

Probability Assignment 1

EE22BTECH11209 - GUMMAPU SATHWIK PREETHAM*

Question : Events A and B are such that

$$\Pr(A) = \frac{1}{2}, \Pr(B) = \frac{7}{12} \text{ and } \Pr(A' + B') = \frac{1}{4}. \quad (1)$$

1) State whether A and B are independent ?

Solution :

$$\Pr(AB) = 1 - \Pr(A' + B') \quad (2)$$

$$= 1 - \frac{1}{4} \quad (3)$$

$$= \frac{3}{4} \quad (4)$$

$$\Pr(A) \times \Pr(B) = \frac{1}{2} \times \frac{7}{12} \quad (5)$$

$$= \frac{7}{24} \quad (6)$$

$$\Pr(AB) \neq \Pr(A) \Pr(B) \quad (7)$$

$$\therefore A \text{ and } B \text{ are not independent.} \quad (8)$$