Assignment 1

Question-1.13

From a lot of 30 bulbs which include 6 defectives, a sample of 4 bulbs is drawn at random with replacement. Find the probability distribution of the number of defective bulbs.

Solution:

Given 30 bulbs which include 6 defectives and 4 bulbs are drawn at random with replacement.

TABLE I
PROBABILITY DISTRIBUTION OF THE NUMBER OF DEFECTIVE BULBS.

No. of defective bulbs drawn	Probability
0	$\frac{24^4}{30^4}$
1	$\frac{6}{30} \times \frac{24^3}{30^3} \times 4$
2	$\frac{6^2}{30^2} \times \frac{24^2}{30^2} \times 6$
3	$\frac{6^3}{30^3} \times \frac{24}{30} \times 4$
4	$\frac{6^4}{30^4}$