

AI1110

Assignment 3

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1 GRADE 11 EX.16.2 EXAMPLE 8 QUESTION 8

A coin is tossed three times „consider the following events.A:’No head appears’, B:’Exactly one head appears’ and C:’Atleast two heads appears’.

Do they form a set of mutually exclusive and exhaustive events?

Therefore , the events are pair-wise disjoint ,i.e, they are mutually exclusive.Hence ,A,B and C form a set of mutually exclusive and exhaustive events.

2 SOLUTION

The sample space of the experiment is

$$S = \begin{pmatrix} HHH \\ HHT \\ HTH \\ THH \\ HTT \\ THT \\ TTH \\ TTT \end{pmatrix}$$

and $A = (TTT)$,

$$B = \begin{pmatrix} HTT \\ THT \\ TTH \end{pmatrix} ,$$

$$C = \begin{pmatrix} HHT \\ HTH \\ THH \\ HHH \end{pmatrix}$$

Now ,

$$A \cup B \cup C = \begin{pmatrix} HHH \\ HHT \\ HTH \\ THH \\ HTT \\ THT \\ TTH \\ TTT \end{pmatrix} = S$$

Therefore , A ,B and C are exhaustive events .

Also ,

$$A \cap B = \phi , A \cap C = \phi \text{ and } B \cap C = \phi$$