Assignment 1

EE22BTECH11053 - Tanmay Vishwasrao

Question 10.13.3.25

A coin is tossed 3 times. List the possible outcomes. Find the probability of getting (i) all heads (ii) at least 2 heads

Solution: As the coin is tossed 3 times we will get 8 different outcomes.

The list of possble outcomes is HHH,HHT,HTH,THH,HTT,THT,TTH,TTT. The sample space is $n(S) = 8$.

Let us consider a random variable X such that

$$X = \begin{cases} 0 & \text{Tails} \\ 1 & \text{Heads} \end{cases} \tag{1}$$

1) all heads

$$\Pr(X = 3) = \frac{\text{All Heads}}{\text{Total number of outcomes}} \tag{2}$$

$$= \frac{1}{8} \tag{3}$$

2) atleast 2 heads

$$\Pr(X \geq 2) = \frac{\text{atleast 2 heads}}{\text{Total number of outcomes}} \tag{4}$$

$$= \frac{1}{2} \tag{5}$$