EE23010 NCERT Exemplar

Vishal A - EE22BTECH11057

Question 10.13.3.35
Box A contains 25 slips of which 19 are marked Rs 1 and others are marked Rs 5 each. Box B contains 50 slips of which 45 are marked Rs 1 and others are marked Rs 13 each. Slips of both boxes are poured into a third box and reshuffled. A slip is drawn at random. What is the probability that it is marked other than Rs 1?

Solution:
Let

$$X = \begin{cases} 0 & \text{Slips of Rs 1} \\ 1 & \text{Slips of Rs 5} \\ 2 & \text{Slips of Rs 13} \end{cases} \tag{1}$$

Using the third axiom of probability

$$p_X(0) + p_X(1) + p_X(2) = 1 \tag{2}$$

$$p_X(1) + p_X(2) = 1 - \frac{64}{75} \tag{3}$$

$$= \frac{11}{75} \tag{4}$$

Therefore, the probability that the slip drawn from the combined box is marked other than Rs 1 is $\frac{11}{75}$.