Assignment-6

EE22BTECH11012-A.Chhatrapati

Question 12.13.3.72) If the events A and B are independent, then $\Pr(A \cap B)$ is equal to

(A) $\Pr(A)$+$\Pr(B)$
(B) $\Pr(A)$-$\Pr(B)$
(C) $\Pr(A)\Pr(B)$
(D) $\Pr(A) \mid \Pr(B)$

Solution: Since

$$\Pr(A \mid B) = \frac{\Pr(AB)}{\Pr(B)} \tag{1}$$

As A and B are independent events,

$$\Pr(A \mid B) = \Pr(A) \tag{2}$$

$$\Pr(A) = \frac{\Pr(AB)}{\Pr(B)} \tag{3}$$

$$\implies \Pr(AB) = \Pr(A)\Pr(B) \tag{4}$$

So answer is option(C)