Permutation and Combination Questions with Solutions Pdf

1. In how many different ways can the letters of the word AWARE be arranged?

a. 40

b. 60

c. 120

d. 150 -→

Ans:

The given word contains 5 letters of which A is taken 2 times.

$$\therefore \text{ Required number of ways } = \frac{\lfloor 5}{\lfloor 2} = \frac{5 \times 4 \times 3 \times 2 \times 1}{2} = 60.$$

2. In how many different ways can the letters of the word WEDDING be arranged?

a. 2500

b. 2520

c. 5000

d. 5040 -→

Ans:

The given word contains 7 letters of which D is taken 2 times.

∴ Required number of ways

$$= \frac{\underline{|7}}{\underline{|2}} = \frac{7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{2 \times 1} = 2520.$$

3. In how many ways can a group of 5 men and 2 women be made out of a total of 7 men and 3 women?

a. 45

b. 63

c. 90

d. 126 -→

Required no. of ways

$$= (^7C_5 \times {}^3C_2) = (^7C_2 \times {}^3C_1) = \frac{7 \times 6}{2 \times 1} \times 3 = 63.$$

4. Out of 5 women and 4 men, a committee of three members is to be formed in such a way that at least one member is a woman. In how many different ways can it be done?

a. 76

b. 80

c. 84

d. 96 -→

Ans:

Required number of ways = $(^5C_1 \times {}^4C_2) + (^5C_2 \times {}^4C_1) +$ $(^5C_3)$

$$= \left(5 \times \frac{4 \times 3}{2 \times 1}\right) + \left(\frac{5 \times 4}{2 \times 1} \times 4\right) + \left(\frac{5 \times 4 \times 3}{3 \times 2 \times 1}\right)$$

$= (30 + 40 + 10) = 80.$

5.   A committee of 5 members is to be formed out of 3 trainees, 4 professors and 6 research associates. In how many different ways can this be done, if the committee should have 4 professors and 1 research associate or all 3 trainees and 2 professors?

a. 12

b. 13

c. 24

d. 52 -→

Ans:

Required number of ways = $(^4C_4 \times {}^6C_1) + (^3C_3 \times {}^4C_2)$

$$= (1 + 6) + \left(1 + \frac{4 \times 3}{2}\right) = (7 + 7) = 14.$$