Date Planned : __ / __ / __	Daily Tutorial Sheet - 8	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level - 2	Exact Duration :________

156. The number of ways in which a mixed doubles tennis game can be arranged from 9 married couples:

(A) 3024 **(B)** 1512 **(C)** 2592 **(D)** 6048

157. If n dice are rolled, then number of possible outcomes is:

(A) 6^n **(B)** $\frac{6^n}{n!}$ **(C)** ${}^{(n+5)}C_5$ **(D)** None of these

***158.** Number of ways in which 3 different numbers in A.P. can be selected from 1, 2, 3, ... n is:

(A) $\frac{(n-2)(n-4)}{4}$, if n is even **(B)** $\frac{n^2-4n+5}{2}$, if n is odd

(C) $\frac{(n-1)^2}{4}$, if n is odd **(D)** $\frac{n(n-2)}{4}$, if n is even

***159.** The number of non-negative integral solutions of $x_1 + x_2 + x_3 + x_4 \le n$ (where n is a positive integer) is:

(A) ${}^{n+3}C_3$ **(B)** ${}^{n+4}C_4$ **(C)** ${}^{n+5}C_5$ **(D)** ${}^{n+4}C_n$

***160.** There are 10 questions, each question is either True or False. Number of different sequences of not all correct answers is also equal to:

(A) Number of ways in which a normal coin tossed 10 times would fall in a definite order if both Heads and Tails are present.

(B) Number of ways in which a multiple-choice question containing 10 alternatives with one or more than one correct alternatives, can be attempted

(C) Number of ways in which it is possible to draw coins from 10 coins of different denominations taken some or all at a time.

(D) Number of different selections of 10 indistinguishable things taken some or all at a time.

***161.** The continued product, 2. 6. 10. 14.... to n factors is equal to:

(A) ${}^{2n}C_n$ **(B)** ${}^{2n}P_n$

(C) $(n + 1)(n + 2)(n + 3)....(n + n)$ **(D)** None of these

***162.** The combinatorial coefficient ${}^{n-1}C_p$ denotes:

(A) The number of ways in which n things of which p are alike and rest different can be arranged in a circle

(B) The number of ways in which p different things can be selected out of n different thing if a particular thing is always excluded

(C) Number of ways in which n alike balls can be distributed in p different boxes so that no box remains empty and each box can hold any number of balls

(D) The number of ways in which $(n - 2)$ white balls and p black balls can be arranged in a line if no two black balls are together, balls are all alike except for the colour

***163.** Which of the following statements are correct?

(A) Number of 6 letter words that can be formed using letters of the word "CENTRIFUGAL" if each word must contain all the vowels is 3.7!

(B) There are 15 balls of which some are white and the rest black. If the number of ways in which the balls can be arranged in row, is maximum then the number of white balls must be equal to 7 or 8. Assume balls of the same colour to be alike.

(C) There are 12 things, 4 alike of one kind, 5 alike and of another kind and the rest are all different. The total number of combinations is 240.

(D) Number of selections that can be made of 6 letters from the word "COMMITIEE" is 35.

***164.** If $P = n\left(n^2-1^2\right)\left(n^2-2^2\right)\left(n^2-3^2\right)....\left(n^2-r^2\right)$, $n > r$, $n \in N$, then P is divisible by:

(A) $(2r+2)!$ **(B)** $(2r-1)!$ **(C)** $(2r+1)!$ **(D)** None of these

***165.** Let n be a positive integer with $f(n) = 1!+2!+3!+....+n!$ and $P(x), Q(x)$ be polynomials in x such that $f(n+2) = P(n)f(n+1)+Q(n)f(n)$ for all $n \ge 1$. Then:

(A) $P(x) = x+3$ **(B)** $Q(x) = -x-2$ **(C)** $P(x) = -x-2$ **(D)** $Q(x) = x+3$

***166.** Consider seven-digit number $x_1x_2....x_7$, where $x_1, x_2, ..., x_7 \ne 0$ having the property that x_4 is the greatest digit and digits towards the left and right of x_4 are in decreasing order (from left to right). Then total number of such numbers in which all digits are distinct is:

(A) ${}^9C_7.{}^6C_3$ **(B)** ${}^9C_6.{}^5C_3$ **(C)** ${}^{10}C_7.{}^6C_3$ **(D)** ${}^9C_2.{}^6C_3$

***167.** A woman has 11 close friends. 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:

(A) ${}^{11}C_5 - {}^9C_3$ **(B)** ${}^9C_5 + 2\,{}^9C_4$ **(C)** $3\,{}^9C_4$ **(D)** 378

***168.** On the normal chess board I_1 and I_2 are two insects which start moving towards each other. I_1 starts from extreme left bottom and I_2 starts from extreme right top. Each insect moves with the same constant speed. Insect I_1 can move only to the right or upward along the lines while the insect I_2 can move only to the left or downward along the lines of the chess board. The total number of ways the two insects can meet at same point during their trip is:

(A) $\left(\frac{9}{8}\right)\left(\frac{10}{7}\right)\left(\frac{11}{6}\right)\left(\frac{12}{5}\right)\left(\frac{13}{4}\right)\left(\frac{14}{3}\right)\left(\frac{15}{2}\right)\left(\frac{16}{1}\right)$ **(B)** $2^8\left(\frac{1}{1}\right)\left(\frac{3}{2}\right)\left(\frac{5}{3}\right)\left(\frac{7}{4}\right)\left(\frac{9}{5}\right)\left(\frac{11}{6}\right)\left(\frac{13}{7}\right)\left(\frac{15}{8}\right)$

(C) $\left(\frac{2}{1}\right)\left(\frac{6}{2}\right)\left(\frac{10}{3}\right)\left(\frac{14}{4}\right)\left(\frac{18}{5}\right)\left(\frac{22}{6}\right)\left(\frac{26}{7}\right)\left(\frac{30}{8}\right)$ **(D)** ${}^{16}C_8$

***169.** There are 12 points in a plane of which 5 are collinear. The maximum number of distinct quadrilaterals which can be formed with vertices at these points is:

(A) $2.{}^7P_3$ **(B)** ${}^7P_3$ **(C)** $10.{}^7C_3$ **(D)** 420

***170.** There are 10 seats in the first row of a theatre of which 4 are to be occupied. The number of ways of arranging 4 persons so that no two persons sit side by side is:

(A) ${}^7C_4$ **(B)** $4.{}^7P_3$ **(C)** ${}^7C_3.4!$ **(D)** 840