AUSTIN GROUP EDUCATORS

CET-MATHEMATICS:

MATHEMATICAL INDUCTION, PERMUTATIONS & COMBINATIONS, BINOMIAL THEOREM

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CET-2002 1. Let $n \geq 5$ and $b \neq 0$. In the binomial expansion of $(a-b)^n$, the sum of the 5^{th} and 6^{th} terms is zero then a/b equals:

(a) $\frac{5}{n-4}$ (b) $\frac{1}{5(n-4)}$ (c) $\frac{n-5}{6}$ (d) $\frac{n-4}{5}$

CET-2002 2. How many nine digit numbers can be formed using the digits 2,2,3,3,5,5,8,8,8 so that the odd digits occupy even positions:

(a) 180 (b) 7560 (c) 60 (d) 16

CET-2002 3. There are n points in a plane of which p points are collinear. How many lines can be formed from these points:

(a) ${}^nC_2 - {}^pC_2$ (b) ${}^nC_2 - {}^pC_2 + 1$ (c) ${}^nC_2 - {}^pC_2 - 1$ (d) ${}^{n-p}C_2$

CET-2003 4. The number of words that can be formed out of the letters of the word "ARTICLE"so that the vowels occupy even places is:

(a) 574 (b) 36 (c) 754 (d) 144

CET-2003 5. The coefficient of x^{32} in the expansion of $\left(x^4 - \frac{1}{x^3}\right)^{15}$ is:

(a) ${}^{-15}C_3$ (b) ${}^{15}C_4$ (c) ${}^{-15}C_5$ (d) ${}^{15}C_2$

CET-2004 6. How many numbers of 6 digits can be formed from the digits of the number 112233?

(a) 30 (b) 60 (c) 90 (d) 120

CET-2005 7. If ${}^nC_{12} = {}^nC_6$, then ${}^nC_2$=

(a) 72 (b) 153 (c) 306 (d) 2556

CET-2005 8. The middle term in the expansion of $\left(x - \frac{1}{x}\right)^{18}$ is:

(a) ${}^{18}C_9$ (b) $-{}^{18}C_9$ (c) ${}^{18}C_{10}$ (d) $-{}^{18}C_{10}$

CET-2007 9. The ninth term of the expansion of $\left(3x - \frac{1}{2x}\right)^8$ is:

(a) $\frac{1}{512 \cdot x^9}$ (b) $\frac{-1}{512 \cdot x^9}$ (c) $\frac{-1}{512 \cdot x^8}$ (d) $\frac{1}{512 \cdot x^8}$

CET-2009 10. If n is a positive integer, then $n^3 + 2n$ is divisible by

(a) 2 (b) 6 (c) 15 (d) 3

CET-2009 11. The total number of terms in the expansion of $(x+y)^{100} + (x-y)^{100}$ after simplification is

(a) 51 (b) 202 (c) 100 (d) 50

CET-2010 12. In the binomial expansion of $(1+x)^{15}$, the coefficient of x^r and x^{r+3} are equal. Then, r is:

(a) 8 (b) 7 (c) 4 (d) 6

CET-2011 13. If r^{th} and $(r+1)^{\text{th}}$ terms in the expansion of $(p+q)^n$ are equal, then $\dfrac{(n+1)q}{r(p+q)}$ is:

(a) 0 (b) 1 (c) 1/4 (d) 1/2

CET-2012 14. The 13^{th} term in the expansion of $\left(x^2 + \dfrac{2}{x}\right)^n$ is independent of x, then the sum of the divisors of n is:

(a) 36 (b) 37 (c) 38 (d) 39

CET-2012 15. The value of ${}^{10}C_1 + {}^{10}C_2 + {}^{10}C_3 + \cdots + {}^{10}C_9$ is:

(a) 2^{10} (b) 2^{11} (c) $2^{10} - 2$ (d) $2^{10} - 1$

CET-2014 16. How many 5 digit telephone numbers can be constructed using the digits 0 to 9, if each number starts with 67 and no digit appears more than once?

(a) 335 (b) 336 (c) 338 (d) 337

CET-2014 17. If 21^{st} and 22^{nd} terms in the expansion of $(1+x)^{44}$ are equal, then x is equal to:

(a) 8/7 (b) 21/22 (c) 7/8 (d) 23/24

CET-2015 18. The middle term in the expansion of $\left(\dfrac{10}{x} + \dfrac{x}{10}\right)^{10}$ is:

(a) ${}^9C_5$ (b) ${}^7C_5$ (c) ${}^{10}C_5$ (d) ${}^8C_5$

CET-2016 19. The 11^{th} term in the expansion of $\left(x + \dfrac{1}{\sqrt{x}}\right)^{14}$ is:

(a) $\dfrac{999}{x}$ (b) $\dfrac{1001}{x}$ (c) i (d) $\dfrac{x}{1001}$