



भारतीय प्रौद्योगिकी संस्थान हैदराबाद  
Indian Institute of Technology Hyderabad

# Probability Assignment

T.Sai Raghavendra(FWC22087)

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### I. PROBLEM2

#### A. Question

If A and B are events such that  $P(\frac{A}{B}) = P(\frac{B}{A})$ ,  
then

(A)  $A \subset B$  but  $A \neq B$

(B)  $A = B$

(C)  $A \cap B = \phi$

(D)  $P(A) = P(B)$

#### B. Solution

Given,  $P(\frac{A}{B}) = P(\frac{B}{A})$

$$\begin{aligned} &\implies \frac{P(AB)}{P(B)} = \frac{P(BA)}{P(A)} \\ \implies \frac{P(AB)}{P(B)} &= \frac{P(AB)}{P(A)} \quad (\text{Since } P(AB) = P(BA)) \\ &\implies \frac{1}{P(B)} = \frac{1}{P(A)} \\ &\therefore P(A) = P(B) \end{aligned}$$