Date Planned : __ / __ / __	Daily Tutorial Sheet - 9	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level - 2	Exact Duration :________

***171.** A man is at the origin on the x-axis and takes a unit step either to the left or the right. He stops after 5 steps or if he reaches 3 or -2. Number of ways in which he:

(A) Reaches -2 is 3 **(B)** reaches 3 is 4

(C) Stops exactly after taking 5 steps is 12 **(D)** can perform the experiment is 20

***172.** For the equation $x+y+z+w=19$, the number of positive integral solutions is equal to:

(A) The number of ways in which 15 identical things can be distributed among 4 persons.

(B) The number of ways in which 19 identical things can be distributed among 4 persons.

(C) Coefficient of x^{19} in $\left(x^0+x^1+x^2+.+x^{19}\right)^4$

(D) Coefficient of x^{19} in $\left(x+x^2+x^3+....+x^{19}\right)^4$

***173.** The number of non-negative integer solutions of $x+y+z+w=10$ must be same as:

(A) Number of ways of distributing 10 identical objects in four distinct boxes

(B) Number of selections of 10 objects from a lot containing four varieties of objects

(C) Number of selections of four objects from a lot containing 10 distinct objects

(D) Number of results of a 10-match series between two countries if a match ends either in a win or loss or a draw

***174.** 10 persons are to be arranged in a circular fashion so that in no two arrangements all the persons have same neighbours. The number of ways of doing so is equal to:

(A) Number of ways of arranging 10 people around a circular table divided by 2

(B) Number of different garlands that can be formed using 10 different flowers.

(C) Number of different necklaces that can be formed using 10 different beads

(D) Number of different garlands that can be formed using 10 identical flowers.

***175.** The Number of ways in which five different books to be distributed among 3 persons so that each person gets at least one book, is equal to the number of ways in which?

(A) 5 persons are allotted 3 different residential flats so that each person is allotted at most one flat and no two persons are allotted the same flat

(B) Number of parallelograms (some of which may be overlapping) formed by one set of 6 parallel lines and other set of 5 parallel lines that goes in other direction

(C) 5 different toys are to be distributed among 3 children, so that each child gets at least one toy

(D) 3 mathematics professors are assigned five different lectures to be delivered, so that each professor gets at least one lecture

***176.** Number of ways in which the letters of the word 'B U L B U L' can be arranged in a line in any order is also equal to the:

(A) Number of ways in which 2 alike Apples and 4 alike Mangoes can be distributed in 3 children so that each child receives any number of fruits.

(B) Number of ways in which 6 different books can be tied up into 3 bundles, if each bundle is to have equal number of books.

(C) Coefficient of $x^2y^2z^2$ in the expansion of $(x+y+z)^6$

(D) Number of ways in which 6 different prizes can be distributed equally in three children.

***177.** Number of ways in which 200 people can be divided in 100 couples is:

(A) $\frac{(200)!}{2^{100}(100)!}$ **(B)** $1\times3\times5\times...\times199$ **(C)** $\binom{101}{2}\binom{102}{2}...\binom{200}{2}$ **(D)** $\frac{(200)!}{(100)!}$

***178.** If letters of the word "THING" are arranged in all possible manner and words thus formed are written in dictionary order. If K is the number of words lying between "NIGHT" and "THING" (both exclusive) in that dictionary, then:

(A) Number of zeros at the end of $K!$ is 4

(B) Number of divisors of K is 6

(C) Number of integral coordinates (both abscissa and ordinate integer) lying strictly inside triangle formed by $y=0$, $x=0$, $x+y=K$ is 171

(D) K does not divide number of words in that dictionary

***179.** You are given 8 balls of different colours (black, white, ...). The number of ways in which these balls can be arranged in a row so that the two balls of particular colour (say red and white) may never come together is:

(A) $8!-2.7!$ **(B)** $6.7!$ **(C)** $2.6!\,{}^7C_2$ **(D)** None of these

***180.** Hermione has 10 friends among whom two are married to each other. She wishes to invite five of them for a party. If the married couples refuse to attend separately, then the number of different ways in which she can invite five friends is:

(A) ${}^8C_5$ **(B)** $2\times{}^8C_3$ **(C)** ${}^{10}C_5-2\times{}^8C_4$ **(D)** None of these

***181.** Number of quadrilaterals which can be constructed by joining the vertices of a convex polygon of 20 sides if none of the sides of the polygon is also the side of the quadrilateral is:

(A) ${}^{17}C_4-{}^{15}C_2$ **(B)** $\frac{{}^{15}C_3.20}{4}$ **(C)** 2275 **(D)** 2125

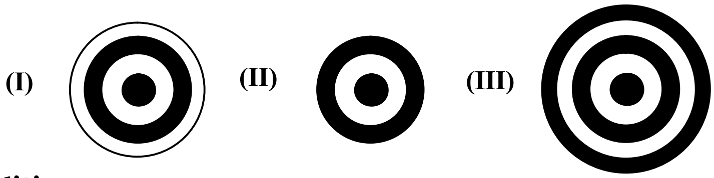
***182.** There are n married couples at a party. Each person shakes hand with every person other than their spouse. The total number of hand-shakes must be:

(A) ${}^{2n}C_2-n$ **(B)** ${}^{2n}C_2-(n-1)$ **(C)** $2n(n-1)$ **(D)** ${}^{2n}C_2$

***183.** The kindergarten teacher has 25 kids in her class. She takes 5 of them at a time, to zoological garden as often as she can, without taking the same 5 kids more than once. Then the number of visits, the teacher makes to the garden exceeds that of a kid by:

(A) ${}^{25}C_5 - {}^{24}C_4$ **(B)** ${}^{24}C_5$ **(C)** ${}^{25}C_5 - {}^{24}C_5$ **(D)** ${}^{24}C_4$

***184.** In a shooting competition, three targets are set as shown:



Condition:

Target (I) has four rings on which a person can hit in order from inside to outside.

Target (II) has three rings on which a person can hit in order from outside to inside.

Target (III) has five rings on which a person can hit in order from inside to outside.

The number of ways in which 12 shots (one at each ring) can be made:

[**Hint:** Any target can be chosen before not completing specific target but order of hit for a particular target should be as specified above in condition.]

(A) $\frac{12!}{4! \times 3! \times 5!}$ **(B)** $\frac{12!}{4! \times 3! \times 5!} \times 3!$ **(C)** ${}^{12}C_4 \; {}^{8}C_3 \; {}^{5}C_5$ **(D)** $12!$

***185.** The total number of words that can be made by writing the letters of the word PERMUTATION so that no vowel occupies any space between two consonants is:

(A) $\frac{|\underline{7}}{|\underline{2}} \times |\underline{5}$ **(B)** ${}^{7}C_2 \times (|\underline{5})^2$ **(C)** $\frac{|\underline{6}}{|\underline{2}} \times |\underline{6}$ **(D)** ${}^{6}C_4 \times |\underline{4} \times |\underline{6}$