MATHS

BOOKS - JEE MAINS PREVIOUS YEAR

SEQUENCES AND SERIES

Others

1. The sum of the series $\frac{1}{2!} - \frac{1}{3!} + \frac{1}{4!} - \ldots$ upto infinity is (1) e^{-2} (2) e^{-1} (3) $e^{-1/2}$ (4) $e^{1/2}$

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2. The average marks of boys in a class is 52 and that of girls is 42. The average marks of boys and girls combined is 50. The percentage of boys in the class is (1) 40 (2) 20 (3) 80 (4) 60

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3. The first two terms of a geometric progression add up to 12. The sum of the third and the fourth terms is 48. If the terms of the geometric progression are alternately positive and negative, then the first term is

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4. $1+\frac{2}{3}+\frac{6}{3^2}+\frac{10}{3^3}+\frac{14}{3^4}+$

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5. A person is to count 4500 currency notes. Let an denote the number of notes he counts in the nth minute. If $a_1=a_2=\ldots\ldots=a_{10}=150$ and $a_{10}, a_{11}, \ldots\ldots$ are in A.P. with common difference 2, then the time taken by him to count all notes is (1) 34 minutes (2) 125 minutes (3) 135 minutes (4) 24 minutes

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6. If 100 times the 100^{th} term of an AP with non zero common difference equals the 50 times its 50^{th} term, then the 150^{th} term of this AP is (1) 150 (2) 150 times its 50^{th} term (3) 150 (4) zero

A. 150 times its 50th term

B. 150

C. zero

D. -150

Answer: null

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7. Statement 1: The sum of the series $1+(1+2+4)+(4+6+9)+(9+12+16)+\ldots\ldots$ $+(361+380+400) is 8000$. Statement 2: $\sum_{k=1}^{n}\left(k^{3}-(k-1)^{3}\right)=n^{3}$ for any natural number n. (1) Statement 1 is false, statement 2 is true (2) Statement 1 is true, statement 2 is true; statement 2 is a correct explanation for statement 1 (3) Statement 1 is true, statement 2 is true; statement 2 is not a correct explanation for statement 1 (4) Statement 1 is true, statement 2 is false

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8. If x, y, z are in A.P. and $tan^{-1}x, tan^{-1}yandtan^{-1}z$ are also in A.P., then (1) $2x = 3y = 6z$ (2) $6x = 3y = 2z$ (3) $6x = 4y = 3z$ (4) $x = y = z$

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9. The sum of first 20 terms of the sequence 0.7, 0.77, 0.777, .. , is (1) $\frac{7}{9}\left(99 - 10^{-20}\right)$ (2) $\frac{7}{81}\left(179 + 10^{-20}\right)$ (3) $\frac{7}{9}\left(99 + 10^{-20}\right)$ (3) $\frac{7}{81}\left(179 - 10^{-20}\right)$

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10. If

$(10)^9 + 2(11)^1(10)^8 + 3(11)^2(10)^7 + .. + 10(11)^9 = k(10)^9$

, then k is equal to (1) $\frac{121}{10}$ (2) $\frac{441}{100}$ (3) 100 (4) 110

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11. If m is the A.M. of two distinct real numbers l and $n(l, n > 1)$ andG_1, G_2 and G_3 are three geometric means between l and n, then $G_1^4 + 2G_2^4 + G_3^4$ equals, (1) $4l^2$ mn (2) $4m^2$ nl (3) $4lmn^2$ (4) $4l^2m^2n^2$

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12. The sum of first 9 terms of the series $\frac{1^3}{1} + \frac{1^3 + 2^3}{1 + 3} + \frac{1^3 + 2^3 + 3^3}{1 + 2 + 3} + \ldots\ldots$ is (1) 71 (2) 96 (3) 142 (4) 192

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13. If the sum of the first ten terms of the series $\left(1\frac{3}{5}\right)^2+\left(2\frac{2}{5}\right)^2+\left(3\frac{1}{5}\right)^2+4^2+\left(4\frac{4}{5}\right)^2+\ldots\ldots,$ is $\frac{16}{5}$ m, then m is equal to: (1) 102 (2) 101 (3) 100 (4) 99

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14. For any three positive real numbers a, b and c, $9\left(25a^2+b^2\right)+25\left(c^2-3ac\right)=15b(3a+c)\cdot$ Then : (1)a, b and$c$ are in$A\dot{P}$ (2) a, b and c are in $G\dot{P}$ (3)b, c and a are in $G\dot{P}$ (4) b, c and a are in $A\dot{P}$

A. a,b and c are in GP

B. b,c and a are in GP

C. b,c and a are in AP

D. a,b and c are in AP

Answer: null