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:
Let the cards drawn from the deck be $X = \{0, 1, 2, 3\}$ and $Y = \{0, 1\}$,where 0 denotes the card is from diamonds and 1 denotes the card is from spades. Three diamonds and one spade can be selected such that $XY = \{00, 10, 20, 31\}$ where X denotes any card and Y denotes wether the card is diamond or spade.

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

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

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