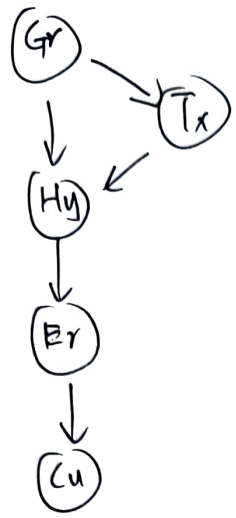
4.

a)



Gr	P(Tx | Gr)
T	0.6
F	0.2

Gr	Tx	P(Hy | Gr, Tx)
T	T	0.84
T	F	0.76
F	T	0.52
F	F	0.02

Hy	P(Er | Hy)
T	0.75
F	0.12

Er	P(Cu | Er)
T	0.92
F	0.07

$$P(Cu \wedge Er \wedge Hy \wedge Tx \wedge Gr) = P(Cu \mid Er \wedge Hy \wedge Tx \wedge Gr) \cdot P(Er \mid Hy \wedge Tx \wedge Gr) \cdot P(Hy \mid Gr \wedge Tx) \cdot P(Tx \mid Gr) \cdot P(Gr)$$

$$= P(Cu \mid Er) \cdot P(Er \mid Hy) \cdot P(Hy \mid Gr, Tx) \cdot P(Tx \mid Gr) \cdot P(Gr)$$

↓ Cu independent with Hy, Tx, Gr

↓ Er independent with Tx, Gr

b) $P(Cu = T \wedge Er = T \mid Gr = F \wedge Tx = F \wedge Hy = T)$

$$= \frac{P(Cu = T \wedge Er = T \wedge Gr = F \wedge Tx = F \wedge Hy = T)}{P(Gr = F \wedge Tx = F \wedge Hy = T)} = \frac{0.92 \times 0.75 \times 0.02 \times (1-0.2) \times (1-0.15)}{0.02 \times (1-0.2) \times (1-0.15)} \times \left[0.92 \times 0.75 + 0.02 \times (1-0.75) + (1-0.92) \times 0.75 + (1-0.02) \times (1-0.75) \right]$$

↓ calculate for Cu, Er = TT, TF, FT, FF

$$= \frac{0.009384}{0.136} = 0.069$$