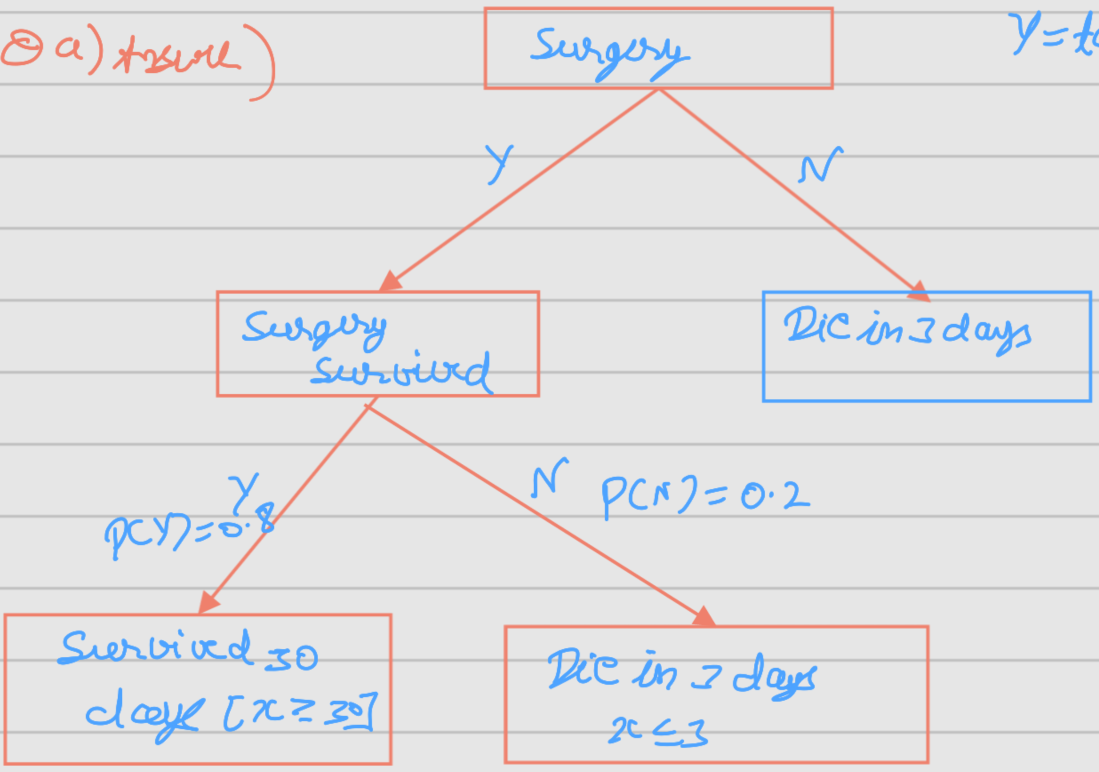
a) Answer)

Y = taken, N = not taken



c) Answer:

A.T.Q

t_+ = test +ve ; t_- = Test −ve ; S_+ = survived

S_- = not survived

Now → $P(t_+ | S_+) = 0.95$

$P(t_- | S_-) = 0.05$

$P(t_- | S_+) = 1 - P(t_+ | S_+) = 1 - 0.95 = 0.05$

$P(t_+ | S_-) = 1 - P(t_- | S_-) = 1 - 0.05 = 0.95$

$$P(S_+ | t_+) = \frac{P(t_+ | S_+) \cdot P(S_+)}{P(t_+ | S_+) \cdot P(S_+) \cdot P(t_- | S_+) \cdot P(S_+)}$$

$$= \frac{0.95 \times 0.8}{0.95 \times 0.8 + 0.05 \times 0.2} = \frac{76}{77}$$

d) yes the surgery be performed if the result of the test is positive because if have 98%. chance to survive ~~the~~ if test is +ve and perform surgery

(b) According to question we have Given that living $f(n)$ is linear in nature,

$L(30) = 1.0$, $L(0) = 0$

→ Applying eq of line, ⇒ $\left(\frac{y_{30} - y_0}{30 - 0}\right) = \overset{\text{slope}}{m} = \frac{1-0}{30-0}$

$m = \frac{1}{30}$

so now $L(x) = \frac{1}{30}x + c$ ①

At $L(0)$

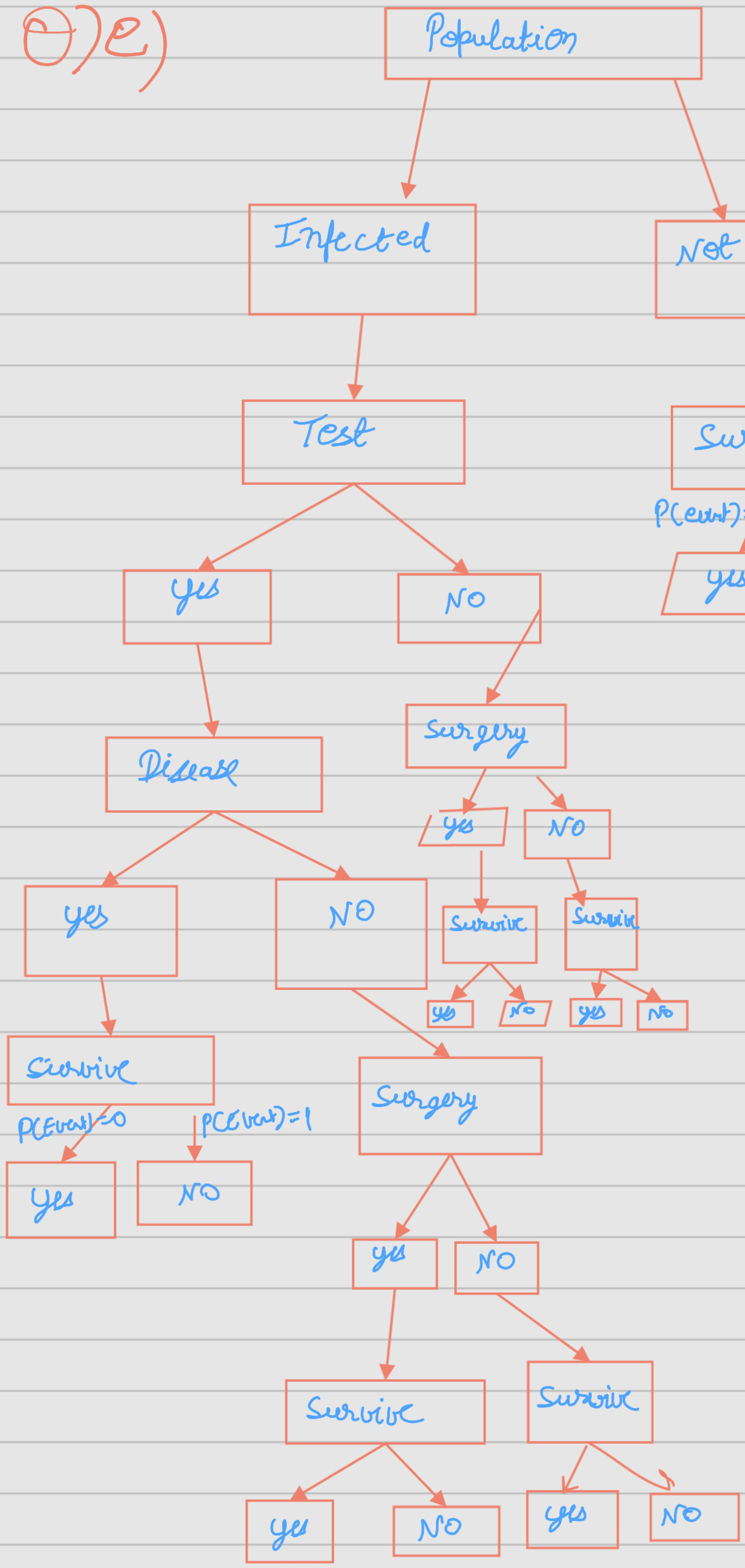
$$L(0) = 0 + C = 0 \Rightarrow C = 0 \quad (2)$$

so now putting (2) in (1)

$$\boxed{L(x) = \frac{x}{30}}$$

$$L(1) = \frac{1}{30}, \quad L(2) = \frac{2}{30} = \frac{1}{15}, \quad L(3) = \frac{3}{30} = \frac{1}{10}$$

Q) e)



e) F ts) $P(DT)$: Probability of Aquiring disease during test
$P(\overline{DT})$: " not Aquiring " "

$P(SS/T)$: Probability of successfully surgery given Test is performed.

$$P(DT) = 0.005$$
$$P(\overline{DT}) = 0.995$$

$$P(SS/T) = P(t_+) \times P(SS/T) + P(\overline{DT}) + P(SS/t_-) * P(\overline{DT}) * \quad (1) \rightarrow P(t_+)$$

$P(SS/t_+) = 0.98$; $P(\overline{DT}) = 0.995$

$$P(t_-) = P(t_-/SS) \times P(SS) + P(-/\overline{SS}) \times P(\overline{SS})$$
$$= (0.05) \times (0.8) + (0.95) \times (0.2) = 0.23$$

so $P(t_+) = 0.77$

$P(SS/t_-) = 0.17$

Putt all the value in eq (1)

$$P(SS/T) = 0.78$$

No, the test should not be contracting prior to operation because it decrease is the P(+) of successful surgery to 0.78 on the other hand successful surgery without any test is 0.8

→ decision tree