PROBABILITY

UDAY KUMAR - FWC22086

16.4.2 [1] Four cards are drawn from a well-shuffled deck of 52 cards. What is the probability of obtaining 3 diamonds and one spade?.

Solution:

RV	values	Description
X	{0,1,2,3}	Cards drawn randomly
Y	{0,1}	0:diamond ,1:spade
X,Y	{00,10,20,31}	Desired set of cards (3 diamonds and one spade)

Table 2:

Three diamonds and one spade can be selected such that X,Y $= \{00, 10, 20, 31\}$ where X denotes any card and Y denotes wether the card is diamond or spade.

$$\Pr(00, 10, 20, 31) = \frac{{}^{13}C_3 \times {}^{13}C_1}{{}^{52}C_4} \tag{16.4.2.1}$$

$$\therefore \Pr(00, 10, 20, 31) = \frac{286}{20285} \tag{16.4.2.2}$$

[1] Read question numbers as (CHAPTER NUMBER).(EXERCISE NUMBER).(QUESTION NUMBER)