Date Planned : __ / __ / __	Daily Tutorial Sheet - 10	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level - 2	Exact Duration :_________

***186.** The number of ways in which 5 different prizes can be distributed amongst 4 persons if each is entitled to receive at most 4 prizes is:

(A) 1020 **(B)** 620 **(C)** $5^4 - 5$ **(D)** $4^5 - 4$

***187.** A letter lock consists of 3 rings marked with 15 different letters. If N denotes the number of ways in which it is possible to make unsuccessful attempts to open the lock, then:

(A) 482 divides N **(B)** N is product of 3 distinct prime numbers
(C) N is product of 4 distinct prime numbers **(D)** N is product of 2 distinct prime numbers

***188.** The number of zeroes at end of $\underline{|70}$ is equal to:

(A) The number of 6-digit numbers formed using all the digits 1, 2, 3, 4, 5, 6 divided by ${}^{10}C_2$
(B) The number of 6- digit numbers formed using all the digits 1, 2, 3, 4, 5, 6 divided by 10.
(C) Twice the number of 4-digit numbers formed using 4 of the digits 1, 2, 3, 4, 5, 6 divided by ${}^{10}C_2$
(D) The number of 4- digit numbers formed using 4 of the digits 1, 2, 3, 4, 5, 6 divided by 5

189. There are three papers of 100 marks each in an examination. Then the no. of ways can a student get 150 marks such that he gets atleast 60% in two papers:

(A) ${}^3C_2 \times {}^{32}C_2$ **(B)** ${}^4C_3 \times {}^{32}C_2$ **(C)** ${}^4C_3 \times {}^{36}C_2$ **(D)** ${}^4C_3 \times {}^{36}C_3$

***190.** X is a set containing n elements. A subset P_1 is chosen at random and then set X is reconstructed by replacing the elements of set P_1. A subset P_2 of X is now chosen at random and again set X is reconstructed by replacing the elements of P_2. This process is continued to choose subsets P_3, P_4, P_5.... P_m where $m \geq 2$, then the number of ways to select sets such that:

(i) $P_i \cap P_j = \phi$ for $i \neq j$ and $i, j = 1, 2 \ldots m.$ **(ii)** $P_1 \cap P_2 \cap P_3 \ldots \cap P_m = \phi$

***191.** 10 different toys are to be distributed among 10 children. Total number of ways of distributing these toys so that exactly 2 children do not get any toy, is equal to:

(A) $(10!)^2\left(\frac{1}{3!\,2!\,7!}+\frac{1}{(2!)^5\,6!}\right)$ **(B)** $(10!)^2\left(\frac{1}{3!\,2!\,7!}+\frac{1}{(2!)^4\,6!}\right)$

(C) $(10!)^2\left(\frac{1}{3!\,7!}+\frac{1}{(2!)^5\,6!}\right)$ **(D)** $(10!)^2\left(\frac{1}{3!\,7!}+\frac{1}{(2!)^4\,6!}\right)$

192. Identify following statements for True (**T**) and False (**F**):

S_1: An old man while dialing a 7-digit telephone number remembers that the first four digits consist of one 1's, one 2's and two 3's. He also remembers that the fifth digit is either a 4 or 5 while has no memory of the sixth digit, he remembers that the seventh digit is 9 minus the sixth digit. Maximum number of distinct trials he has to try to make sure that he dials the correct telephone number, is 240.
S_2: A woman has 11 close friends. The number of ways in which she can invite 5 of them to dinner, if two of them are not on speaking terms and will not attend together is 378.
S_3: 10 IIT and 2 PET students sit in a row. If the total number of ways in which exactly 3 IIT students sit between 2 PET students is $\lambda \times 10!$, then λ is 6.
Which of the following choice is correct?

(A) TTT **(B)** TTF **(C)** TFF **(D)** FTF

193. There are 10 stations on a circular path. A train has to stop at 4 stations such that no two stations are adjacent. The number of such selections must be:

(A) 25 **(B)** 35 **(C)** 210 **(D)** 50

194. Number of ways of arranging 12 boys and 12 girls are as follows:

a_1 = a line such that boys and girls sit alternatively.

a_2 = around a circular table alternatively.

a_3 = around an equilateral triangular table alternatively and eight on each side.

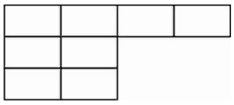
a_4 = around a square table alternatively and six on each side.

(For a_3 and a_4 on a corner if on one side, it's a boy then on the other side it should be a girl to maintain alternation). Which of the following is true?

(A) $a_1 > a_2 > a_3 > a_4$ **(B)** $a_4 > a_3 > a_2 > a_1$

(C) $a_1 > a_3 > a_4 > a_2$ **(D)** $a_1 > a_4 > a_3 > a_2$

195. The number of different ways the letters of the word VECTOR can be placed in 8 boxes given below such that no row empty is equal to:



(A) 26 **(B)** 26 × 6! **(C)** 6! **(D)** 2! × 6!

***196.** A man has to move 9 steps. He can move in 4 directions: left, right, forward, backward. In how many ways he can move 9 steps such that he finishes his journey one step away (either left or right or forward or backward) from the starting position?

(A) $\left({}^{10}C_5\right)^2$ **(B)** $4\times\left({}^{9}C_4\right)^2$ **(C)** $\left({}^{9}C_4\right)^2$ **(D)** $4\times\left({}^{10}C_5\right)^2$

197. How many integral solutions are there to the system of equations $x_1 + x_2 + x_3 + x_4 + x_5 = 20$ and $x_1 + x_2 + x_3 = 5$ when $x_k \ge 0$?

(A) 334 **(B)** 336 **(C)** 332 **(D)** 338

198. Three girls and nine boys need to be seated in two vans, each having numbered seats, 3 in the front and 4 at the back. How many seating arrangements are possible if 3 girls should sit together in a back row on adjacent seats?

(A) 12! **(B)** $2\times 12!$ **(C)** $2\times 10!$ **(D)** $2\times 9!$

199. If n_1 and n_2 are five- digit numbers, the total number of ways of forming n_1 and n_2 so that these numbers can be added without carrying at any stage is:

(A) $45(55)^4$ **(B)** $38(55)^4$ **(C)** $36(55)^4$ **(D)** $40(55)^4$

200. Number of sub parts into which 'n' straight lines in a plane can divide it is:

(A) $\frac{n^2+n+2}{2}$ **(B)** $\frac{n^2+n+4}{2}$ **(C)** $\frac{n^2+n+6}{2}$ **(D)** None of these