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

Random variable	Value	Definition
	0	Slips of Rs 1
X	1	Slips of Rs 5
	2	Slips of Rs 13
	0	Box A
Y	1	Box B
	2	Box where slips of Box A and Box B are combined

TABLE I
DISTRIBUTION

Using the third axiom of probability

$$p_{XY}(02) + p_{XY}(12) + p_{XY}(22) = 1 \qquad (1)$$

$$p_{XY}(12) + p_{XY}(22) = 1 - \frac{64}{75} \qquad (2)$$

$$= \frac{11}{75} \qquad (3)$$

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