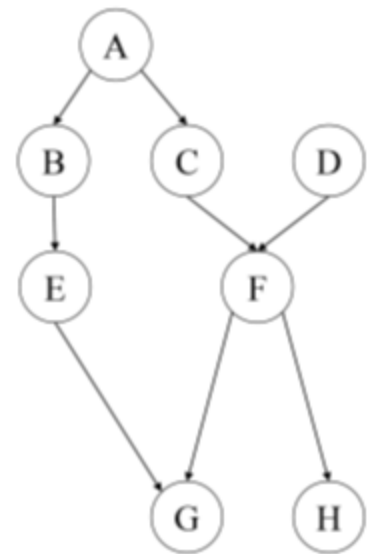# Homework #5

Due Jun 9 by 11:59pm   **Points** 20   **Submitting** a file upload
**Available** May 31 at 12pm - Jun 11 at 11:59pm

This assignment was locked Jun 11 at 11:59pm.

1. Consider the Bayesian network below. Answer true or false for the following questions on d-separation. Show the blocked paths for partial credit.

a. I (D, G | { }) **[2 points]**

b. I (B, C | { }) **[2 points]**

c. I (B, C | {A}) **[2 points]**

d. I (B, C | {A, G}) **[2 points]**

e. I (B, C | {A, C, G}) **[2 points]**

2. Calculate the following probabilities using the Bayesian network below. The CPTs for each node are shown below the network. You may need to use the various probability formulas such as marginalization, the chain rule, conditional independence, Bayes rule, etc.
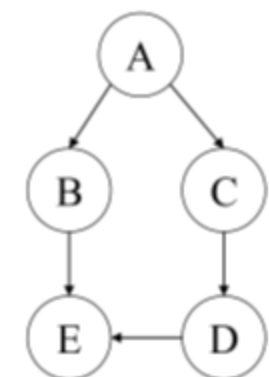
Conditional probability tables are given below:

A	P(A)
true	0.4
false	0.6

A	B	P(B|A)
true	true	0.9
true	false	0.1
false	true	0.25
false	false	0.75

C	D	P(D|C)
true	true	0.75
true	false	0.25
false	true	0.9
false	false	0.1

B	D	E	P(E|B,D)
true	true	true	0.1
true	true	false	0.9

true	false	true	0.2
true	false	false	0.8
false	true	true	0.3
false	true	false	0.7
false	false	true	0.4
false	false	false	0.6

A	C	P(C|A)
true	true	0.25
true	false	0.75
false	true	0.8
false	false	0.2

1. P(A=true, B=false, C=true, D=false, E=false) **[3 points]**

2. P(B=false, C=false) **[4 points]**

3. P(A=true | B=false, C=false) **[3 points]**