Probability Assignment 1

EE22BTECH11209 - GUMMAPU SATHWIK PREETHAM*

Question : Events A and B are such that

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

1) State whether A and B are independent ?

Solution :

$$\Pr(AB) = 1 - \Pr(A' + B')$$
$$(2)$$
$$= 1 - \frac{1}{4} \quad (3)$$
$$= \frac{3}{4} \quad (4)$$
$$\Pr(A) \times \Pr(B) = \frac{1}{2} \times \frac{7}{12} \quad (5)$$
$$= \frac{7}{24} \quad (6)$$
$$\Pr(AB) \neq \Pr(A)\Pr(B)$$
$$(7)$$

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