

# Markov Networks

测验, 4 个问题

✓ 恭喜！您通过了！

下一项



1 / 1  
分数

1.

**Factor Scope.** Let  $\phi(a, c)$  be a factor in a graphical model, where  $a$  is a value of  $A$  and  $c$  is a value of  $C$ . What is the scope of  $\phi$ ?

- ☐ {A}
- ☐ {A, B, C, E}
- ☒ {A, C}



正确

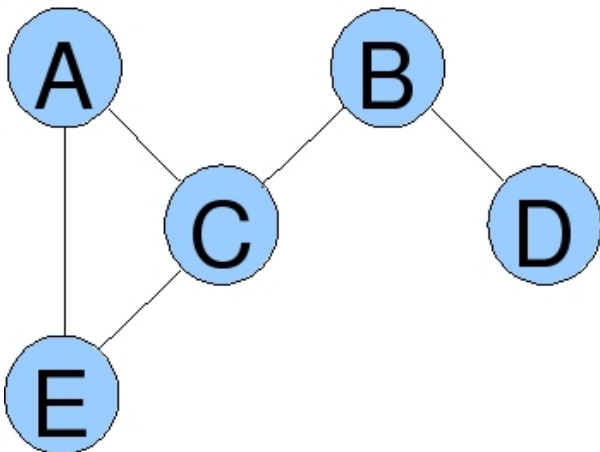
- ☐ {A, C, E}



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2.

**Independence in Markov Networks.** Consider this graphical model from week 1's quizzes. This time, all of the edges are undirected (see modified graph below). Which pairs of variables are independent in this network? You may select 1 or more options.



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未选择的是正确的



No pair of variables are independent on each other.



正确

No pairs of variables are independent in a fully connected Markov network.



A, D



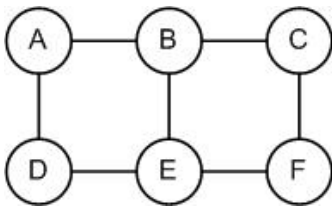
未选择的是正确的



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3.

**Factorization.** Which of the following is a valid Gibbs distribution over this graph?



$\phi(A, B, C, D, E, F)$



$\frac{\phi(A) \times \phi(B) \times \phi(C) \times \phi(D) \times \phi(E) \times \phi(F)}{Z}$ , where  $Z$  is the partition function



正确

A Gibbs distribution is a factor product divided by the partition function, and this expression complies with this definition.



There is no Gibbs distribution for this Markov network



$\phi(A, B, D) \times \phi(C, E, F)$



1 / 1  
分数

4.

**Factors in Markov Network.** Let  $\pi_1[A, B]$ ,  $\pi_2[B, C]$ , and  $\pi_3[A, C]$  be all of the factors in a particular undirected graphical model. Then what is  $\sum_{A,B,C} \pi_1[A, B] \times \pi_2[B, C] \times \pi_3[A, C]$ ? More than one answer could be correct.



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未选择的是正确的

☐

Always equal to 1



未选择的是正确的

☐

Always equal to the partition function,  $Z$



正确

This is the formula for  $Z$ , the partition function.

☐

Always less than or equal to 1



未选择的是正确的

☐

Always greater than or equal to  $\pi_1[a, b] \times \pi_2[b, c] \times \pi_3[a, c]$ , where  $a$  is a value of  $A$ ,  $b$  is a value of  $B$ , and  $c$  is a value of  $C$



正确

This is the sum over the factor products for all possible values of the variables in the factors, so it is greater than or equal to the factor product for only one combination of values.

☐

Always greater than or equal to 0



正确

The factors can be any positive function.

