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The Question Bank

Permutation and Combination Questions for SBI Clerk Pre, IBPS Clerk Pre and IBPS RRB Exams.

P n C Quiz 3

Directions: Read the following questions carefully and choose the right answer.

1. 16 persons shake hands with one another in a party. How many shake hands took place?

A. 124   B. 120   C. 165   D. 150   E. None of these

2. How many 3 - letter words with or without meaning, can be formed out of the letters of the word, 'LOGARITHMS', if repetition of letters is not allowed?

A. 720   B. 420   C. 5040   D. 120   E. None of these

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

A. 1650   B. 1780   C. 6800   D. 5220   E. None of these

4. A team of 7 children is to be selected out of 7 girls and 5 boys such that it contains at least 5 girls. In how many different ways can the selection be made?

A. 105   B. 246   C. 100   D. 128   E. None of these

5. In how many different ways can the letters of word RABBIT be arranged?

A. 360   B. 240   C. 300   D. 275   E. None of these

6. A team of 6 children is to be selected out of 4 girls and 5 boys such that it contains at least two girls. In how many different ways can the selection be made?

A. 105   B. 80   C. 100   D. 120   E. None of these

7. How many five digit numbers can be formed with the numbers 1, 2, 3, 4, 5 and 6 which are divisible by 4 if repetition is allowed?

A. 1728   B. 1444   C. 1600   D. 1344   E. None of these

8. In how many ways 5 different balls can be distributed among 9 people, if any person can receive any number of balls?

A. 9 × 5 ways   B. 15120 ways   C. 5^9 ways   D. 9^5 ways   E. None of these

9. In how many different ways can 4 females and 5 males be arranged in a row so that the four females sit together?

A. 17280   B. 12560   C. 16480   D. 18560   E. None of these

10. In an auditorium the chairs were arranged such that the number of rows were 3 more than the number of columns. The chairs are rearranged by removing 3 columns and adding 6 rows without adding or removing any chair. How many people can sit in that auditorium at a time?
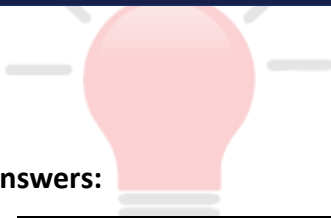
A. 124   B. 96   C. 108   D. 98   E. 88

Correct Answers:

1	2	3	4	5	6	7	8	9	10
B	A	E	B	A	B	A	D	A	C

Explanations:

1. Total possible ways = $^{16}C_2$

$$= \frac{16 \times 15}{2 \times 1} = 120$$
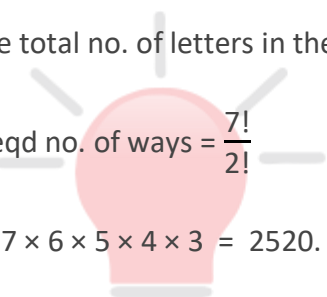
Hence, option B is correct.

2. The word 'LOGARITHMS'' has 10 different alphabets

Hence, the number of 3-letter words (with or without meaning) formed by using these letters = ($^{10}P_3$)

= 10 × 9 × 8 = 720

Therefore, option (A) is correct.

3. The total no. of letters in the word POPULAR is 7 where P appears twice

Reqd no. of ways = $\dfrac{7!}{2!}$

= 7 × 6 × 5 × 4 × 3 = 2520.

Hence, option E is correct.

4. A team of seven children consisting of at least five girls can be formed in the following ways

Case I: When five girls and two boys are selected $^7C_5 \times ^5C_2$

Case II: When six girls and one boys are selected $^7C_6 \times ^5C_1$

Case III: When seven girls and no boy are selected $^7C_7$

Reqd. no. of selections = $^7C_5 \times ^5C_2 + ^7C_6 \times ^5C_1 + ^7C_7$

$$= \frac{7 \times 6}{2} \times \frac{5 \times 4}{2} + 7 \times \frac{5}{1} + 1$$

= 21 × 10 + 7 × 5 + 1 = 210 + 35 + 1 = 246

Hence, option B is correct.

5.

Required no. of ways = 6! = 360 ways

Hence, option A is correct.

6. **Method I:** Total number of ways in which 6 students can be selected $^9C_6$

Selection of atmost 1 girl selection = $^4C_1 \times {}^5C_5$

Selection of at least 2 girls = $^9C_6 - {}^4C_1 \times {}^5C_5$

= 84 − 4 = 80

Method II: A team of six children consisting of at least two girls can be formed in the following ways

Case I: When two girls and four boys are selected $^4C_2 \times {}^5C_4$

Case II: When three girls and three boys are selected $^4C_3 \times {}^5C_3$

Case III: When four girls and two boy are selected $^4C_4 \times {}^5C_2$

Reqd. no. of selections = $^4C_2 \times {}^5C_4 + {}^4C_3 \times {}^5C_3 + {}^4C_4 \times {}^5C_2$

$= \dfrac{4 \times 3}{2} \times \dfrac{5}{1} + 4 \times \dfrac{5 \times 4}{2} + 1 \times 10$

= 6 × 5 + 4 × 10 + 10 = 30 + 40 + 10 = 80

Hence, option B is correct.

7. A number is divisible by 4 if its last two digits are divisible by 4.

Since the divisibility of 4 depends upon only the last two number, the first three numbers can be anything. So the combination of first three numbers can be 6 × 6 × 6= 216

Two word combinations which are divisible by 4 are - 12,16, 24, 32, 36, 44, 56 and 64. So the last 2 digits can be of 8 combinations.

Total numbers that can be formed are 216 × 8= 1728

Hence, option A is correct.

8. There are 5 types of balls, 9 person can be given the ball in 5 ways.

1st ball in 9 ways, 2nd ball in 9 ways so on...so total ways is 9 to the power 5 = 9^5

Hence, option D is correct.

9.   Let 4 females be one unit and let there be 6 units in all.

They can be arranged in 6! ways and in each of these arrangements 4 females can be arranged in 4! ways

Therefore, total number of arrangements in which females are always together = 6! x 4! = 720 x 24 = 17280.

Hence, option A is correct.

10.   Since no chair was added or removed, the capacity of the auditorium remains constant.

The capacity of the auditorium is the product of the number of rows and number of columns.

Let there be x columns and x + 3 rows, then

$x(x + 3) = (x − 3)(x + 9)$

∴ $x^2 + 3x = x^2 + 6x − 27$

∴ $x = 9$

Thus there were 9 columns and 12 rows, i.e., 9 × 12 = 108 people can sit in the auditorium at a time.

Hence, option C is correct.