Problems Set – 2 :

A bag contains 5 Red balls, 8 blue balls, 11 White balls. Three balls are drawn together from the box. Find the probability that

(i) One is red, one is blue, one is white

(ii) Two whites and one red

(iii) Three white

Solution:- No. of Exhaustive cases $= {}^{24}C_3 = 2024$

(i) One is red, one is blue, one is white

No. of possible cases $= {}^5C_1 \cdot {}^8C_1 \cdot {}^{11}C_1 = 440$

$$\text{Required probability} = \frac{{}^5C_1 \cdot {}^8C_1 \cdot {}^{11}C_1}{{}^{24}C_3}$$

$$= \frac{440}{2024}$$

(ii) Two white and One red

No. of possible cases $= {}^{11}C_2 \cdot {}^5C_1$

$$\text{Required probability} = \frac{{}^{11}C_2 \cdot {}^5C_1}{{}^{24}C_3} = \frac{275}{2024}$$

(iii) Three white:

No. of possible cases $= {}^{11}C_3 = 165$

Required prob^{n} $= \frac{^{11}C_3}{^{24}C_3} = \frac{165}{2024}$

An urn contains 8 white and 3 red balls If two balls are drawn at random, Find the probability that

(i) both are white
(ii) both are red
(iii) one is of each color:

HW
$^{8}C_1 / ^{11}C_2$
$^{3}C_2 / ^{11}C_2$
$\frac{^{8}C_1 \cdot ^{3}C_1}{^{11}C_2}$

Three light bulbs are chosen at random from 12 bulbs of which 5 are defective Find the probability that

(i) All are defective
(ii) two are defective
(iii) one is defective
(iv) No one is defective

Sol:- NO. of Exhaustive cases $= ^{12}C_3 = 220$

(i) All are defective
NO. of possible cases $= ^{5}C_3 = 10$
Required prob^{n} $= \frac{^{5}C_3}{^{12}C_3} = \frac{10}{220} = \frac{1}{22}$

(ii) Two are defective
NO. of possible cases $= ^{5}C_2 \cdot ^{7}C_1 = 70$

Required probability $= \frac{70}{220} = \frac{7}{22}$

(iii) One is defective

No. of possible cases $= {}^{5}C_1 \cdot {}^{7}C_2 = 105$

Required probability $= \frac{105}{220} = \frac{21}{44}$

(iv) No one is defective

No. of possible cases $= {}^{5}C_0 \, {}^{7}C_3$

Required probll $= \frac{{}^{5}C_0 \cdot {}^{7}C_3}{220} = \frac{35}{220}$

$= \times =$