19L-1196 Probability & Statistics

Section 4A TO: Mubashir Qayyum

Assignment # 3

Q# 1

$P(A) = 0.4$ $P(A') = 0.6$

$P(B) = 0.5$ $P(B') = 0.5$

$P(C) = 0.2$ $P(C') = 0.8$

Let 'd' be the probability of The system gets damaged.

$P(d) = P(\text{by one virus}) +$

$P(\text{by two virus}) +$

$P(\text{by three virus})$

$P(d) = P(A B' C') + P(A' B C') + P(A' B' C) +$

$P(A B C') + P(A B' C) + P(A' B C) +$

$P(A B C)$

$= 0.4 \times 0.5 \times 0.8 + 0.6 \times 0.5 \times 0.8 + 0.6 \times 0.5 \times 0.2$
$+ 0.4 \times 0.5 \times 0.8 + 0.4 \times 0.5 \times 0.2 + 0.6 \times 0.5 \times 0.2$
$+ 0.4 \times 0.5 \times 0.2$

$P(d) = 0.46 + 0.26 + 0.04$

$= \boxed{0.76}$ Ans.

Q# 2

$P(B_1) = 0.2$

$P(B_2) = 0.3$

$P(B_1 \text{ && } B_2) = 0.2 \times 0.3$

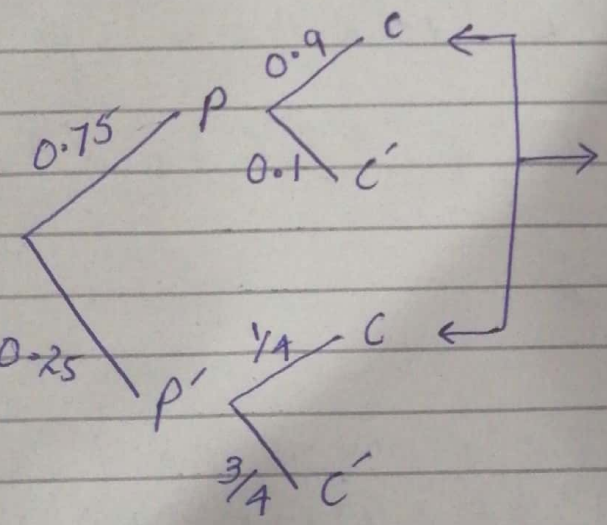
$= 0.06$ Ans

Q3 $P(c|p) = 0.9$ $P(c|p') = 1/4$

~~$P(c) = 0.19$~~

c: correct option c′: Wrong

p: prepared p′: unprepared.



$P(c) = 0.75 \times 0.9 + 0.25 \times 0.25$

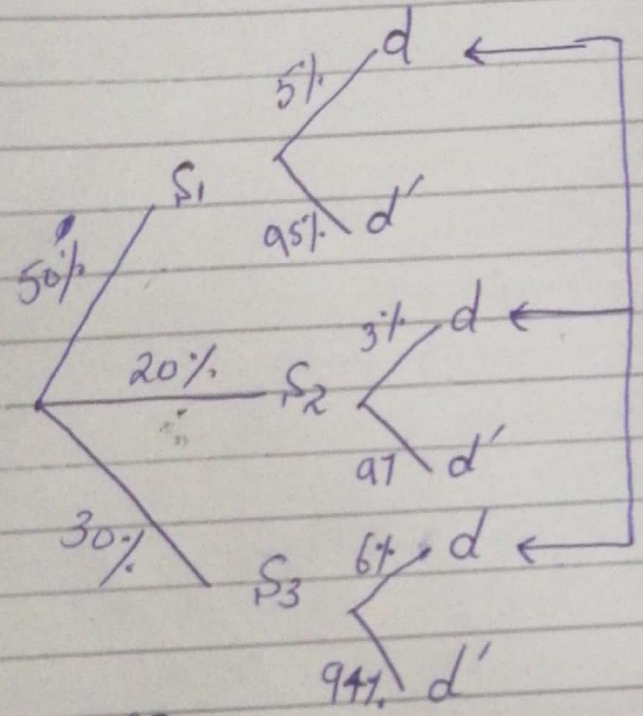
$= 0.7375$

$$P(p'|c) = \frac{P(p' \cap c)}{P(c)} = \frac{0.25 \times 0.25}{0.7375}$$

$= 0.08$ Ans

Q # 4/a

d: defective



$$P(d) = 0.5 \times 0.05 + 0.2 \times 0.03 + 03 \times 0.06$$

$$= 0.049 \text{ Ans}$$

Q # 4/B

Find

$$P(S_1 | d) = \frac{P(S_1 \cap d)}{P(d)}$$

$$= \frac{0.5 \times 0.05}{0.049}$$

$$= 0.51 \text{ Ans.}$$