Assignment 5

PRABHAV SINGH (BT21BTECH11004)

Question : Let E and F be events with $P(E) = \frac{3}{5}$ and $P(F) = \frac{3}{10}$ and $P(E \cap F) = \frac{1}{5}$. Are E and F independent?

Solution : Given ,

$$P(E) = \frac{3}{5} \tag{1}$$

$$P(F) = \frac{3}{10} \tag{2}$$

$$P(E \cap F) = \frac{1}{5} \tag{3}$$

Two events, say A and B, are said to be independent if

$$P(A \cap B) = P(A) \times P(B) \tag{4}$$

$$\tag{5}$$

We have,

$$P(E) \times P(F) = \frac{3}{5} \times \frac{3}{10} = \frac{9}{50} \neq P(E \cap F) \tag{6}$$

Thus, E and F are not independent events.