

# MUHAMMAD AHMAD

## FA23-BLE- II3 (6)

### Probability Methods In Engineering ASSIGNMENT

Q1:

Given Information:

Total Bulb = 1

Defective Bulb = 5 Accepted Bulb = 6

Two bulbs are selected randomly without replacement.

$$\frac{2!}{(2-2)!} = 2 \quad 4S = \text{overall total ways}$$

Do we have 45 different ways to select two bulbs at random without replacement

(a) Probability of exactly one defective bulb:

We have to select two bulbs and from given statement one of the bulbs is defective so the other is obviously accepted

Total ways = Select 1 from defective  $\times$  Select others from accepted

$$5 \times 6 = 24 \text{ Total ways for } a$$

So we have 24 ways to select one defective and one accepted bulb.

$$\text{Prob}[a] = \frac{\text{Total ways for } a}{\text{over all total ways}} = \frac{24}{45}$$

(6) Probability of exactly two defective bulbs  
how to select two bulbs over all and both are defective:

Total ways = select 2 from defective

$$H = \frac{2!}{(2-2)!} = 2 \quad \text{Total ways for } b$$

So we have 6 ways to select both defective bulbs.

$$\text{Prob}[b] = \frac{\text{Total ways for } b}{\text{overall ways}} = \frac{6}{45}$$

# Q23

Given Information

1; 5/ Compare to the detected : So solo components are aep teol

PCDefeteJ- PLi;½JΘ'os: PNot detectealJ - [N.DJ= cgs

2: Z{ component is deccled hese is 4ols chcre it wuy not rejeta!  
PC not rejted rdefedat): o o4,

2 f component is not deselected here is 7% chat it was rejcdel  
r[rejected inot defeeted J: So Pntt reist Inat cesectiv]  
PL Ne )NO=o43

(4 foI Alterotie method (TREE):

P[NDIR]-d07

PCAIO]-6-96

(a) Prokablity component which are rejected :

PC RJ- PC RO] +PCRND  
PCRID].PCo]rPRJND) PCvDJ  
(oa)(eos)+loro)ko4s)

PCRJ bllac., erobe c9 retted is o 14s co PCAcel]. PCAJ is:  
OR

PCARJ N: - PCRJ = -oIu5= 08855

h) proaility on rejectd but not cebected.

PC NDIR] P[RIND] i;½PND) o07 xo9s o53 (56+)  
PIRI

(c) probability 4 notejecteh is tebectcl.

PCD INR) = PCNRID]- P[0J

(02-9)

035S5