**Permutation and Combination**

Q1 : In how many ways can 15 people be seated around two round tables with seating capacities of 7 and 8 people?

a. 15! / 8! b. 7! \* 8! c. 15C7 \* 6! \* 7! d. 2 \* 15C7 \* 6! \* 7!

Q2 : In how many ways can the letters of the word RAJEEV be rearranged such that all the vowels always appear together?

a. 6! / 2! b. 3! \* 3! c. 4! / 2! d. 4! \* 3! / 2!

Q3 : How many integers, greater than 999 but not greater than 7000, can be formed with the digits 0, 1, 2, 5 and 7, if repetition of digits is allowed?

a. 499 b. 501 c. 375 d. 376

Q4 : In how many rearrangements of the word RAJEEV is the letter 'A' positioned in middle of the 2 'E's?

a. 24 b. 72 c. 120 d. 240

Q5 : Consider the word MALAYALAM. Whichever way you read it, either from left to right or from right to left, you obtain the same word. Such words are known as **palindrome**. Find the maximum possible number of 5-letter palindromes.

a. 265 b. 526 c. 26C5 d. 263

Q6 : How many factors of 25 × 36 × 52 are perfect squares?

a. 20 b. 30 c. 24 d. 36

Q7 : In how many ways can a bird trainer arrange 5 pigeons and 4 parrots in a row so that no two pigeons are together?

a. 5! \* 4! b. 120 c. 625 d. 4! \* 5! \* 2!

Q8 : The letter of the word LABOUR are permuted in all possible ways and the words thus formed are arranged as in a dictionary. What is the rank of the word LABOUR?

a. 240 b. 241 c. 242 d. 243

Q9 : Naveen is positioned at the origin of the coordinate system. He can take steps of unit measure in any of the directions - North, East, West or South. Find the number of ways in which he can reach the point (5 , 6), covering the shortest possible distance.

a. 360 b. 400 c. 462 d. 362

Q10 : How many 5-digit positive integers exist such that their sum of digits is odd?

a. 30000 b. 36000 c. 45000 d. 60000

Q11 : How many natural numbers less than a lakh can be formed with the digits 0,6 and 9?

a. 242 b. 243 c. 728 d. 729

Q12 : There are five parts of HARRY POTTER SERIES numbered from 1 to 5 lying on the table. In how many ways can they be arranged, so that part-1 and part-3 are never together?

a. 72 b. 48 c. 120 d. 210

Q13 : Six gift packs are numbered 1, 2, 3, 4, 5 and 6. Each pack must contain either a white shirt or a red shirt. At least one packet must contain a black shirt and packets containing black shirts must be consecutively numbered. Calculate the total number of ways of arranging the gift packs.

a. 15 b. 20 c. 21 d. 36

Q14 : In a cricket match, if Faulkner can score 0,1,2,3, 4 or 6 runs off a ball, then find the distinct number of sequences in which he can score exactly 30 runs of an Ishant Sharma’s over of 6 balls of no extra runs or deliveries.

a. 86 b. 71 c. 56 d. 65

Q15 : There are 20 couples in a party. Every person greets every person except his or her own spouse. People of the same gender shake hands and those of opposite gender greet each other with a HELLO. What is the total number of handshakes and HELLOs in the party?

a. 760 b. 1140 c. 1520 d. 570

Q16 : There are five cards lying on the table in one row. Five numbers from among 1 to 100 have to be written on them, one number per card, such that the difference between the numbers on any two adjacent cards is not divisible by 4. The remainder when each of the 5 numbers is divided by 4 is written down on another card (the 6th card) in order. How many sequences can be written down on the 6th card?

a. 210 b. 210 \* 33 c. 4 \* 34 d. 42 \* 33

Q17 : From an employee pool of six men and four ladies, a committee of three is to be formed. If Mrs. X is not willing to join the committee in which Mr. Y is a member, whereas Mr. Y is willing to join the committee only if Mrs. Z is included; then how many such committees are possible?

a. 138 b. 128 c. 112 d. 91

Q18 : A 6x6 grid is cut from an 8x8 chessboard. In how many ways can we put two identical coins, one on the black square and one on a white square on the grid, such that they are not placed in the same row or in the same column?

a. 216 b. 324 c. 144 d. 108

Q19 : In a railway compartment, there are 2 rows of seats facing each other with accommodation for 5 in each, 4 wish to sit facing forward and 3 facing towards the rear while 3 others are indifferent. In how many ways can the 10 passengers be seated?

a. 12800 b. 43200 c. 28800 d. 25600

Q20 : There are 5 grandmasters, 8 professionals and 7 amateurs in a chess club. A group of 6 players will be chosen to compete in a competition. How many combinations of players are possible if the group is to consist of exactly 3 grandmasters?

a. 4550 b. 5650 c. 4440 d. 5520

Q21 : The Indian Cricket team consists of 16 players. It includes 2 wicket keepers and 5 bowlers. In how many ways can a cricket team of eleven players be selected, if we have to select 1 wicket keeper and at least 4 bowlers?

a. 1092 b. 840 c. 252 d. 126

Q22 : A question paper consists of 10 questions, divided into two parts A and B. Each part contains five questions. A candidate is required to attempt six questions in all of which at least 2 should be from part A and at least 2 from part B. In how many ways can the candidate select the questions if he can answer all questions equally well?

a. 50 b. 100 c. 150 d. 200

Q23 : Suppose 7 students are staying in a hall in a hostel and they are allotted 7 beds. Among them, Parvin does not want a bed next to Anju because Anju snores. Then, in how many ways can you allot the beds?

a. 3000 b. 3600 c. 4200 d. 4800

Q24 : A family consists of a grandfather, 5 sons and daughter and 8 grandchildren. They are to be seated in a row for dinner. The grandchildren wish to occupy the 4 seats at each end and the grandfather refuses to have a grandchild on either side of him. The number of ways in which the family can be made to sit is:

a. 21530 b. 8! \* 480 c. 8! \* 360 d. 8! \* 240

Q25 : How many times will the digit ‘7' be written when listing the integers from 1 to 1000?

a. 271 b. 300 c. 252 d. 304

Q26 : Sameer wants to buy a total of 100 fruits using exactly a sum of Rs 1000. He can buy mango at Rs 20 per unit, apple at Rs 5 per unit or banana at Re 1 per unit. If he has to buy at least one of each fruit and cannot buy any other type of fruits, then in how many distinct ways can he make his purchase?

a. 2 b. 3 c. 4 d. 5

Q27 : At the Pravasi Bhartiya meeting, 10 speakers including PM, MP, MLA and seven other speakers have to address the gathering. The only protocol that needs to be taken care of is that whenever they speak; the PM should speak before an MP and an MP will speak before an MLA. In how many ways can they address the meeting?

a. 10! b. 10! / 6! c. 10! / 6 d. 10! / (6! \* 4!)

Q28 : How many rectangles are there in the 8 \* 8 chessboard?

a. 1296 b. 2034 c. 888 d. 1024

Q29 : How many squares are there in the 6 \* 8 rectangular chessboards?

a. 91 b. 133 c. 204 d. 256

Q30 : The number of ways of arranging N students in a row such that no two boys sit together and no two girls sit together is M(M > 100). If one more student is added, then number of ways of arranging as above increases by 200%. The value of n is

a. 12 b. 8 c. 9 d. 10