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Courses » Computational Systems Biology

Announcements

**Course**

Ask a Question

Progress

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FAQ

## Unit 7 - Week 3

### Course outline

How to access the portal

Pre-requisite Assignment

MATLAB Access and Introduction

MATLAB Learning Modules

Week 1

Week 2

**Week 3**

- 21 - Biological Networks
- 22 - Network Perturbations
- 23 - Community Detection
- 24 - Network Motifs
- 25 - Lab: Cytoscape
- 26 - Lab: Cytoscape
- 27 - Lab: Network Biology

### Assignment 3

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment.

**Due on 2018-09-05, 23:59 IST.**

1) Which of the following statements are true:

**1 point**

- ☐ Tendency of nodes to be connected with other nodes of dissimilar degree is assortativity
- ☐ The value of assortativity coefficient does not lie between 0 and 1
- ☐ Assortative coefficient of -1 indicates the network is perfectly assortative
- ☐ Assortative coefficient of 1 indicates the network is perfectly assortative

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*Assortative coefficient of 1 indicates the network is perfectly assortative*

2) The number of motifs in a complete undirected graph with 4 vertices is:  
(Hint: Can you try and re-wire this network?)

**1 point**

- ☐ 0
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

0

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Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12

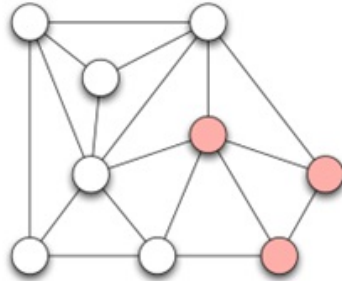
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**No, the answer is incorrect.****Score: 0****Accepted Answers:***(Type: Range) 0.65,0.67***2 points**

4) Calculate the assortativity coefficient of the following graph (correct to 2 places)

(Note: There are 2 different types of nodes, pink coloured and white coloured nodes)

**No, the answer is incorrect.****Score: 0****Accepted Answers:***(Type: Range) 0.32,0.36***3 points**

5) Load the undirected graph "nptel\_interaction\_network.csv" in Cytoscape and calculate the network parameters to answer the following questions (correct to 2 decimal places):

[CLICK HERE TO DOWNLOAD CSV FILE](#)

Network Clustering coefficient

**No, the answer is incorrect.****Score: 0****Accepted Answers:***(Type: Range) 0.48,0.52***1 point**

6) Network Density

**No, the answer is incorrect.****Score: 0****Accepted Answers:**

(Type: Range) 0.42,0.45

1 point

7) Betweenness centrality of node 12

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 0.07,0.1

1 point

8) Degree of node 4

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Numeric) 6

1 point

9) Write a program in MATLAB to build a Erdős–Rényi network with 1,000 nodes and 2,00,000 edges. Calculate its clustering coefficient.

Write answers up to 2 decimals

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 0.35,0.45

2 points

Previous Page

End