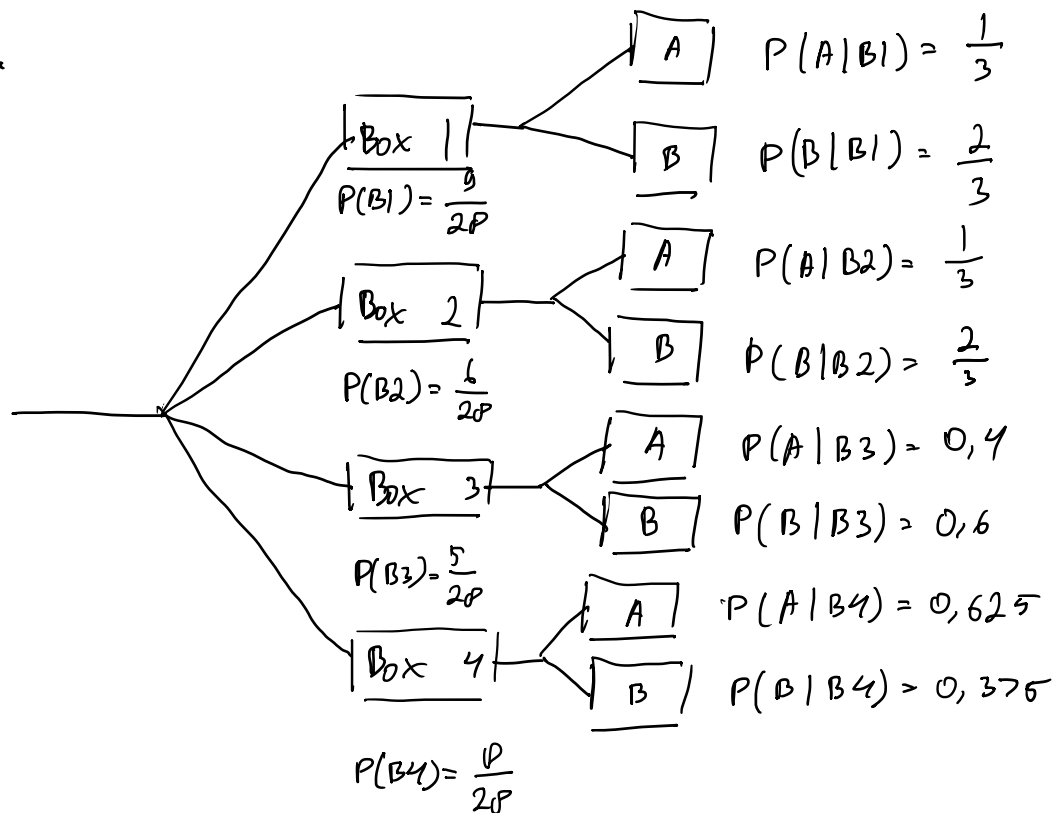


1.

	Box 1	Box 2	Box 3	Box 4	
0,1 μF	3	2	2	5	$\rightarrow A$
1,0 μF	6	4	3	3	$\rightarrow B$

a.



b. $P(A) = P(A \cap B1) + P(A \cap B2) + P(A \cap B3) + P(A \cap B4)$

$$= P(A|B1) \cdot P(B1) + P(A|B2) \cdot P(B2) + P(A|B3) \cdot P(B3) + P(A|B4) \cdot P(B4)$$

$$= \frac{1}{3} \cdot \frac{9}{20} + \frac{1}{3} \cdot \frac{6}{20} + 0,4 \cdot \frac{5}{20} + 0,625 \cdot \frac{10}{20}$$

$$= \frac{3}{20} + \frac{2}{20} + \frac{2}{20} = \frac{7}{20} = \frac{3}{7}$$

c. $P(B) = 1 - P(A)$

$$= 1 - \frac{3}{7}$$

$$= \frac{4}{7}$$

$$d. P(B_2 | A) = \frac{P(B_2 \cap A)}{P(A)} = \frac{P(B_2) \cdot P(A|B_2)}{P(A)}$$

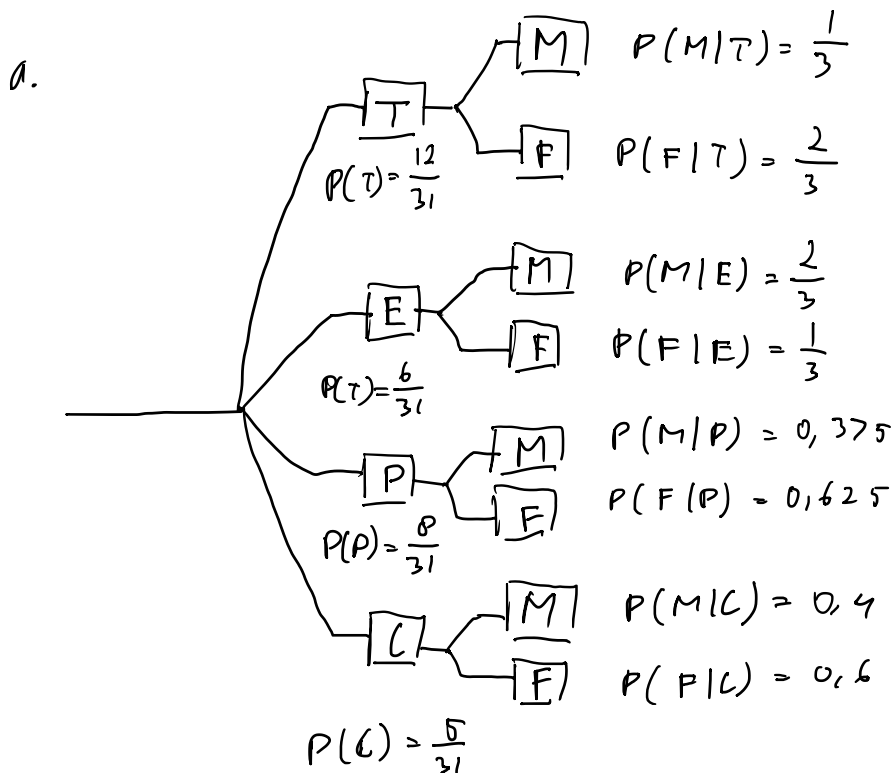
$$= \frac{\frac{6}{20} \cdot \frac{1}{3}}{\frac{3}{7}} = \frac{14}{84} = \frac{1}{6}$$

$$e. P(B_4 | B) = \frac{P(B_4 \cap B)}{P(B)} = \frac{P(B_4) \cdot P(B|B_4)}{P(B)}$$

$$= \frac{\frac{8}{20} \cdot 0,375}{\frac{4}{7}} = \frac{\frac{3}{20}}{\frac{4}{7}} = \frac{21}{80} = \frac{3}{16}$$

2.

	T. Eng	E. Eng	P. Eng	C. Eng
Male	4	4	3	2
Female	8	2	5	3



b.

$$P(P|M) = \frac{P(P \cap M)}{P(M)} = \frac{P(P) \cdot P(M|P)}{P(M)}$$

$$P(M) = P(T \cap M) + P(E \cap M) + P(P \cap M) + P(L \cap M)$$

$$= P(T) \cdot P(M|T) + P(E) \cdot P(M|E) + P(P) \cdot P(M|P) + P(L) \cdot P(M|L)$$

$$= \frac{12^4}{31} \cdot \frac{1}{31} + \frac{8^2}{31} \cdot \frac{2}{31} + \frac{8}{31} \cdot 0,375 + \frac{5}{31} \cdot 0,4$$

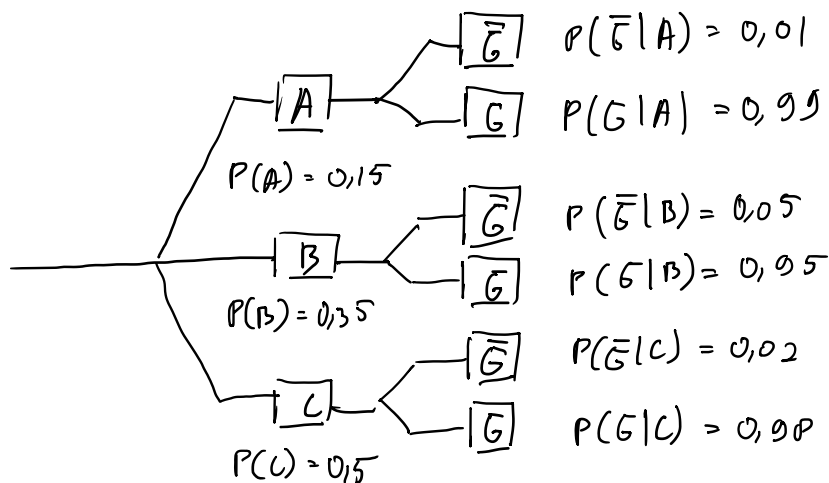
$$= \frac{4}{31} + \frac{4}{31} + \frac{3}{31} + \frac{2}{31}$$

$$= \frac{13}{31}$$

$$P(P|M) = \frac{P(P) \cdot P(M|P)}{P(M)} = \frac{\frac{8}{31} \cdot 0,375}{\frac{13}{31}} = \frac{3}{13}$$

$$c. P(M) = \frac{13}{31}$$

3.a.



$$b. P(\bar{G}) = P(\bar{G} \cap A) + P(\bar{G} \cap B) + P(\bar{G} \cap C)$$

$$= P(\bar{G}|A) \cdot P(A) + P(\bar{G}|B) \cdot P(B) + P(\bar{G}|C) \cdot P(C)$$

$$= 0,01 \cdot 0,15 + 0,05 \cdot 0,35 + 0,02 \cdot 0,5$$

$$= 0,0015 + 0,0175 + 0,01$$

$$= 0,029$$

$$c. P(B|\bar{G}) = \frac{P(B \cap \bar{G})}{P(\bar{G})} = \frac{P(B) \cdot P(\bar{G}|B)}{P(\bar{G})} = \frac{0,35 \cdot 0,05}{0,029} = \frac{35}{58} = 0,603$$