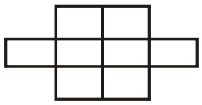
Mental Ability

Ganit Bodh Series

Self Evaluation Test -12 (Permutaions & Combinations)

1. How many ways are there to arrange the letters of the word GARDEN with the vowels in the alphabetical order?
   a) 120 b) 240
   c) 360 d) 480
2. The number of ways of distributing 8 identical balls in 3 distinct boxes so that none of the boxes is empty is
   a) 5 b) 21
   c) 3^8 d) $^8C_3$
3. Let T_n denote the number of triangles which can be formed using the vertices of a regular polygon of n sides. If $T_{n+1} - T_n = 21$, then n equals
   a) 5 b) 7
   c) 6 d) 4
4. Ten different letters of an alphabet are given. Words with 5 letters are formed from these given letters. Then the number of words which have at least one letters repeated is
   a) 69760 b) 30240
   c) 99748 d) none of these
5. How many numbers greater than 1000, but not greater than 4000 can be formed with the digits 0, 1, 2, 3, 4, repetition of digits being allowed?
   a) 374 b) 375
   c) 376 d) none of these
6. There are 10 lamps in a hall. Each one of them can be switched on independently. The number of ways in which the hall can be illuminated is
   a) 10^2 b) 1023
   c) 2^{10} d) 10!
7. A five digit number divisible by 3 is to be formed using the numerals 0, 1, 2, 3, 4 and 5 without repetition. The total number of ways this can be done is
   a) 216 b) 240
   c) 600 d) 3125
8. The number of positive integers which can be formed using any number of digits from 0, 1, 2, 3, 4, 5, but using each digit not more than once in each number is
   a) 1200 b) 1500
   c) 1600 d) 1630
9. The total number of 9 digit number which have all different digits is
   a) 10! b) 9 !
   c) 9 . 9 ! d) 10 . 10!
10. Eight chairs are numbered 1 to 8. Two women and three men wish to occupy one chair each. First the women choose the chairs from amongst the chairs marked 1 to 4, and then the men select the chairs from amongst the remaining. The number of possible arrangements is
    a) $^4C_3 \times {}^4C_2$ b) $^4C_2 \times {}^4P_3$
    c) $^4P_2 \times {}^4P_3$ d) none of these
11. From 4 officers and 8 Jawans, a committee of 6 is to be chosen to include exactly one officer. The number of such committees is
    a) 160 b) 200
    c) 224 d) 300
12. Given 5 different green dyes, 4 different blue dyes and 3 different red dyes. The number of combinations of dyes which can be chosen taking at least one green and one blue dye is
    a) 3600 b) 3720
    c) 3800 d) none of these
13. Six 'X' have to be placed in the squares of the figure given below such that each row contains at least one 'X'. The number of ways in which this can be done is



    a) 26 b) 27
    c) 22 d) None
14. If a polygon has 44 diagonals, then the number of its sides are
    a) 11 b) 7
    c) 8 d) none
15. An n-digit number is a positive number with exactly n digits. Nine hundred distinct n-digit numbers are to be formed using only the three digits 2, 5 and 7. The smallest value of n for which this is possible is
    a) 6 b) 7
    c) 8 d) 9
16. The number of five-digit telephone numbers having at least one of their digits repeated is
    a) 90000 b) 100000
    c) 30240 d) 69760
17. If n is an integer between 0 and 21, then the minimum value of n! (21 - n) ! is:
    a) 9! 21! b) 10! 11!
    c) 20 ! d) 21 !
18. A rectangle with sides 2m - 1 and 2n - 1 is divided into squares of unit length by drawing parallel lines as shown in the diagram, then the number of rectangles possible with odd side length is
    a) $(m + n + 1)^2$ b) 4^{m+n-1}
    c) m^2n^2 d) $mn(m + 1)(n + 1)$
19. 7 different coloured balls to be kept in 5 different boxes. A box may contain any number of balls and no box is empty (order of balls is considered in the boxes). Then number of such ways are
    a) $\lfloor 7 \cdot {}^6C_4$ b) $\lfloor 7 \cdot \lfloor 5 \cdot {}^6C_2$
    c) $\lfloor 7 \cdot \lfloor 5$ d) $4^{10} - 1$
20. The total number of ways of distributing n identical balls among k different boxes if each box can hold any number of balls is
    a) k^n b) n^k
    c) $\frac{\lfloor (k+n-1)}{\lfloor (k-1) \lfloor n}$ d) $\frac{\lfloor (k-n+1)}{\lfloor k \lfloor n-1}$

Self Evaluation Test -12 (Permutaions & Combinations)

1. (c)
2. (b)
3. (b)
4. (a)
5. (b)
6. (b)
7. (a)
8. (d)
9. (c)
10. (d)
11. (c)
12. (b)
13. (a)
14. (a)
15. (b)
16. (d)
17. (c)
18. (c)
19. (a)
20. (a)