MATHS

BOOKS - CENGAGE MATHS (HINGLISH)

BINOMIAL THEORM

Question Bank

1. Let P be the 7^{th} term from the beginning and Q be the 7^{th} term from the end in the expansion of $\left(\left(\sqrt[3]{3}+\frac{1}{\sqrt[3]{4}}\right)^{n}\right.$ where $n \in N$. If $12P = Q$, then find the value of n.

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2. In the expansion of $(2-3x)^{19}$ if r^{th} term has algebrically least cocfficient then r is

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3. The value of $\sum_{0 \le I \le j \le 5} \sum \left({}^{5}C_{j}\right)\left({}^{j}C_{i}\right)$ is equal to

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4. Let coefficient of x^2 and x^3 in the expansion of $(3+ax)^9$ are equal. If a lies between the roots of the equation $49x^2+7px-9=0$, then the range of p is $(-\infty, -\lambda)$. Find the value of λ.

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5. The sum of the series

$$\frac{\binom{101}{1}C_1}{\binom{101}{0}C_0} + \frac{2.\binom{101}{2}C_2}{\binom{101}{1}C_1} + 3.\frac{\binom{101}{3}C_3}{\binom{101}{2}C_2} \text{ equals}$$

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6. Number of terms in the expansion of $\left(\frac{x^1}{3} + \frac{x^2}{5}\right)^{40}$ with integral power of x is equal to

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7. If fifth term is numcrically greatest term in expansion of $\left(5 + \frac{x}{2}\right)^{11}$ then total number of possible integral values of x is

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8. If $N = \left(6 + \sqrt{34}\right)^7$, then digit at unit's place of $(N(1 - \{N\}))^{10}$, (where . denotes tional part function), is equal to

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9. If $\overset{6}{undercet}(6)\ C + \overset{7}{undercet}(6)\ C + \overset{8}{undercet}(6)\ C + \ldots\ldots\ldots + \underset{6}{\overset{13}{C}} = \overset{m}{un}$ (where $m < 20$) then the value of (m-r) is equal to .

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10. If $T = \sum_{r=1}^{18} \frac{(-1)^{r-1}.\, r^{18}.\, Overset(18)C_r}{r+1}$ then ((1)/(T)-10)` equal to

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11. If $T = \sum_{k=2006}^{2013} \underset{2006}{\overset{k}{C}}$ simplifies $\underset{p}{\overset{n}{C}}$ where o is prime, then (n+p) is

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12. If $\left(7+x+x^2\right)^{25}=a_0+a_1x+a_1x^2+\ldots.+a_{50+x^{50},thenl*digitof}$ (a_0+a_1+a_2+.....+a_(50))` is

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13. Let number of dissimilar terms in the expansion of $(x+y+z)^{25}$ is $\underset{u}{\lambda}$, then $|\lambda-u|$ is (where $u>5$).

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14. Coefficient of t^{12} in $\left(1+t^2\right)^6\left(1+t^6\right)\left(1+t^{12}\right)$ is

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15. Coefficient of $x_1^{12}\in\left(1+x^3\right)^5\left(1+x^4\right)^8\left(1+x^5\right)^{11}$ is

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16. If l, m, n are in A.P., then the sum of coefficients of $\left(1+\left(lx^2-2m\ldots x+n\right)^{2014}\right)^{2015}$ when expanded in powers of x is

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17. If

1((2014),(1)) ((2013),(2013)) + 2 ((2014),(2)) ((2013)(2012)) + 3((2014),(3)) ((2013),(2011)) +.....2014((2014),(2014)) ((2013),(0)) = 2014(overcset(4026)underset(lambda)\C)$then\sum ofalldigitsof$lambda` is.

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18. Number of terms containing integral powers of ' x ' is expansion of $\left(1+2\sqrt{x}\right)^{40}$ is

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19. Let (1+x^2)^2(1+x)^n=A_0+A_1 x+A_2 x^2+.... If A_0, A_1, A_2 ares in A.P. then the value of n is

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20. If the second term of the expansion $\left[\frac{a^1}{13}+\frac{a}{\sqrt{a^{-1}}}\right\}^n$ is $14\frac{a^5}{2}$ then the value of $\overset{n}{\underset{3}{C}}$overset(n)underset(2) \C`

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21. The sum of the roots (real or complex) of the equation $x^{2001}+\left(\frac{1}{2}-x\right)^{2001}=0$ is

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22. The last two digits of the number 3^{400} are

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23. Sum of all the rational terms in the expansion of $\left(\frac{3^1}{4}+\frac{4^1}{3}\right)^2$, is

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24. The sum of rational terms in the binomial expansion of $\left(\sqrt{2}+\sqrt[3]{5}\right)^{10}$ is

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25. If $1+x^4+x^5=\sum_{I=0}^{5} a_i(1+x)^i$, for all $x \in R$, then absolute value of a_2 is equal to

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26. If the coefficient of x^{100} in $1+(1+x)+(1+x)^2$ .....+(1+x)^n ,(n ge 100)is overset(201) C_(101), $then$n` is equal to

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27. The digit at unit place in the coefficient of x^{50} in the product $(1-x)^{50}\left(1-(1-x)^2\right)^{50}$ is

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28. The total number of terms in the product $\left({}^{101}C_0-{}^{101}C_1x+{}^{101}C_2x^2-\ldots\ldots\ldots Overset(101)C_{101}x^{101}\right)\left(1+x+x^2+\ldots\right.$

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29. If the constant term in the binomial expansion of $\left(x^2-\frac{1}{x}\right)^n, n \in N$ is 15 then the value of n is equal to

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30. Consider a sequence of 1001 terms as $\frac{{}^{1001}C_0}{1.2.3.4}, \frac{{}^{1001}C_1}{2.3.4.5}, \frac{{}^{100}C_2}{3.4.5.6}, \ldots \frac{{}^{1001}C_{1000}}{1001.1002.1003.1004}$ If n^{th} term is greatest term of sequence then n is equal to-

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31. Coefficient of x^6 in $(1+x)\left(1+x^2\right)^2\left(1+x^3\right)^3 \ldots (1+x^n)^n$ is

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