Permutation & Combination

Date Planned : __ / __ / __	Daily Tutorial Sheet - 1	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	JEE Archive	Exact Duration :_____

1. The number of integers greater than 6000 that can be formed using the digits 3, 5, 6, 7 and 8 without repetition is: **(2015 Main)**

(A) 216 **(B)** 192 **(C)** 120 **(D)** 72

2. How many different nine-digit numbers can be formed from the number 22 33 55 888 by rearranging its digits so that the odd digits occupy even positions? **(2000)**

(A) 16 **(B)** 36 **(C)** 60 **(D)** 180

3. An n-digit number is a positive number with exactly n digits. Nine hundred distinct n-digit numbers are to be formed using only the three digits 2, 5 and 7. The smallest value of n for which this is possible, is: **(1998)**

(A) 6 **(B)** 7 **(C)** 8 **(D)** 9

4. In a college of 300 students, every student reads 5 newspapers and every newspaper is read by 60 students. The number of newspapers is: **(1998)**

(A) atleast 30 **(B)** atmost 20 **(C)** exactly 25 **(D)** None of these

5. Eight chairs are numbered 1 to 8. Two women and three men wish to occupy one chair each. First the women choose the chairs from amongst the chairs marked 1 to 4 and then the men select the chairs from amongst the remaining. The number of possible arrangements is: **(1982)**

(A) ${}^6C_3 \times {}^4C_2$ **(B)** ${}^4P_2 \times {}^4P_3$ **(C)** ${}^4C_2 + {}^4P_3$ **(D)** None of these

6. Ten different letters of an alphabet are given. Words with five letters are formed from these given letters. Then, the number of words which have at least one letter repeated, is: **(1980)**

(A) 69760 **(B)** 30240 **(C)** 99748 **(D)** None of these

7. Let T_n be the number of all possible triangles formed by joining vertices of an n-sided regular polygon. If $T_{n+1} - T_n = 10$, then the value of n is: **(2013 Main)**

(A) 7 **(B)** 5 **(C)** 10 **(D)** 8

8. The value of the expression ${}^{47}C_4 + \sum_{j=1}^{5} {}^{52-j}C_3$ is: **(1980)**

(A) ${}^{47}C_5$ **(B)** ${}^{52}C_5$ **(C)** ${}^{52}C_4$ **(D)** None of these

9. Prove that the product of any r consecutive natural numbers is always divisible by $r!$. **(1985)**

10. The letters of the word COCHIN are permuted, and all the permutations are arranged in an alphabetical order as in an English dictionary. The number of words that appear before the word COCHIN, is:

(A) 360 **(B)** 192 **(C)** 96 **(D)** 48 **(2007)**

11. The number of arrangements of the letters of the word BANANA in which the two N's do not appear adjacently, is: **(2002)**

(A) 40 **(B)** 60 **(C)** 80 **(D)** 100

12. Number of divisors of the form $(4n+2), n \geq 0$ of the integer 240 is: **(1998)**

(A) 4 **(B)** 8 **(C)** 10 **(D)** 3