التقنيات الحسابية للاحياء 2
9:11
الثلاثاء 15/6/2021
د/ابراهيم العوضى عبدالحميد السمان

Faculty of Computers & Information, Assiut University
4th Level
Final Exam
Duration: 2 hours

1

* الإسم الرباعي (بالعربي فقط)

عائشة محمدصفوت عبدالرحمن محمد

2

* رقم الجلوس

1620175047

3

المستوي *

- الاول
- الثاني
- الثالث
- رابعة 2013
- رابعة 2014
- رابعة 2015
- رابعة 2016
- رابعة 2017

4

البرنامج *

- عام
- بايو
- هندسة

5

رقم المعمل *

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6

رقم الكمبيوتر *

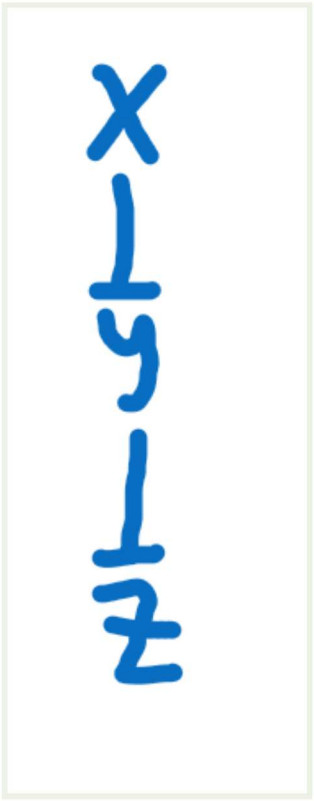
19

7

الكود (قد تمت مراجعة بيانات الطالب ورقم الجلوس) *

1cSo

8



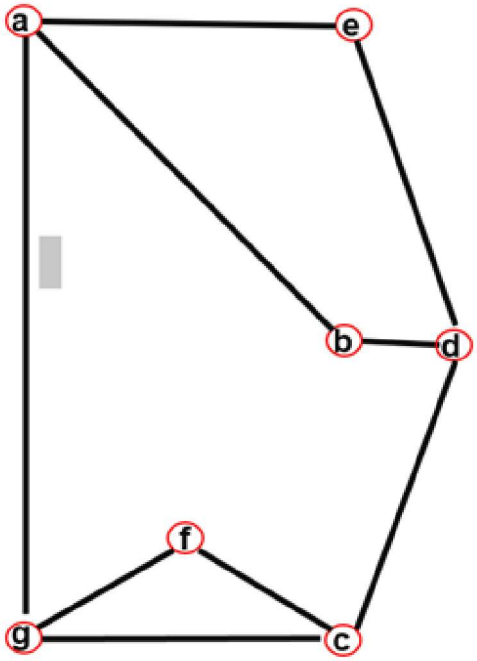
The next figure represents the protein-protein interaction network.
(3 Points)

- True
- False

9

What is the value of I?
(3 Points)

Assume we have the next graph and the adjacency matrix.



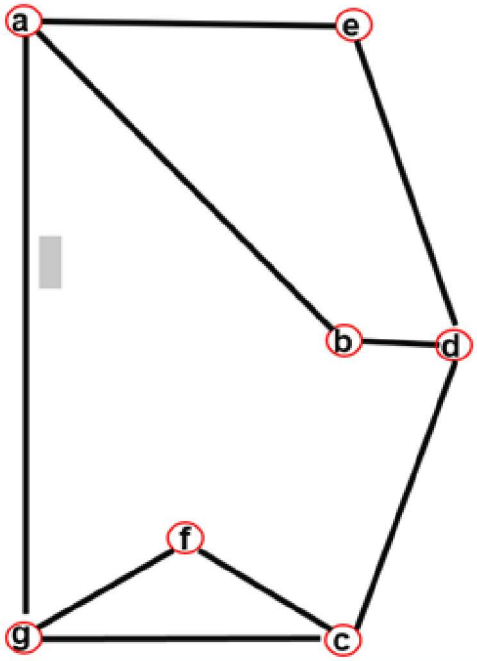
	a	b	c	d	e
a	I				II
b					
c	III				
d					
e		V	VI		
f					
g					
h					

- 0
- 1
- 2

10

What is the value of IV?
(3 Points)

Assume we have the next graph and the adjacency matrix.



	a	b	c	d	e
a	I				II
b					
c	III				
d					
e		V	VI		
f					
g					
h					

- 0
- 1
- 2

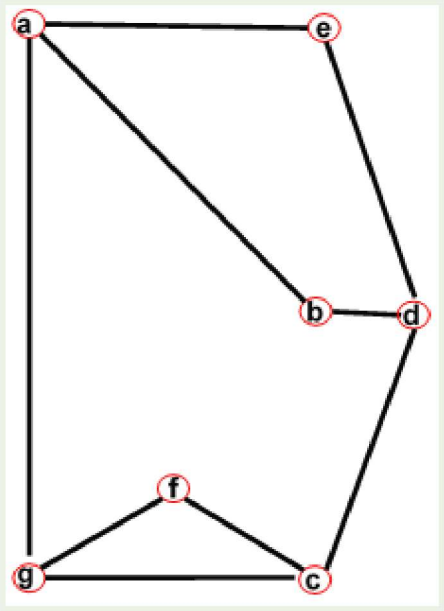
11

The metabolic network contains about 6,000 genes.
(2 Points)

- True
- False

12

What is the degree of node g?
(3 Points)

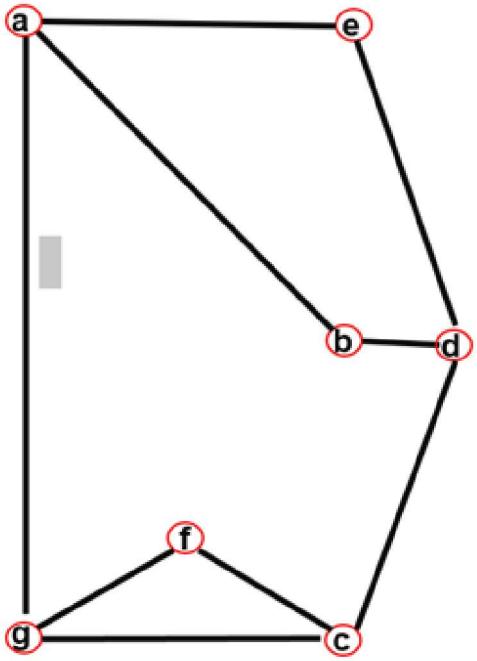


- 2
- 3
- 4

13

What is the value of III?
(3 Points)

Assume we have the next graph and the adjacency matrix.

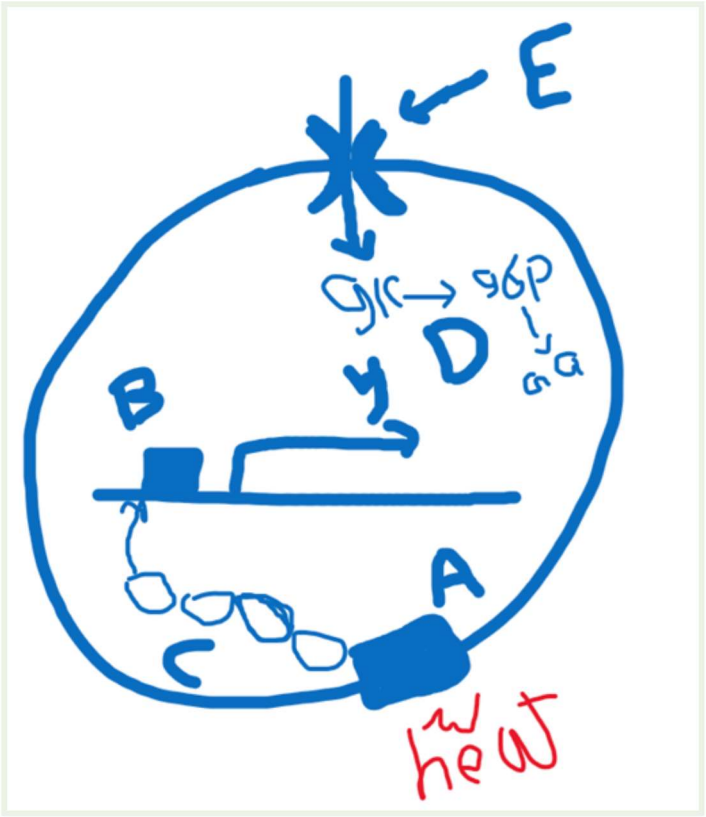


	a	b	c	d	e
a	I				II
b					
c	III				
d					
e		V	VI		
f					
g					
h					

- 0
- 1
- 2

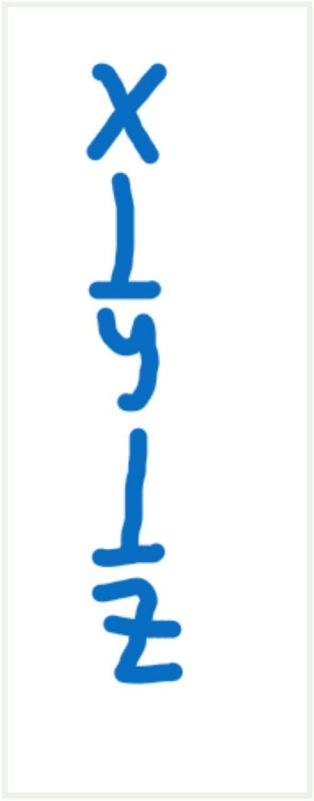
14

Is B a protein?
(3 Points)



- True
- False

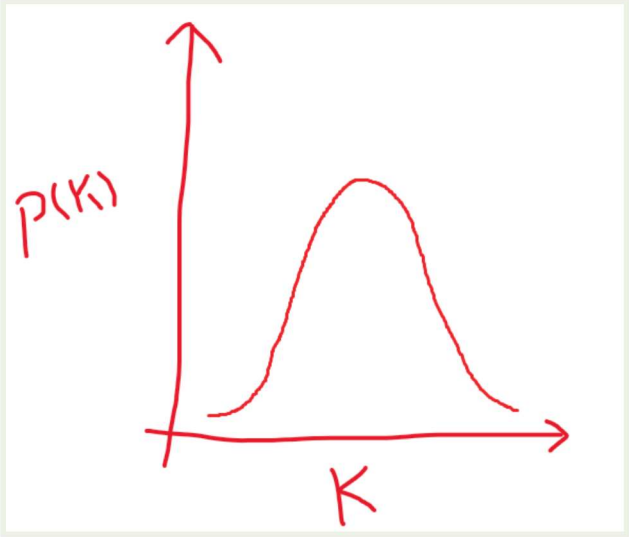
15



In the next figure, the cell should REDUCE X to INCREASE Z.
(3 Points)

- True
- False

16

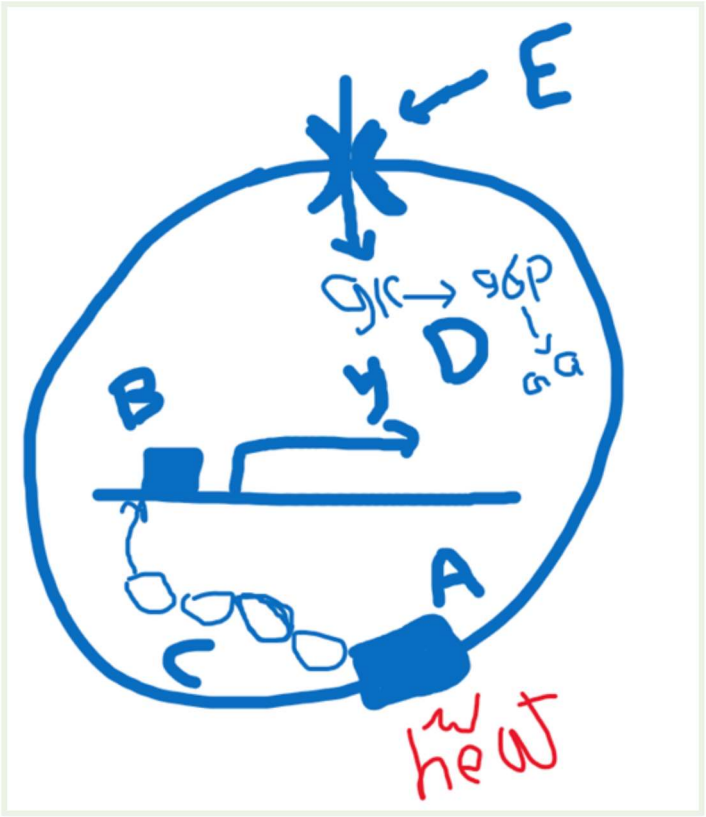


The next figure is true in the metabolic networks.
(3 Points)

- True
- False

17

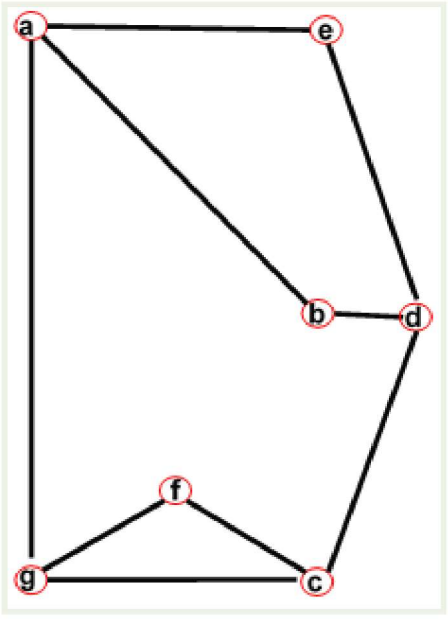
What is E?
(3 Points)



- Membrane protein
- Transporter
- Sensor

18

What is the degree of node a?
(3 Points)



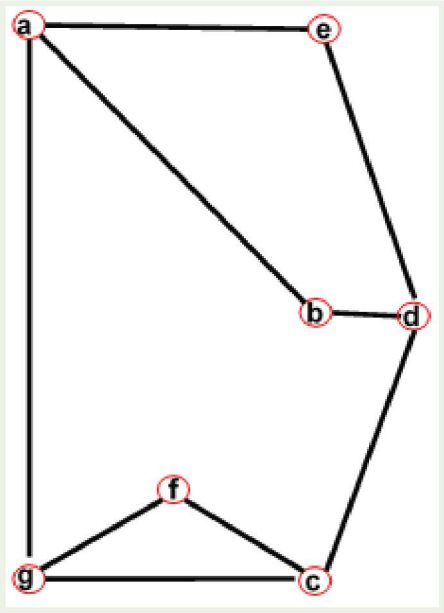
- 2

3

4

19

What is the degree of node f?
(3 Points)



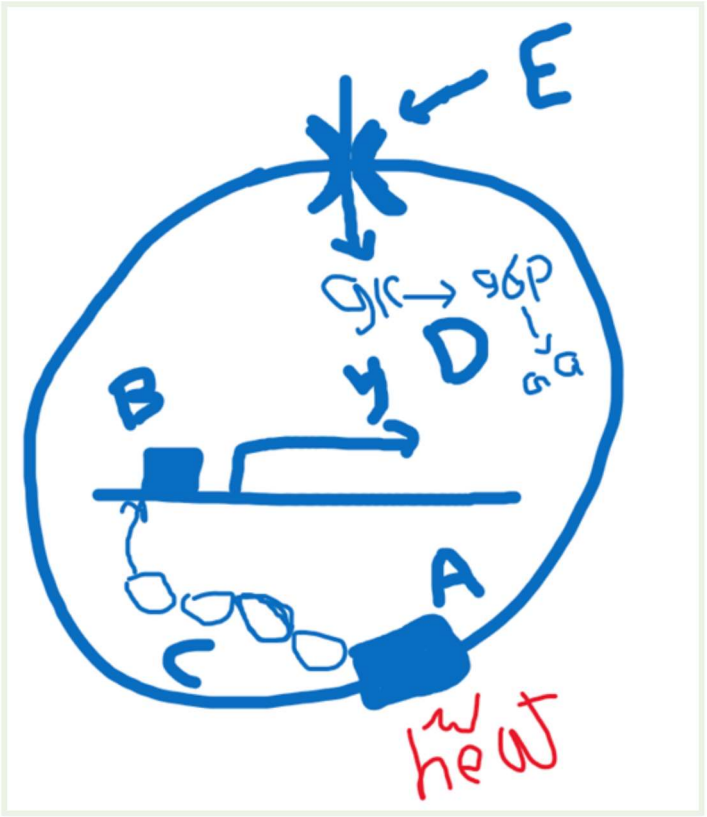
2

3

4

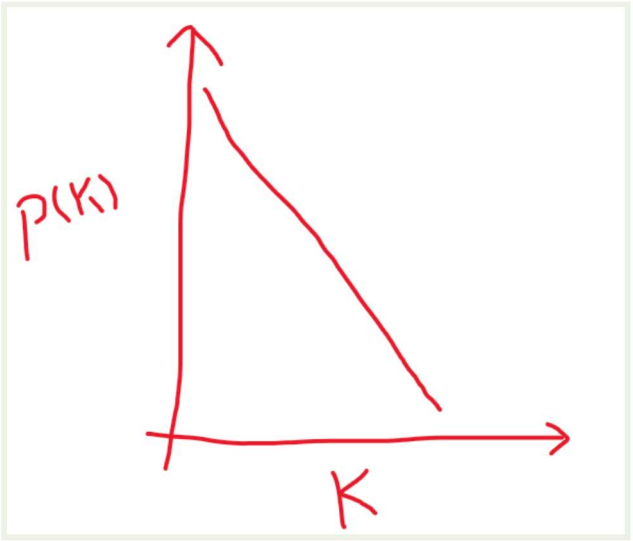
20

What is A?
(3 Points)



- Membrane protein
- Transporter
- Sensor

21



The next figure is true in the protein-protein interaction network.
(3 Points)

- [x] True
- [ ] False

22

The human protein-interaction network is a complete network.
(2 Points)

- [ ] True
- [x] False

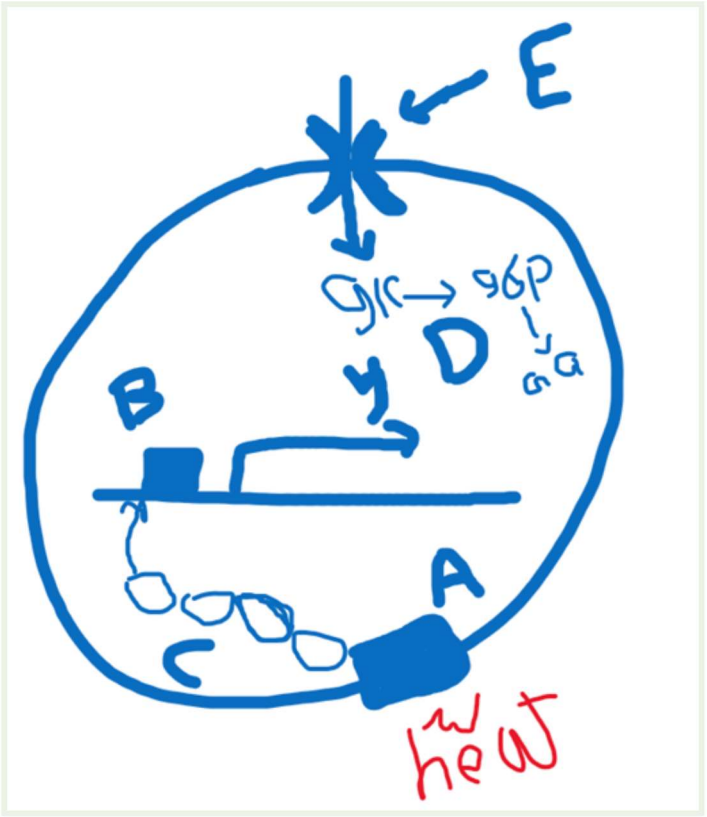
23

The graph data structure can be used to solve complex biological problems.
(3 Points)

- [x] True
- [ ] False

24

What is C?
(3 Points)



- Metabolic network
- Protein-protein interaction network
- Signal transduction network

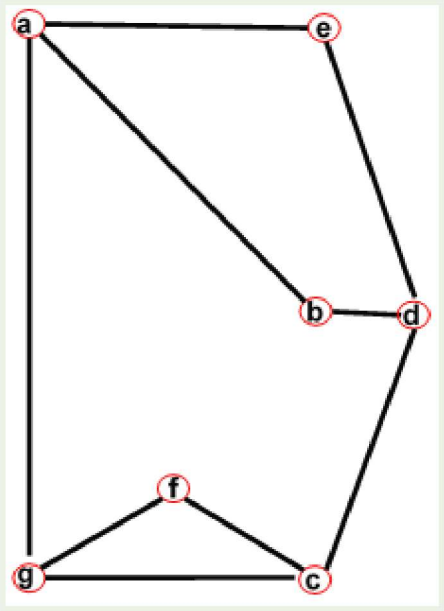
25

We can predict the very important genes related to many diseases from the node degree of this gene.
(3 Points)

- True
- False

26

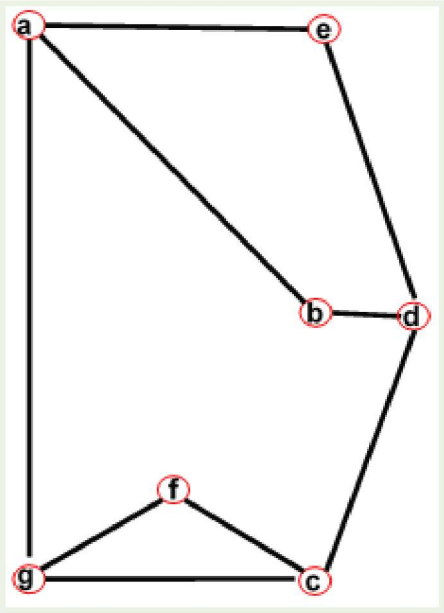
What is the degree of node b?
(3 Points)



- (●) 2
- ( ) 3
- ( ) 4

27

What is the degree of node c?
(3 Points)

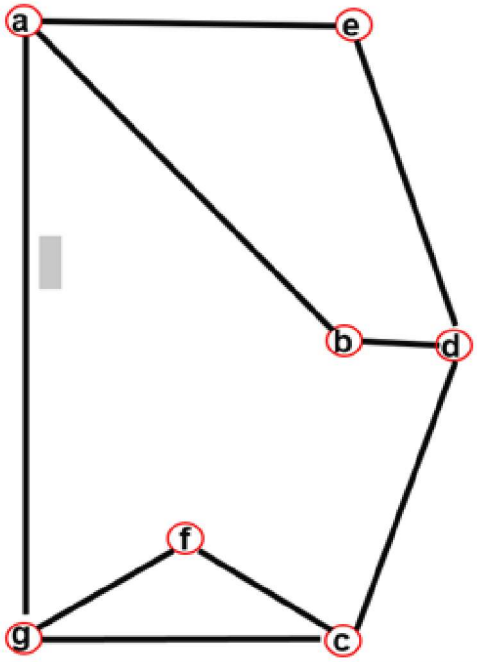


- ( ) 2
- (●) 3
- ( ) 4

28

What is the value of VI?
(3 Points)

Assume we have the next graph and the adjacency matrix.



	a	b	c	d	e
a	I				II
b					
c	III				
d					
e		V	VI		
f					
g					
h					

- 0
- 1
- 2

29

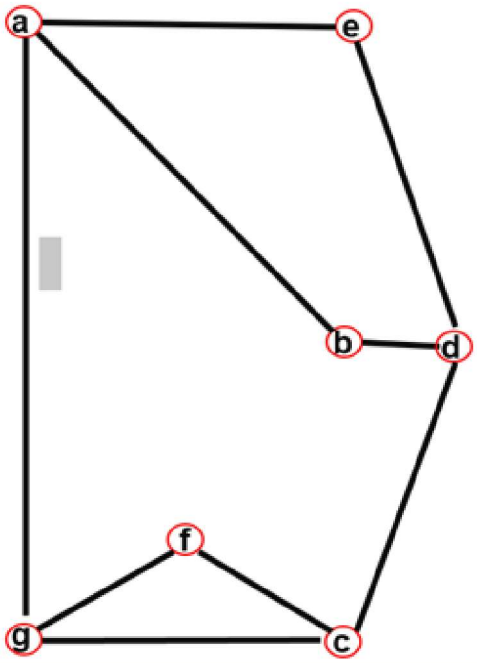
The top 10% of hub genes contain a lot of important genes.
(3 Points)

- True
- False

30

What is the value of V?
(3 Points)

Assume we have the next graph and the adjacency matrix.

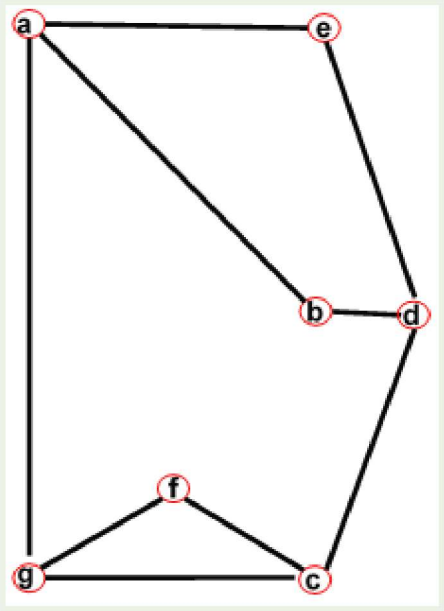


	a	b	c	d	e
a	I				II
b					
c	III				
d					
e		V	VI		
f					
g					
h					

- 0
- 1
- 2

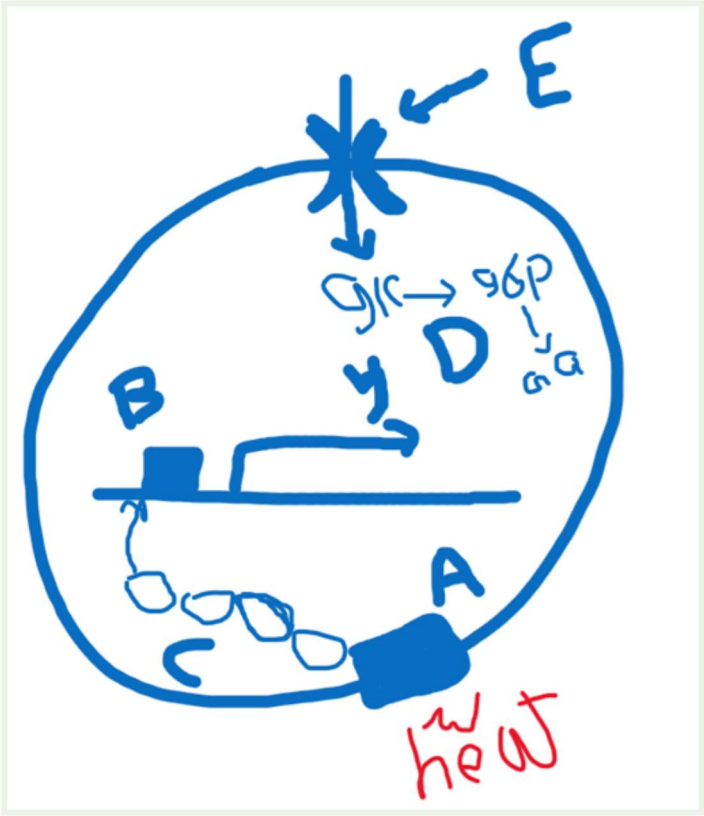
31

What is the degree of node e?
(3 Points)



- 2
- 3
- 4

32

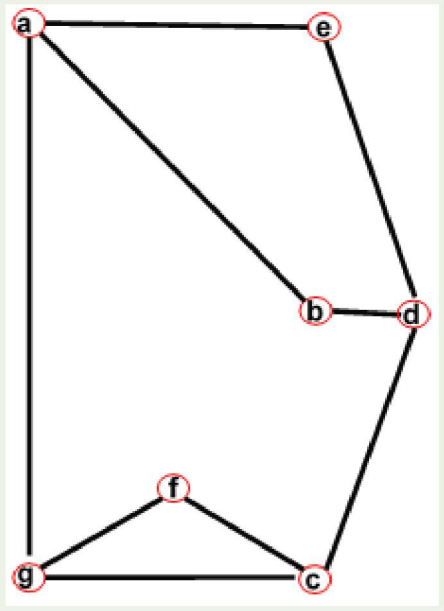


C can be a part of a protein-protein interaction network.
(3 Points)

- [x] True
- [ ] False

33

What is the degree of node d?
(3 Points)



- [ ] 2
- [x] 3
- [ ] 4

34

The bipartite graph can be represented as the complete network.
(3 Points)

- [x] True
- [ ] False

35

The relation between gene and disease can NOT be used to study the relation among diseases themself.
(3 Points)

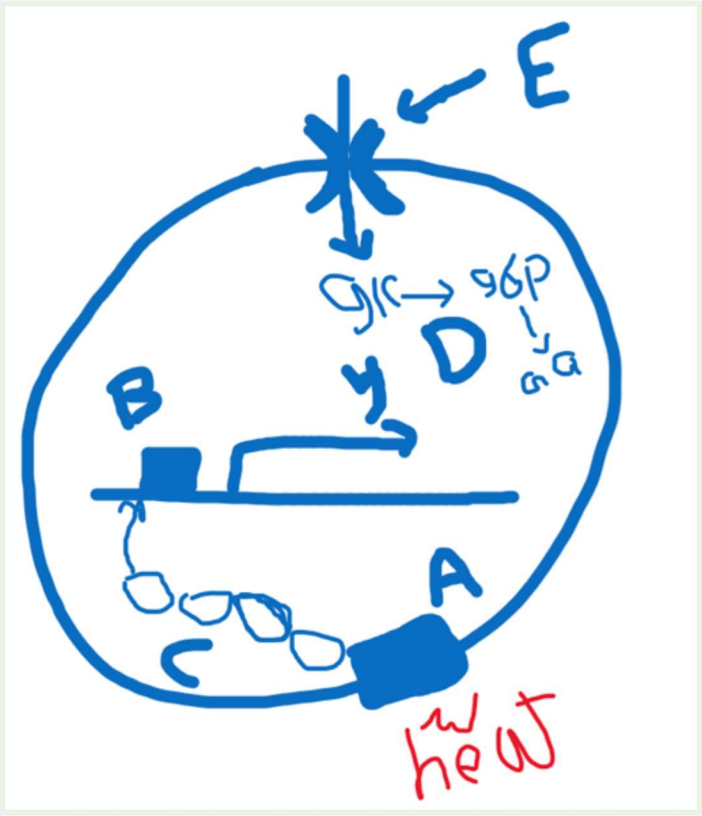
- True
- False

36

The gene with the maximum degree node is the most important in the cell.
(3 Points)

- True
- False

37



B will increase the transcription of y?
(3 Points)

- True
- False

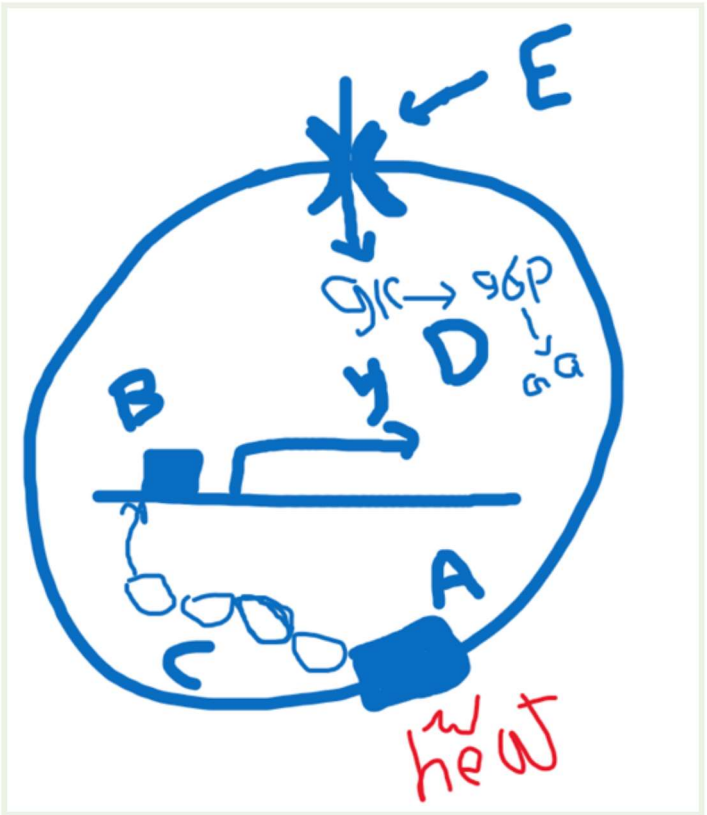
38

Assume that, the matrix E represents the adjacency matrix for a graph, the matrix E x E has no information.
(3 Points)

- True
- False

39

What is D?
(3 Points)



- Metabolic network

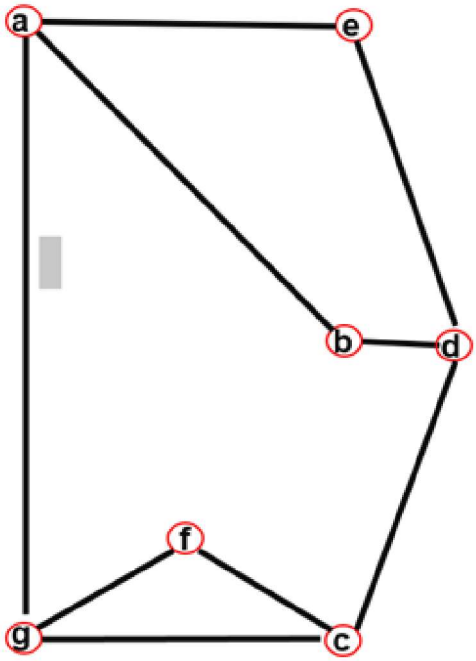
Protein-protein interaction network

Signal transduction network

40

What is the value of II?
(3 Points)

Assume we have the next graph and the adjacency matrix.



	a	b	c	d	e
a	I				II
b					
c	III				
d					
e		V	VI		
f					
g					
h					

0

1

2

41

Behind each complex system, there is a network that defines the interactions between the component.
(3 Points)

- [ ] True
- [ ] False