.

Combinations Ex 17.1 Q1(i)

$^{14}C_3$

$= \frac{14!}{3!(14-3)!} \qquad \left(\because {}^nC_r = \frac{n!}{r!(n-r)!}\right)$

$= \frac{14!}{3!1\,1!}$

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

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

$= 364$

Combinations Ex 17.1 Q1(ii)

$^{12}C_{10}$

$= \frac{12!}{10!(12-10)!} \qquad \left(\because {}^nC_r = \frac{n!}{r!(n-r)!}\right)$

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

$= 66$

Combinations Ex 17.1 Q1(iii)

$^{35}C_{35}$

$= \frac{35!}{35!(35-35)!} \qquad \left(\because {}^nC_r = \frac{n!}{r!(n-r)!}\right)$

$= 1$

Combinations Ex 17.1 Q1(iv)

$^{n+1}C_n$

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

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

$= n+1$

Combinations Ex 17.1 Q1(v)

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

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

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

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

$= 5 + 10 + 10 + 5 + 1$
$= 31$

********** END **********