

Date Planned : __ / __ / __	Daily Tutorial Sheet - 2	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	JEE Archive	Exact Duration : _____

13. Total number of ways in which six '+' and four '-' signs can be arranged in a line such that no two '-' signs occur together is: (1988)
14. There are four balls of different colours and four boxes of colours, same as those of the balls. The number of ways in which the balls, one each in a box, could be placed such that a ball does not go to a box of its own colour is: (1992)
15. The number of ways of choosing 10 objects out of 31 objects of which 10 are identical and the remaining 21 are distinct, is: (2019)  
 (A)  $2^{20} - 1$       (B)  $2^{21}$       (C)  $2^{20}$       (D)  $2^{20} + 1$
16. Suppose that 20 pillars of the same height have been erected along the boundary of a circular stadium. If the top of each pillar has been connected by beams with the top of all its non-adjacent pillars, then the total number of beams is: (2019)  
 (A) 180      (B) 210      (C) 170      (D) 190
17. Some identical balls are arranged in rows to form an equilateral triangle. The first row consists of one ball, the second row consists of two balls and so on. If 99 more identical balls are added to the total number of balls used in forming the equilateral triangle, then all these balls can be arranged in a square whose each side contains exactly 2 balls less than the number of balls each side of the triangle contains. Then, the number of balls used to form the equilateral triangle is: (2019)  
 (A) 262      (B) 190      (C) 225      (D) 157
18. There are  $m$  men and two women participating in a chess tournament. Each participant plays two games with every other participant. If the number of games played by the men between themselves exceeds the number of games played between the men and the women by 84, then the value of  $m$  is: (2019)  
 (A) 12      (B) 11      (C) 9      (D) 7
19. A group of students comprises of 5 boys and  $n$  girls. If the number of ways, in which a team of 3 students can randomly be selected from this group such that there is at least one boy and at least one girl in each team, is 1750, then  $n$  is equal to: (2019)  
 (A) 28      (B) 27      (C) 25      (D) 24
20. Let  $S$  be the set of all triangle in the  $xy$ -plane, each having one vertex at the origin and the other two vertices lie on coordinate axes with integral coordinates. If each triangle in  $S$  has area 50 sq. units, then the number of elements in the set  $S$  is: (2019)  
 (A) 36      (B) 32      (C) 18      (D) 9
21. The number of 6 digits numbers that can be formed using the digits 0, 1, 2, 5, 7 and 9 which are divisible by 11 and no digit is repeated, is: (2019)  
 (A) 60      (B) 72      (C) 48      (D) 36

- 22.** A committee of 11 members to be formed from 8 males and 5 females. If  $m$  is the number of ways the committee is formed with at least 6 males and  $n$  is the number of ways the committee is formed with atleast 3 females, then: **(2019)**  
**(A)**  $m = n = 68$  **(B)**  $m + n = 68$  **(C)**  $m = n = 78$  **(D)**  $n = m - 8$
- 23.** Consider three boxes, each containing 10 balls labelled 1, 2, ..., 10. Suppose one ball is randomly drawn from each of the boxes. Denote by  $n_i$ , the label of the ball drawn from the  $i$ th box, ( $i = 1, 2, 3$ ). Then, the number of ways in which the balls can be chosen such that  $n_1 < n_2 < n_3$  is: **(2019)**  
**(A)** 82 **(B)** 120 **(C)** 240 **(D)** 164
- 24.** The number of natural numbers less than 7,000 which can be formed by using the digits 0, 1, 3, 7, 9 (repetition of digits allowed) is equal to: **(2019)**  
**(A)** 374 **(B)** 375 **(C)** 372 **(D)** 250
- 25.** Consider a class of 5 girls and 7 boys. The number of different teams consisting of 2 girls and 3 boys that can be formed from this class, if these are two specific boys A and B, who refuse to be the members of the same team, is: **(2019)**  
**(A)** 350 **(B)** 500 **(C)** 200 **(D)** 300
- 26.** The number of four-digit numbers strictly greater than 4321 that can be formed using the digits 0, 1, 2, 3, 4, 5 (repetition of digits is allowed) is: **(2019)**  
**(A)** 306 **(B)** 310 **(C)** 360 **(D)** 288