AI1110: Assignment 4

Rishi Manoj - CS21BTECH11045

Abstract—**This document contains the solution to Question of Chapter 16 (Probability) in the NCERT Class 11 Textbook.**

Probability Miscellaneous Exercise Q2: 4 cards are drawn from a well-shuffled deck of 52 cards. What is the probability of obtaining 3 diamonds and one spade?

Solution: Let X and Y be the events defined as follows,

X : Picking three diamond cards
Y : Picking a spade card

$$n(X) = \binom{13}{3} \tag{1}$$

$$n(Y) = \binom{13}{1} \tag{2}$$

$$n(XY) = \binom{13}{3} \times \binom{13}{1} \tag{3}$$

$$n(S) = \binom{52}{4} \tag{4}$$

Here, S is the sample space.
Probability of getting 3 diamonds and 1 spade is given by,

$$\Pr(XY) = \frac{n(XY)}{n(S)} \tag{5}$$

$$= \frac{\binom{13}{3} \times \binom{13}{1}}{\binom{52}{4}} \tag{6}$$

$$= \frac{3178}{270725} \tag{7}$$

$$= 0.0137 \tag{8}$$

Therefore, the probability of getting 3 diamonds and 1 spade is 0.0137.