



Permutations and Combinations

Q.No.1:

Let T_n be the number of all possible triangles formed by joining vertices of an n -sided regular polygon. If $T_{n+1} - T_n = 10$, then the value of n is:

JEE 2013

- A. 7
- B. 5
- C. 10
- D. 8

Q.No.2: The number of integers greater than 6,000 that can be formed, using the digits 3, 5, 6, 7 and 8, without repetition, is:

JEE 2015

- A. 216
- B. 192
- C. 120
- D. 72

Q.No.3: If all the words (with or without meaning) having five letters, formed using the letters of the word SMALL and arranged as in a dictionary; then the position of the word SMALL is :

JEE 2016

- A. 59th
- B. 52nd
- C. 58th
- D. 46th

Q.No.4: A man X has 7 friends, 4 of them are ladies and 3 are men. His wife Y also has 7 friends, 3 of them are ladies and 4 are men. Assume X and Y have no common friends. Then the total number of ways in which X and Y together can throw a party inviting 3 ladies and 3 men, so that 3 friends of each of X and

Y are in this party, is

JEE 2017

- A. 485
- B. 468
- C. 469
- D. 484

Q.No.5: From 6 different novels and 3 different dictionaries, 4 novels and 1 dictionary are to be selected and arranged in a row on a shelf so that the dictionary is always in the middle. The number of such arrangement is :

JEE 2018

- A. at least 500 but less than 750
- B. at least 750 but less than 1000
- C. at least 1000
- D. less than 500

Q.No.6: 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 there are two specific boys A and B, who refuse to be the numbers of the same team, is:

JEE 2019

- A. 500
- B. 200
- C. 300
- D. 350

Q.No.7: 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:

JEE 2019

- A. 374
- B. 372
- C. 375
- D. 250

Q.No.8: If $\sum_{i=1}^{20} \left(\frac{{}^{20}C_{i-1}}{{}^{20}C_i + {}^{20}C_{i-1}} \right)^3 = \frac{k}{21}$, then k equals:

JEE 2019

- A. 400
- B. 50

C. 200

D. 100

Q.No.9: If $\sum_{r=0}^{25} \{ {}^{50}C_r \cdot {}^{50-r}C_{25-r} \} = K ({}^{50}C_{25})$, then K is equal to : **JEE 2019**

A. $(25)^2$

B. $2^{25} - 1$

C. 2^{24}

D. 2^{25}

Q.No.10: Let

$$S_n = 1 + q + q^2 + \dots + q^n \text{ and } T_n = 1 + \left(\frac{q+1}{2}\right) + \left(\frac{q+1}{2}\right)^2 + \dots + \left(\frac{q+1}{2}\right)^n$$

where q is a real number and $q \neq 1$. If

${}^{101}C_1 + {}^{101}C_2 \cdot S_1 + \dots + {}^{101}C_{101} \cdot S_{100} = \alpha T_{100}$, then α is equal to : **JEE 2019**

A. 2^{99}

B. 202

C. 200

D. 2^{100}

Vidyarohi Learning