Q-10.13.3.10

Yash Patil - EE22BTECH1108

Question: All the jacks, queens and kings are removed from a deck of 52 playing cards. The remaining cards are well shuffled and then one card is drawn at random. Giving ace a value 1 similar value for other cards, find the probability that the card has a value

1) 7
2) greater than 7
3) less than 7

Solution: Number of cards left after removing all jacks, queens and kings(=N)

$$= 52 - 4 \times 3 \tag{1}$$
$$= 40 \tag{2}$$

Random variable	Sample space	Value	Event	Probability
X_1	40	4	the card has value 7 and is of any suit	$\frac{4}{40}$
X_2	40	12	the card has value greater than 7 and is of any suit	$\frac{12}{40}$
X_3	40	24	the card has value less than 7 and is of any sui	$\frac{24}{40}$

1) Probability that card has value equal to 7

$$= \frac{4}{40} \tag{3}$$
$$= \frac{1}{10} \tag{4}$$

2) Probability that card has value greater than 7

$$= \frac{12}{40} \tag{5}$$
$$= \frac{3}{10} \tag{6}$$

3) Probability that card has value less than 7

$$= \frac{24}{40} \tag{7}$$
$$= \frac{6}{10} \tag{8}$$