TOPIC

Engineering Probability and Statistics – Section II – Question 10

QUESTION

Events A and B are mutually exclusive. If P(A) = 0.5, and P(B) = 0.4, the events A and B are

(A) not independent
(B) partially independent
(C) independent
(D) cannot determine independence

HINT

Two events A and B are said to be independent if $P(A \cap B) = P(A)P(B)$.

SOLUTION

Events A and B are mutually exclusive. That is,

$$A \cap B = \emptyset.$$

Therefore,

$$P(A \cap B) = P(\emptyset) = 0.$$

On the other hand,

$$P(A)P(B) = 0.5 \times 0.4$$
$$= 0.2$$
$$\neq P(A \cap B).$$

Hence, events A and B are not independent.

ANSWER

(A)

CONTRIBUTOR

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