AI1110 ASSIGNMENT-7

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***Abstract*—This document contains the solution for Assignment 4 (CBSE CLASS 12 CHAPTER 13 QUESTION-7)**

QUESTION 7 :

A box of oranges is inspected by examining three randomly selected oranges drawn without replacement. If all the three oranges are good, the box is approved for sale, otherwise, it is rejected. Find the probability that a box containing 15 oranges out of which 12 are good and 3 are bad ones will be approved for sale.

Solution : observe Tables as followed

Event	Description
$X_1 = 1$	good orange obtained
$X_2 = 1$	picking good orange being good
$X_3 = 2$	two oranges drawn being good

TABLE I

Probability	Value
$\Pr(X_1 = 1)$	$\frac{12}{15} = \frac{4}{5}$
$\Pr(X_1 = 0)$	$\frac{1}{5}$
$\Pr(X_2 = 1 \vert X_1 = 1)$	$\frac{11}{14}$
$\Pr(X_2 = 1 \vert X_1 = 0)$	$\frac{12}{14} = \frac{6}{7}$
$\Pr(X_3 = 1 \vert X_1 = 1, X_2 = 1)$	$\frac{10}{13}$
$\Pr(X_3 = 1 \vert X_1 = 0, X_2 = 1)$	$\frac{11}{13}$

TABLE II

probability for getting all good oranges is :

$$\Pr(X_1 = 1) \times \Pr(X_2 = 1 \vert X_1 = 1) \times \Pr(X_3 = 1 \vert X_1 = 1, X_2 = 1) \quad (1)$$

$$= \frac{4}{5} \times \frac{11}{14} \times \frac{10}{13} \quad (2)$$

$$= 0.483 \quad (3)$$