

Assignment 1 - EE1030

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I. SECTION-B // JEE MAIN / AIEEE

- If $1, \log_9(3^{1-x} + 2), \log_3(4 \cdot 3^x - 1)$ are in A.P then x equals [2002]
 - $\log_3 4$
 - $1 - \log_3 4$
 - $1 - \log_4 3$
 - $\log_4 3$
- l, m, n are the p^{th}, q^{th} and r^{th} term of a G.P. all positive, then $\begin{vmatrix} \log l & p & 1 \\ \log m & q & 1 \\ \log n & r & 1 \end{vmatrix}$ equals [2002]
 - 1
 - 2
 - 1
 - 0
- The value of $2^{\frac{1}{4}} \cdot 4^{\frac{1}{8}} \cdot 8^{\frac{1}{16}} \dots \infty$ is [2002]
 - 1
 - 2
 - $\frac{3}{2}$
 - 4
- Fifth term of a GP is 2, then the product of its 9 terms is [2002]
 - 256
 - 512
 - 1024
 - none of these
- Sum of infinite number of terms of a GP is 20 and sum of their square is 100. The common ratio of GP is [2002]
 - 5
 - $\frac{3}{5}$
 - $\frac{8}{5}$
 - $\frac{1}{5}$
- $1^3 - 2^3 + 3^3 - 4^3 + \dots + 9^3 =$ [2002]
 - 425
 - 425
 - 475
 - 475
- The sum of the series $\frac{1}{1 \cdot 2} - \frac{1}{2 \cdot 3} + \frac{1}{3 \cdot 4} \dots$ up to ∞ is equal to [2003]
 - $\log_e \left(\frac{4}{e} \right)$
 - $2 \log_e 2$
 - $\log_e 2 - 1$
 - $\log_e 2$
- If $S_n = \sum_{r=0}^n \frac{1}{n C_r}$ and $t_n = \sum_{r=0}^n \frac{r}{n C_r}$, then $\frac{t_n}{S_n}$ is equal to [2004]
 - $\frac{2n-1}{2}$
 - $\frac{1}{2}n - 1$
 - $n - 1$
 - $\frac{1}{2}n$
- Let T_r be the r^{th} term of an A.P. whose first term is a and common difference is d . If for some positive integers $m, n, m \neq n, T_m = \frac{1}{n}$ and $T_n = \frac{1}{m}$, then $a - d$ equals [2004]
 - $\frac{1}{m} + \frac{1}{n}$
 - 1
 - $\frac{1}{mn}$
 - 0
- The sum of the first n terms of the series $1^2 + 2 \cdot 2^2 + 3^2 + 2 \cdot 4^2 + 5^2 + 2 \cdot 6^2 + \dots$ is $\frac{n(n+1)^2}{2}$ when n is even. When n is odd the sum is [2004]
 - $\left[\frac{n(n+1)}{2} \right]^2$
 - $\frac{n^2(n+1)}{2}$
 - $\frac{n(n+1)^2}{4}$
 - $\frac{3n(n+1)}{2}$
- The sum of series $\frac{1}{2!} + \frac{1}{4!} + \frac{1}{6!} + \dots$ is [2004]
 - $\frac{(e^2-2)}{n^2(n+1)}$
 - $\frac{e}{2}$
 - $\frac{n(n+1)^2}{2}$
 - $\frac{(e^2-1)}{2}$
- If the coefficients of $r^{th}, (r+1)^{th}$, and $(r+2)^{th}$ terms in the binomial expansion of $(1+y)^m$ are in A.P., then m and r satisfy the equation [2005]
 - $m^2 - m(4r-1) + 4r^2 - 2 = 0$
 - $m^2 - m(4r+1) + 4r^2 + 2 = 0$
 - $m^2 - m(4r+1) + 4r^2 - 2 = 0$
 - $m^2 - m(4r-1) + 4r^2 + 2 = 0$
- If $x = \sum_{n=0}^{\infty} a^n, y = \sum_{n=0}^{\infty} b^n, z = \sum_{n=0}^{\infty} c^n$ where a, b, c are in A.P and $|a| < 1, |b| < 1, |c| < 1$ then x, y, z are in [2005]
 - G.P.
 - A.P.
 - Arithmetic - Geometric Progression
 - H.P.
- The sum of the series $1 + \frac{1}{4 \cdot 2!} + \frac{1}{16 \cdot 4!} + \frac{1}{64 \cdot 6!} + \dots \infty$ is [2005]

$$(a) \frac{e-1}{\sqrt{e}}$$

$$(b) \frac{e+1}{\sqrt{e}}$$

$$(c) \frac{e-1}{2\sqrt{e}}$$

$$(d) \frac{e+1}{2\sqrt{e}}$$

15. Let $a_1, a_2, a_3 \dots$ be terms on A.P. If $\frac{a_1+a_2+\dots+a_p}{a_1+a_2+\dots+a_q} = \frac{p^2}{q^2}, p \neq q$, then $\frac{a_6}{a_{21}}$ equals [2006]

$$(a) \frac{41}{11}$$

$$(b) \frac{7}{2}$$

$$(c) \frac{2}{7}$$

$$(d) \frac{11}{41}$$