

$$1. P(\text{BW or WB}) = \frac{5}{7} \times \frac{2}{6} + \frac{2}{7} \times \frac{5}{6} = \frac{10}{21}$$

OR

$$P(\text{WB or BW}) = \frac{{}^5C_1 \times {}^2C_1}{{}^7C_2} = \frac{10}{21}$$

$$2. P(\text{CS or SC}) = \frac{13}{52} \times \frac{13}{51} + \frac{13}{52} \times \frac{13}{51} = \frac{13}{102}$$

OR

$$P(\text{CS or SC}) = \frac{{}^{13}C_1 \times {}^{13}C_1}{{}^{52}C_2} = \frac{13}{102}$$

$$3. P(\text{Goal-Miss or Miss-Goal}) = \frac{5}{6} \times \frac{1}{6} + \frac{1}{6} \times \frac{5}{6} = \frac{5}{18}$$

$$4. P(\text{EO or OE}) = \frac{3}{6} \times \frac{3}{6} + \frac{3}{6} \times \frac{3}{6} = \frac{1}{2}$$

$$5. P(\text{RW or WR}) = \frac{1}{4} \times \frac{3}{4} + \frac{3}{4} \times \frac{1}{4} = \frac{3}{8}$$

$$6. P(\text{GY or BY}) = \frac{3}{4} \times \frac{1}{20} + \frac{1}{4} \times \frac{1}{10} = \frac{1}{16}$$

$$7. P(\text{FL or WL}) = 0.8 \times 0.4 + 0.2 \times 0.5 = 0.42$$

$$8. (i) P(\text{RRR}) = \frac{5}{9} \times \frac{4}{8} \times \frac{3}{7} = \frac{5}{42}$$

(ii)

$$P(\text{RGG+GRG+GGR}) \\ = \frac{5}{9} \times \frac{4}{8} \times \frac{3}{7} + \frac{4}{9} \times \frac{5}{8} \times \frac{3}{7} + \frac{4}{9} \times \frac{3}{8} \times \frac{5}{7} = \frac{5}{14}$$

OR

$$P(\text{one R two G}) = \frac{{}^5C_1 \times {}^4C_2}{{}^9C_3} = \frac{5}{14}$$

9.

green	blue	red
5	3	4

$$(i) P(\text{GG}) = \frac{5}{12} \times \frac{4}{11} = \frac{5}{33}$$

OR

$$P(\text{GG}) = \frac{{}^5C_2}{{}^{12}C_2} = \frac{5}{33}$$

$$(ii) P(\text{GG or BB}) = \frac{5}{12} \times \frac{4}{11} + \frac{3}{12} \times \frac{2}{11} = \frac{13}{66}$$

$$(iii) P(\text{GG or BB or RR}) = \frac{5}{12} \times \frac{4}{11} + \frac{3}{12} \times \frac{2}{11} + \frac{4}{12} \times \frac{3}{11} = \frac{19}{66}$$

$$(iv) P(\text{different}) = 1 - P(\text{same}) = 1 - \frac{19}{66} = \frac{47}{66}$$

(v)

$$P(\text{red and not red}) = P(\text{RG or GR or RB or BR})$$

$$= \frac{4}{12} \times \frac{5}{11} + \frac{5}{12} \times \frac{4}{11} + \frac{4}{12} \times \frac{3}{11} + \frac{3}{12} \times \frac{4}{11} = \frac{16}{33}$$

OR

$$P(\text{red and not red}) = \frac{{}^4C_1 \times {}^8C_1}{{}^{12}C_2} = \frac{16}{33}$$

15.

$$P(\text{BB}) = \frac{n}{(n+11)} \times \frac{(n-1)}{(n+10)} = \frac{1}{12}$$

$$\Rightarrow \frac{n^2 - n}{n^2 + 21n + 110} = \frac{1}{12}$$

$$\Rightarrow 12(n^2 - n) = 1(n^2 + 21n + 110)$$

$$\Rightarrow 12n^2 - 12n = n^2 + 21n + 110$$

$$\Rightarrow 11n^2 - 33n - 110 = 0$$

$$\Rightarrow n^2 - 3n - 10 = 0$$

$$\Rightarrow (n-5)(n+2) = 0 \Rightarrow n = 5 \text{ or } n = -2$$

Ans. 5

OR

$$P(\text{BB}) = \frac{{}^nC_2}{{}^{n+11}C_2} = \frac{1}{12}$$

$$\Rightarrow \frac{\frac{n(n-1)}{\cancel{2 \times 1}}}{\frac{(n+11)(n+10)}{\cancel{2 \times 1}}} = \frac{1}{12}$$

$$\Rightarrow \frac{n^2 - n}{n^2 + 21n + 110} = \frac{1}{12}$$

$$\Rightarrow 12(n^2 - n) = 1(n^2 + 21n + 110)$$

$$\Rightarrow 12n^2 - 12n = n^2 + 21n + 110$$

$$\Rightarrow 11n^2 - 33n - 110 = 0$$

$$\Rightarrow n^2 - 3n - 10 = 0$$

$$\Rightarrow (n-5)(n+2) = 0 \Rightarrow n = 5 \text{ or } n = -2$$

Ans. 5