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CLASS XI – MATHEMATICS

BINOMIAL THEOREM

1	The term independent of x in the expansion of $\left(\frac{x+1}{x^{2/3}-x^{1/3}+1}-\frac{x-1}{x-x^{1/2}}\right)$ is			
	4	120	210	310
2	Coefficient of x^{11} in the expansion of $(1+x^2)^4(1+x^3)^7(1+x^4)^{12}$ is			
	1051	1106	1113	1120
3	The sum of coefficients of integral powers of x in the expansion of $(1-2\sqrt{x})^{50}$ is			
	$\frac{1}{2}(3^{50}+1)$	$\frac{1}{2}(3^{50})$	$\frac{1}{2}(3^{50}-1)$	$\frac{1}{2}(2^{50}+1)$
4	If $C(n-1,r)=(K^2-3)C(n,r+1)$, then K ϵ			
	$(-\infty,2]$	$[2,\infty)$	$(-\sqrt{3},\sqrt{3})$	$(\sqrt{3},2]$
5	$(C_0^{30})(C_{10}^{30})-(C_1^{30})(C_{11}^{30})+\cdots+(C_{20}^{30})(C_{30}^{30})=$			
	C_{11}^{30}	C_{10}^{60}	C_{10}^{30}	C_{55}^{65}
6	Prove that the coefficient of x^6 in the expansion of $(1+4x^2+10x^4+20x^6)^{\frac{-3}{4}}$ is -1.			
7	Prove that : $\sqrt{8}=1+\frac{3}{4}+\frac{3}{4}\frac{5}{8}+\frac{3.5.7}{4.8.12}+\cdots$			
8	If the expansion of $(1+x+x^2)^n$ be $a_0+a_1x+a_2x^2+\cdots+a_{2n}x^{2n}$,then show that $a_0+a_3+a_6+\cdots=a_1+a_4+a_7+\cdots=a_2+a_5+a_8+\cdots=3^{n-1}$			
9	Prove that approximately , when x is very small, then $\frac{3\left(x+\frac{4}{9}\right)^{\frac{1}{2}}\left(1-\frac{3}{4}x^2\right)^{\frac{1}{3}}}{2\left(1+\frac{9}{16}x\right)^2}=1-\frac{307}{256}x^2$			
10	If $C_0, C_1, C_2, \ldots C_n$ denotes the coefficients in the expansion of $(1+x)^n$, then prove that 1) $C_0+\frac{C_1}{2}+\frac{C_2}{3}+\cdots+\frac{C_n}{n+1}=\frac{2^{2n+1}-1}{n+1}$ 2)$(C_0+C_1)(C_1+C_2)\ldots(C_{n-1}+C_n)=\frac{C_0C_1C_2C_3\ldots C_n(n+1)^n}{n!}$ 3)$2C_0+2^2\frac{C_1}{2}+2^3\frac{C_2}{3}+\cdots 2^{n+1}\frac{C_n}{n+1}=\frac{3^{n+1}-1}{n+1}$ 4)$C_0C_r+C_1C_{r+1}+C_2C_{r+2}+\cdots+C_{n-r}C_n=\frac{2n!}{(n-r)!(n+r)!}$			

PERMUTATION AND COMBINATION

1	The number of diagonals that can be formed by a polynomial of 100 sides is			
	4950	4850	5000	10000
2	If out of p + q + r things p are alike,q are alike and r are alike, then the number of arrangements equals			
	$\frac{(p+q+r)!}{p!\,q!}$	(p+1)(q+1)r-1	$2^{p+q}+2^{r}-1$	(p+q+1)(r+1)-1
3	Total number of 9 digit numbers which have all different digits			
	$10!$	$9!$	$9.9!$	$10.10!$
4	Total number of seven digit numbers, the sum of whose digits is even, is			
	9000000	4500000	810000	None of these
5	Out of 8 sailors on a boat, 3 can work only on one side and 2 can only on the other side. The number of ways the sailors can be arranged on the boat is			
	1700	1720	1728	1736
6	A set contains (2n+1) elements. If the number of subsets of this set which contain atmost n elements is 4096, then the value of n is			
	6	15	21	None of these
7	The number of numbers between 1 to 10^{10} which contain the digit 1 is			
	9^{10}	$10^{10}-9^{10}-1$	$10^{10}-9^{10}$	None of these
8	The number of positive integers which can be formed by using each digit not more than once in each number is			
	1200	1500	1600	1630
9	Passengers are to travel by a double decked bus which can accommodate 13 in upper deck and 7 in lower deck. The number of ways that they can be distributed if 5 refuse to sit in the upper deck and 8 refuse to sit in the lower deck is			
	25	21	18	15
10	There are (n+1) white balls and (n+1) black balls each set number 1 to n+1. The number of ways the balls can be arranged in a row so that the adjacent balls are of different colours, is			
	$[(n+1)!]^2$	$2(2n)!$	$2[(n+1)!]$	$2[(n+1)!]^2$