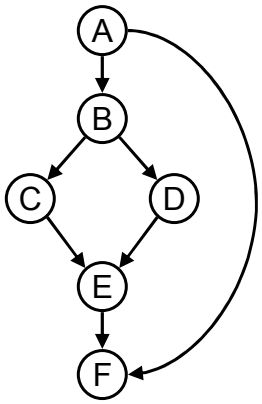
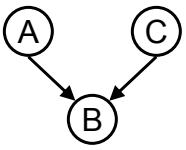
Question 1

- Which of the following statements hold given this net structure?
  - 1 $C \perp\!\!\!\perp D | \emptyset$
  - 2 $C \perp\!\!\!\perp D | \{B\}$
  - 3 $A \perp\!\!\!\perp D | \{B\}$
  - 4 $A \perp\!\!\!\perp D | \{B, F\}$
  - 5 $A \perp\!\!\!\perp D | \{B, F, E\}$



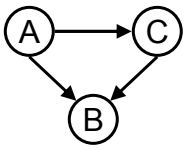
Question 2

- Which nets guarantee each statement:



NET X

NET Y



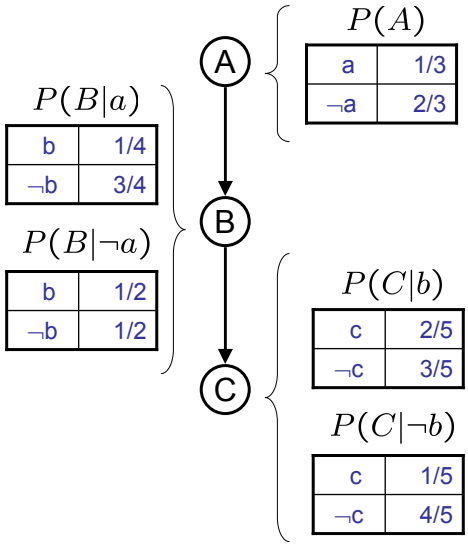
NET Z

  - 1 $A \perp\!\!\!\perp C | \emptyset$
  - 2 $A \perp\!\!\!\perp C | \{B\}$

Question 3

- What is:

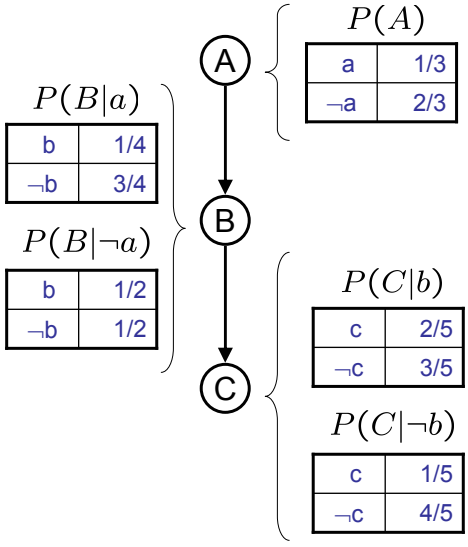
$$P(B|a, \neg c)$$



Question 4

- What fraction of prior samples from this network will be:

$$a, b, \neg c$$

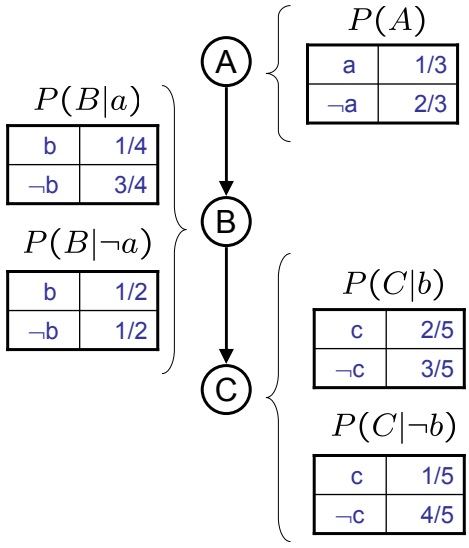


Question 5

- What fraction of likelihood weighted samples from this network will be:

$$a, b, \neg c$$

if we condition on A=a and C=¬c and what will each such sample's weight be?



Question 6

- Which of the following are true:

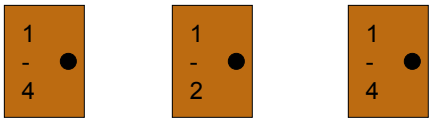
1. $P(X_t, e_{1:t}) = \sum_{x_{t-1}} P(x_t, x_{t-1}, e_{1:t})$
2. $P(X_t, e_{1:t}) = P(e_t|x_t) \sum_{x_{t-1}} P(x_t|x_{t-1}) P(x_{t-1}, e_{1:t-1})$
3. $P(X_t|e_{1:t}) = P(e_t|x_t) \sum_{x_{t-1}} P(x_t|x_{t-1}) P(x_{t-1}|e_{1:t-1})$
4. $P(X_t, e_{1:t}) = \sum_{x_{t-1}} P(e_t, x_t|x_{t-1}) P(x_{t-1}, e_{1:t-1})$

Question 7

- Draw a sensible Bayes' net over the variables:
  - (S)tudy
  - Get a (P)erfect score
  - Exam seems (E)asy to you
  - (U)nderstand the material
  - Prof. chooses easy (Q)uestions
  - Go to (L)ecture

Question 8

- Three doors, two have $0, one has $300
- Even chances of the $300 behind each are ¼, ½, ¼.



- What is the VPI of being told which door has the $300?
- What is the VPI of being told what's behind door 1?