PERMUTATION AND COMBINATION

1. How many words can be formed from the letters of the word "SIGNATURE" so that vowels always come together?
   A. 17280 B. 4320 C. 720 D. 80

2. In how many ways can the letters of the word "CORPORATION" be arranged so that vowels always come together?
   A. 5760 B. 50400 C. 2880 D. None of above

3. In a group of 6 boys and 4 girls, four children are to be selected. In how many different ways can they be selected such that at least one boy should be there
   A. 109 B. 128 C. 138 D. 209

4. If the letters of the word CHASM are rearranged to form 5 letter words such that none of the word repeat and the results arranged in ascending order as in a dictionary what is the rank of the word CHASM?
   A. 24 B. 31 C. 32 D. 30

5. In how many ways can 5 different toys be packed in 3 identical boxes such that no box is empty, if any of the boxes may hold all of the toys?
   A. 20 B.30 C. 25 D. 600

6. What is the value of $1\times1!+2\times2!+3!\times3!+\ldots\ldots\ldots$ $n\times n!$; where n! means n factorial or $n(n-1)(n-2)...1$
   A.$n(n-1)(n-1)!$ B.$(n+1)!/n(n-1)$ C. $(n+1)!-n!$ D. $(n+1)!-1!$

7. When six fair coins are tossed simultaneously, in how many of the outcomes will at most three of the coins turn up as heads?
   A. 25 B. 41 C. 22 D. 42

8. A college has 10 basketball players. A 5-member team and a captain will be selected out of these 10 players. How many different selections can be made?
   A. 1260 B. 210 C. $10C6\times6!$ D. $10C5\times6$

9. 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

10. How many four letter distinct initials can be formed using the alphabets of English language such that the last of the four words is always a consonant?
    A.263×21 B. $26\times25\times24\times21$ C. $25\times24\times23\times21$ D. None of these

11. What is the total number of ways in which Dishu can distribute 9 distinct gifts among his 8 distinct girlfriends such that each of them gets at least one gift?
    A. $72\times8!$ B. $144\times8!$ C. $36\times8!$ D. 9

12. How many number of times will the digit '7' be written when listing the integers from 1 to 1000?
    A.271 B. 300 C. 252 D. 304

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13. 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. 15C8×6!×7! D. 2×15C7×6!×7!

14. 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

15. How many integers, greater than 999 but not greater than 4000, can be formed with the digits 0, 1, 2, 3 and 4, if repetition of digits is allowed?
    A. 499 B. 500 C. 375 D. 376

16. How many five digit positive integers that are divisible by 3 can be formed using the digits 0, 1, 2, 3, 4 and 5, without any of the digits getting repeating
    A.15 B. 96 C. 216 D. 120

17. There are 10 seats around a circular table. If 8 men and 2 women have to seated around a circular table, such that no two women have to be separated by at least one man. If P and Q denote the respective number of ways of seating these people around a table when seats are numbered and unnumbered, then P : Q equals
    A. 9 : 1 B. 72 : 1 C. 10 : 1 D. 8 : 1

18. How many factors of 25×36×52 are perfect squares?
    A. 20 B. 24 C.30 D. 36

19. In how many rearrangements of the word AMAZED, is the letter 'E' positioned in between the 2 'A's (Not necessarily flanked)?
    A. 24 B. 72 C. 120 D. 240

20. a, b, c are three distinct integers from 2 to 10 (both inclusive). Exactly one of ab, bc and ca is odd. abc is a multiple of 4. The arithmetic mean of a and b is an integer and so is the arithmetic mean of a, b and c. How many such triplets are possible (unordered triplets) .
    A. 4 B. 5 C. 6 D. 7

ANSWER KEY

1-A	**2-B**	**3-D**	**4-C**	**5-C**
6-D	**7-D**	**8-A**	**9-A**	**10-A**
11-C	**12-B**	**13-C**	**14-D**	**15-D**
16-C	**17-C**	**18-B**	**19-C**	**20-A**