

# Question: 10.13.3.10

Yash Patil - EE22BTECH11058

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)

$$= 52 - 4 * 3 \quad (1)$$

$$= 40 \quad (2)$$

- 1) Number of cards with value equal to 7( $n_1$ ) = 4  
 $\therefore$  Probability to find a card with value equal to 7 ( $P_1$ )

$$= \frac{n_1}{N} \quad (3)$$

$$= \frac{4}{40} \quad (4)$$

$$= 0.1 \quad (5)$$

- 2) Number of cards with value greater than 7( $n_2$ )  
 $= 4 * 3 = 12 \quad (6)$

$\therefore$  Probability to find a card with value greater than 7 ( $P_2$ )

$$= \frac{n_2}{N} \quad (7)$$

$$= \frac{12}{40} \quad (8)$$

$$= 0.3 \quad (9)$$

- 3) Number of cards with value less than 7( $n_3$ )  
 $= 4 * 6 = 24 \quad (10)$

$\therefore$  Probability to find a card with value lesser than 7 ( $P_3$ )

$$= \frac{n_3}{N} \quad (11)$$

$$= \frac{24}{40} \quad (12)$$

$$= 0.6 \quad (13)$$