

PERMUTATIONS AND COMBINATIONS

1. A round table conference is to be held among 25 delegates from 25 countries. In how many ways can they be seated if two particular delegates are always to sit together?

- A. $23!$
- B. $2! \times 23!$**
- C. $3! \times 23!$
- D. None of these

2. In how many ways can 5 boys and 4 girls be seated in a row, so that they alternate?

- A. $5!$
- B. $5! \times 2!$
- C. $4! \times 5!$**
- D. None of these

3. In how many ways can the letters of the word 'LEADER' be arranged?

- A. 72
- B. 144
- C. 360
- D. 720**

4. A box contains 2 white balls, 3 black balls and 4 red balls. In how many ways can 3 balls be drawn from the box, if at least one black ball is to be included in the draw?

- A. 32
- B. 48
- C. 64**
- D. 96

5. How many numbers greater than a million can be formed with the digits 2,3,0,4,3,3,3 ?

- 300
- **360**
- 440
- 620

6. A gentleman has got 6 sorts of note papers, 7 different ink-stands and 4 different pens. In how many ways can he begin to write a letter?

- **168**
- 176
- 186
- 196

7. How many different words can be formed from the alphabets of the word SCISSORS?

- A. **1440**
- B. 1680
- C. 1800
- D. 2100

8. A team of 8 students goes on an excursion, in two cars, of which one can seat 5 and the other only 4. In how many ways can they travel?

- A) 9
- B) **26**
- C) 126
- D) 3920

9. How many ways can 10 letters be posted in 5 post boxes, if each of the post boxes can take more than 10 letters?

- A) **510**
- B) 105
- C) 10P5
- D) 10C5

10. 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) **$2*(15C7)*6!*7!$**

11. In how many ways can the letters of the word EDUCATION be rearranged so that the relative position of the vowels and consonants remain the same as in the word EDUCATION?

- A) $9!/4$
- B) $9!/(4!*5!)$**
- C) $4!*5!$
- D) None of these

12. There are 2 brothers among a group of 20 persons. In how many ways can the group be arranged around a circle so that there is exactly one person between the two brothers?

- A) $2 * 19!$
- B) $18! * 18$
- C) $19! * 18$
- D) $2 * 18!$**

13. A selection is to be made for one post of principal and two posts of vice-principal amongst the six candidates called for the interview only two are eligible for the post of principal while they all are eligible for the post of vice-principal. The number of possible combinations of selectees is:

- A. 4
- B. 12
- C. 18
- D. 20**

14. In how many different ways can five friends sit for a photograph of five chairs in a row?

- A. 120 ways**
- B. 24 ways
- C. 240 ways
- D. 720 ways

15. In a room there are 12 bulbs of the same wattage, each having a separate switch. The number of ways to light the room with different amounts of illumination is

- A. $12^2 - 1$
- B. 2^{12}**
- C. $2^{12} - 1$

D. none of these