

1.

$$\textcircled{1} \quad {}^6C_2 = 15$$

$$\textcircled{2} \quad {}^7C_3 \quad \frac{{}^7C_3 \times 6 \times 5}{7 \times 6 \times 5} = 35$$

2.

L Vond's 10 component



$${}^{10}C_3 - {}^4C_2 \times 2 \times 4! \quad \text{or} \quad 4 \times {}^3C_1 {}^{10}C_3 - {}^4C_1$$

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$$7! = 6! \times 2!$$

GB V 140 R

A hand-drawn diagram on a black background. At the bottom, there is a dashed line representing a road. Two cars are shown: one labeled "BG" on the left and one labeled "GB" on the right, both moving towards each other. Above the road, there are five white dashed lines and three white arrows pointing towards the center. To the right of the road, there is a large letter "R".

Gas Method

5 6 2

5 6 2

OK

[5 6 2]

Q. Find no. of ways to arrange 'n' persons in 'r' seats ($r < n$) so that

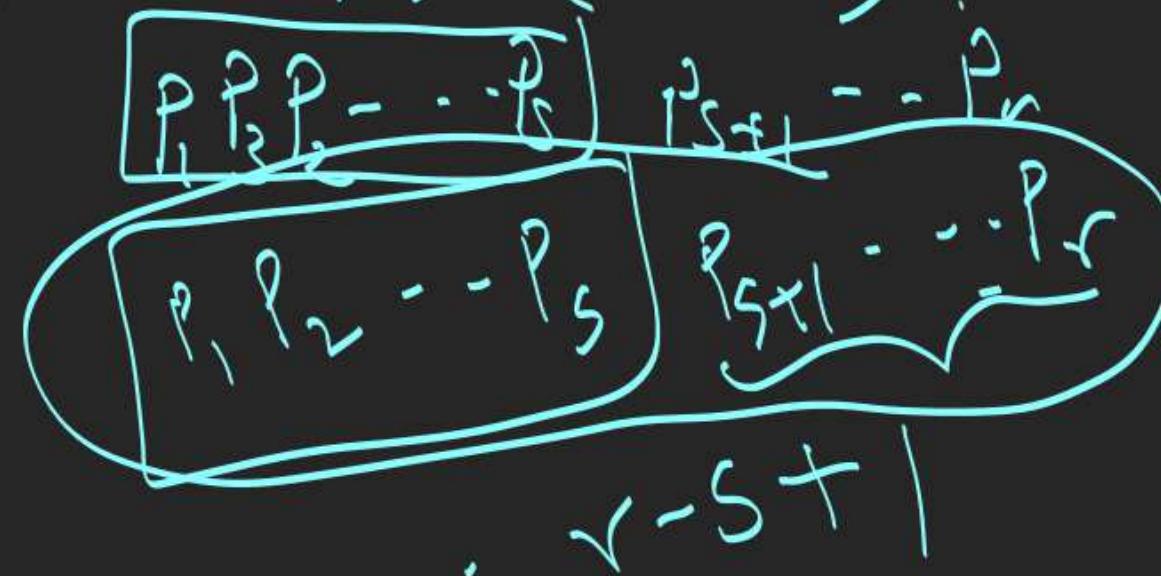
- (i) 's' particular persons are always present ($s < r$)
- (ii) $\cancel{\text{(iii)}} = \cancel{\text{(ii)}}$'s' particular persons are always present ($s < r$) together
- (iii) 's' particular persons are always present ($s < r$) together in a definite order

$$\text{(i)} \quad {}^{n-s}C_{r-s} \cdot r!$$

$$\text{or} \quad {}^{n-s}P_{r-s}$$

(ii)

$$\frac{{}^{n-s}C_{r-s} \cdot (r-s+1)!}{(r-s+1)!}$$



$$\stackrel{5}{=} \text{(i)} \quad \begin{array}{c} \downarrow \\ \times \underline{B} \times \underline{B} \times \underline{B} \times \underline{B} \times \underline{X} \end{array} \quad 4! \ 5C_4 \ 4!$$

$$\text{(ii)} \quad 8! - 5! \ 4! \quad \begin{array}{c} \bar{B} \bar{G} \bar{B} \bar{G} \bar{B} \bar{G} \bar{B} \bar{G} \bar{B} \\ \bar{G} \bar{B} \bar{G} \bar{B} \bar{G} \bar{B} \bar{G} \bar{B} \end{array} \rightarrow 4! \ 4! \quad 2 \times 4! \times 4!$$

(iii)

$$\boxed{G_1 G_2}$$

$$\boxed{B_1 G_1}$$

(iv)

$$2 \times 4! \times 4! -$$

$$2 \times 3! \times 3! \times 7C_1$$

$$\times \underline{B_1 \times G_3 \times B_2 \times G_4 \times B_3 \times G_2 \times}$$

(v)

$$4! \cdot (2!)^4$$

$$\boxed{21 - 30 (\text{Total})}$$

$$\boxed{SC - (-20)}$$