| \sum_{n=1}^{\infty} \left(a_n - \frac{2}{n^2} \right) \right|$ is equal to _____.

[JEE Main 2026 (Online) 21st January Morning Shift]

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ANSWER KEY

Section A (MCQ) — 5 questions

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

Section B (Numerical) — 1 question

Ques.	6										
Ans.	2										