P & C

PERMUTATION AND COMBINATION

- In an arrangement, the order in which the things arranged is considered is called as Permutation .The all different arrangements of three letters A, B and C are ABC, ACB, BCA, BAC, CAB and CBA. Here each of the different arrangements ABC, ACB, BCA, BAC, CAB and CBA is a permutation and number of different arrangement i.e. 6 is the number of permutations.

- But if the order in which the things are arranged or choosen is not considered; then ABC, ACB, BCA, BAC, CAB and CBA are not different but the same is called as combination.

EXAMPLE:

In in how many ways can the letters of the word WATER be arranged so that we have a new pattern every time?

How many different four letter words can be formed (the words need not be meaningful) using the letters of the word MEDITERRANEAN such that the first letter is E and the last letter is R?

RANK OF A WORD IN DICTIONARY :Rank of a word is the position of that word, when we arrange the words formed by alphabets of that given word in dictionary order. Let's see an example. If we are to find the rank of the word "RANK" in the dictionary ?

PERMUTATION & COMBINATION

PW SKILLS

Q1.Arun has to go for a job interview tomorrow. He has 4 formal shirts and 3 formal trousers in how many ways he can choose his outfit?

2. Anita also has also to go for this interview she decides to wear either a Saree or a dress. If Anita has 4 Sarees and 6 dresses, in how many ways can she chooses her outfit?

3. Using digits 1, 2, 3 and 4, how many 3 digit numbers can be formed, if repetition of digits is not allowed?

4. Using digits 1, 2, 3 and 4, how many 3 digit numbers can be formed, if repetition of digits is allowed?

5. Using digits 1, 2, 3, 4, 5, 6 and 7, how many 5 digit EVEN numbers can be formed, without repeating any digit?

6. Using digits 0, 1, 2, 3, 4 and 5, how many four digit numbers can be formed using each digit only once?

7. Using digits 2, 3, 4, 5, 6 how many four digit numbers can be formed such that they are divisible by 3? Repetition of a digit is not allowed.

8. Using digits 1, 2, 3, 4, 5, 6 and 7 (without repetition), find the number of distinct 4 digit numbers that can be formed for each of the following conditions! i. Greater than 3000 ii. Even iii. Even number greater than 3000

Q9. There are 4 boys and 4 girls to be arranged in a row. If all the 4 girls have to be together, in how many ways can the arrangement be done?

10. In a group of 10 people, 4 speak only French, 3 speak only Spanish and the rest speak both French and Spanish. In how many ways can the people be-arranged in a row such that all those who speak only French are together and so are all those who speak only Spanish.

11. There are 4 boys and 4 girls to be arranged in a row. If no two girls should stand together, in how many ways can the arrangement be done?

12.In a group of 10 people. 4 speak only French, 3 speak only Spanish and the rest speak both French and Spanish. In how many ways can the 10 people be arranged in a row such that all those who Speak only French are together and so are all those who speak only Spanish. Further all people should be able to converse with both their neighbours (if they have)

13. There are 4 boys and 4 girls to be arranged in a row. If girls and boys have to be alternate. In how many ways can the arrangement be done?

14. How many 6 digit numbers can be formed using 1, 2, 3. 4. 5 and 6 such that all odd positions (from left end) are odd digits and all even positions are even digits' Repetition of digits is not allowed.

A.72 B.36 C.720 D.360

15. How many 6 digit numbers can be formed using the digits 1, 2 3 4 and 5 (repetitions allowed) such that the number reads the same from left to right or from right to left (e.g. 134431)?

A.64 B. 125 C. 248 D. 360

16. How many 4 digit numbers can be formed using the digits 1, 2, 3, 4 such that at-least one digit is repeated? A. 256 B. 24 C. 232 D. 64 17. Using digits 0, 1, 2, 3 how many four digit numbers divisible by 4 can be formed? Repetition of digits is allowed.

A. 36 B. 48 C. 60 D. 72

Q17.In how many ways can a committee of 7 members be chosen front 10 people?

Q18.Out of 5 men and 6 women in how many ways can a committee of 2 men and 3 women be selected?

Q19.Out of 5 men and 6 women in how many ways can a committee of 5 members be-selected such that at least 3 members are women?

Q20. In a room there are 10 men and each man shakes hands with every other man present. Now many handshakes take place?

ARRANGEMENTS

PW SKILLS

Q1. 4 boys and 4 girls have to be seated around a circular table such that no two girls are adjacent to each other. In how many ways can they be seated?

Q2.8 people have to be seated on a rectangular table with 4 each on the longer sides. In how many ways can they be seated? 2

Q3.4 managers, 2 vice-presidents and 1.president have to be seated in a circle for a meeting such that the two vice-presidents sit on either side of the president. In how many ways can they be seated?

A. 120 **B. 240** **C. 360** **D. 48**

Q4. In how many ways can 6 couples be seated around a circular table such that each couple is sitting together?

A. 11 **B. 6! x 64** **C. 5! x 32** **D. 5! x 64**

Q5. There are 15 intermediate stations on a railway line from one terminus to another. In how many ways can 4 of these stations be chosen as halts for the train such that between any two of these 4 halts there are atleast 2 stations where the train does not halt?

A. 11C4 **B.10C4** **C.9C4** **D.8C4**

THANKYOU