AI1110 ASSIGNMENT-4

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***Abstract*—This document contains the solution for Assignment 4 (NCERT GRADE 10 CHAPTER 15 Example 9)**

EXAMPLE 9 :

Harpreet tosses two different coins simultaneously (say one is ₹1 and other is ₹2). What is the probability that she gets atleast one head ?

Solution :

Let $\Pr(X1)$ be the probability of getting head and so as $\Pr(X2)$ be the probability of getting head

let $\Pr(Y)$ be the probability of getting atleast one head .

so our required outcomes are HH,HT,TH.

$\Pr(Y=2)$ indicate that both ₹1 and ₹2 gets heads and $\Pr(Y=1)$ either of them will get one head

so

$$\Pr(Y=2) = \Pr(X1) \times \Pr(X2) = \frac{1}{2} \times \frac{1}{2} \quad (1)$$

$$\Pr(Y=1) = \Pr\left(\bar{X1}\right) \times \Pr(X2) \quad (2)$$

$$+ \Pr\left(\bar{X2}\right) \times \Pr(X1) \quad (3)$$

$$= \frac{1}{2} \times \frac{1}{2} + \frac{1}{2} \times \frac{1}{2} \quad (4)$$

therefore

$$\Pr(Y) = \Pr(Y=2) + \Pr(Y=1) \quad (5)$$

$$= \frac{1}{2} \times \frac{1}{2} + \frac{1}{2} \times \frac{1}{2} + \frac{1}{2} \times \frac{1}{2} \quad (6)$$

$$= \frac{1}{4} + \frac{1}{2} = \frac{3}{4} \quad (7)$$