

Assignment

EE23010: Probability and Random Processes

Indian Institute of Technology, Hyderabad

Aman Kumar
EE22BTECH11006

Question: If A and B are mutually exclusive events, then

- 1) $\Pr(A) \leq \Pr(B')$
- 2) $\Pr(A) \geq \Pr(B')$
- 3) $\Pr(A) < \Pr(B')$
- 4) none of these

Solution: Given, A and B are mutually exclusive events

So,

$$\Pr(AB) = 0 \quad (1)$$

Using axioms of probability we can write:

$$\Pr(A + B) \leq 1 \quad (2)$$

$$\Pr(A) + \Pr(B) - \Pr(AB) \leq 1 \quad (3)$$

$$\Pr(A) \leq 1 - \Pr(B) \quad (4)$$

$$\Pr(A) \leq \Pr(B') \quad (5)$$

\therefore Option (1) is correct.