

# Assignment 4 CBSE class 12

Pranav B (AI21BTECH11023)

## QUESTION 12

A card from a pack of 52 cards is lost. From the remaining cards of the pack, two cards are drawn and are found to be both diamonds. Find the probability of the lost card being a diamond.

## 1 SOLUTION:

Let the events be :

$E_1$ =lost card is a diamond

$E_2$ =lost card is not a diamond

$E_3$ =Event that two cards chosen are diamond

To find :  $P(E_1/E_3)$ ,

$$P(E_1/E_3) = \frac{P(E_1)P(E_3/E_1)}{P(E_1)P(E_3/E_1) + P(E_2)P(E_3/E_2)} \quad (1.1)$$

$$P(E_1) = \frac{1}{4} \quad (1.2)$$

$$P(E_2) = 1 - P(E_1) \quad (1.3)$$

$$\implies P(E_2) = \frac{3}{4} \quad (1.4)$$

$$P(E_3/E_1) = \frac{{}^{12}C_2}{{}^{51}C_2} = \frac{66}{1275} \quad (1.5)$$

$$P(E_3/E_2) = \frac{{}^{13}C_2}{{}^{51}C_2} = \frac{78}{1275} \quad (1.6)$$

Substituting above values, we get

$$P(E_1/E_3) = \frac{11}{50} \quad (1.7)$$

$$(1.8)$$