Permutation and Combination Questions and Answers 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

$$= \frac{\lfloor 7}{\lfloor 2} = \frac{7\times6\times5\times4\times3\times2\times1}{2\times1} = 2520.$$

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

$$= ({}^{7}C_5 \times {}^{3}C_2) = ({}^{7}C_2 \times {}^{3}C_1) = \frac{7\times6}{2\times1} \times 3 = 63.$$

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

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

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

a. 15

b. 45

c. 60

d. 9 -→

Ans:

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

$$= \left(3 \times \frac{6 \times 5 \times 4}{3 \times 2 \times 1}\right) = 60.$$

7. In how many different ways can the letters of the word DISPLAY be arranged?

a. 720

b. 1440

c. 2520

d. 5040 --→

Ans:

The given word contains 7 letters, all different.

$\therefore$ Required number of ways = ${}^7P_7 = \lfloor\underline{7}$

$= (7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1) = 5040.$

8. In how many different ways can the letters of the word RIDDLED be arranged?

a. 840

b. 1680

c. 2520

d. 5040 -→

Ans:

The given word contains 7 letters of which D is taken 3 times.

$\therefore$ Required number of ways $= \frac{\lfloor 7}{\lfloor 3} = \frac{7 \times 6 \times 5 \times 4 \times \lfloor 3}{\lfloor 3}$

$= (7 \times 6 \times 5 \times 4) = 840.$

9. In how many different ways can the letters of the word INCREASE be arranged?

a. 40320

b. 10080

c. 20160

d. 64 →

Ans:

The given word contains 8 letters of which E is taken 2 times.

$\therefore$ Required number of ways

$$= \frac{\lfloor 8}{\lfloor 2} = \frac{8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{2} = 20160.$$

10. In how many ways a committee consisting of 5 men and 6 women can be formed from 8 men and 10 women?

a. 266

b. 5040

c. 11760

d. 86400 -→

Required number of ways = $({}^{8}C_5 \times {}^{10}C_6) + ({}^{8}C_3 \times {}^{10}C_4)$

$$= \frac{8\times7\times6}{\underline{|}3} \times \frac{10\times9\times8\times7}{\underline{|}4}$$

$$= \frac{8\times7\times6}{6} \times \frac{10\times9\times8\times7}{4\times3\times2\times1} = 11760.$$