MATHS

BOOKS - JEE MAINS PREVIOUS YEAR ENGLISH

SEQUENCES AND SERIES

Others

1. If in a geometric progression consisting of positive terms, each term equals the sum of the next two terms, then the common ratio of this progression equals

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2. 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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3. 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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4. 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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5. $1+\frac{2}{3}+\frac{6}{3^2}+\frac{10}{3^3}+\frac{14}{3^4}+$

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6. 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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7. A man saves Rs. 200 in each of the first three months of his service. In each of the subsequent months his saving increases by Rs. 40 more than the saving of immediately previous month. His total saving from the start of service will be Rs. 11040 after how many months

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8. 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

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9. 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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10. If x, y, z are in A.P. and $tan^{-1}x, tan^{-1}y$ and $tan^{-1}z$ 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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11. 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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12. If

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

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

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13. If m is the A.M of two distict real numbers l and n $(l, n>1)$and G_1, G_2 and G_3 are three geomatric means between l and n, then $(G_1)^4+2(G_2)^4+(G_3)^4$ equals

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

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

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16. For any three positive real numbers a, b and c, $9\left(25a^2+b^2\right)+25\left(c^2-3ac\right)=15b(3a+c)$ Then :

(1)a, b and$c$ are inAP (2) a, b and c are in GP (3)b, c and a are in GP (4) b, c and a are in AP

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