Indian Institute of Technology Hyderabad

PROBABILITY ASSIGNMENT

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1 problem

Let A and B be independent events with P(A)=0.3 and P(B)=0.4 find (i).P(AB) (ii).P(A+B) (iii).P(A | B) (iv).P(B | A)

2 solution

Since A and B are independent events, we have

$$(i).P(AB) = P(A)P(B) \tag{1}$$
$$P(AB) = 0.3 \times 0.4 \tag{2}$$
$$P(AB) = 0.12 \tag{3}$$

$$(ii).P(A+B) = P(A) + P(B) - P(AB) \tag{4}$$
$$P(A+B) = 0.3 + 0.4 - 0.12 = 0.58 \tag{5}$$

$$(iii).P(A|B) = \frac{0.12}{0.40} = 0.3 \tag{6}$$

$$(iv).P(B|A) = \frac{P(B+A)}{P(A)} = \frac{0.12}{0.30} = 0.4 \tag{7}$$