



Combinations Ex 17.1 Q1(i)

$${}^{14}C_3$$

$$= \frac{14!}{3!(14-3)!}$$

$$\left(\because {}^nC_r = \frac{n!}{r!(n-r)!} \right)$$

$$= \frac{14!}{3!11!}$$

$$= \frac{14 \times 13 \times 12 \times 11!}{3 \times 2 \times 1 \times 11!}$$

$$= \frac{14 \times 13 \times 12}{6}$$

$$= 364$$

Combinations Ex 17.1 Q1(ii)

$${}^{12}C_{10}$$

$$= \frac{12!}{10!(12-10)!}$$

$$\left(\because {}^nC_r = \frac{n!}{r!(n-r)!} \right)$$

$$= \frac{12 \times 11 \times 10!}{10! \times 2 \times 1}$$

$$= 66$$

Combinations Ex 17.1 Q1(iii)

$${}^{35}C_{35}$$

$$= \frac{35!}{35!(35-35)!}$$

$$\left(\because {}^nC_r = \frac{n!}{r!(n-r)!} \right)$$

$$= 1$$

Combinations Ex 17.1 Q1(iv)

$${}^{n+1}C_n$$

$$= \frac{(n+1)!}{(n!)(n+1-n)!} \quad \left(\because {}^nC_r = \frac{n!}{r!(n-r)!} \right)$$

$$= \frac{(n+1) \times n!}{n! \times 1!}$$

$$= n+1$$

Combinations Ex 17.1 Q1(v)

$$\sum_{r=1}^5 {}^5C_r$$

$$= {}^5C_1 + {}^5C_2 + {}^5C_3 + {}^5C_4 + {}^5C_5$$

$$= \frac{5!}{1!4!} + \frac{5!}{2!3!} + \frac{5!}{3!2!} + \frac{5!}{4!1!} + \frac{5!}{5!0!} \quad \left(\because {}^nC_r = \frac{n!}{r!(n-r)!} \right)$$

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

$$= 5 + 10 + 10 + 5 + 1$$

$$= 31$$

***** END *****