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**NPTEL** (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » **Social Networks (course)**

Announcements (announcements)

**About the Course** ([https://swayam.gov.in/nd1\\_noc20\\_cs32/preview](https://swayam.gov.in/nd1_noc20_cs32/preview)) Ask a Question (forum)

Progress (student/home) Mentor (student/mentor)

## Unit 7 - Week 5

 Register for  
Certification  
exam

<https://nptelaprilexam.swayam.gov.in/>

# Thank you for taking the Assignment 5.

 Course  
outline

 How does an  
NPTEL online  
course work?

Week 0

Week 1

Week 2

Week 3

Week 4

Week 5

## Assignment 5

 Your last recorded submission was on 2020-03-04, 23:15 Due date: 2020-03-04, 23:59 IST.
   
IST

 1) In a graph having 'n' nodes, how many possible triangles can be present? **1 point**

- ☐  $n^3$   
☐  $3n$   
☒  $(n(n-1)(n-2))/6$   
☐ None of the above

 2) What can we say about the stability/balance of  $K_6$  (complete graph on 6 nodes) having all **1 point** edges -ve, with one random edge being positive? (Choose the most appropriate):

- ☐ It is a stable graph.  
☐ It is an unstable graph but it will have exactly four balanced triangles.  
☐ It is an unstable graph but it will have exactly six balanced triangles.

Assessment submitted.

X Lecture-54:  
Spatial  
Segregation:  
An Introduction  
(unit?  
unit=58&lesson=59)

Lecture55-  
Spatial  
Segregation:  
Simulation of  
the Schelling  
Model (unit?  
unit=58&lesson=60)

Lecture56-  
Spatial  
Segregation:  
Conclusion  
(unit?  
unit=58&lesson=61)

Lecture 57-  
Schelling  
Model  
Implementation-  
1(Introduction)  
(unit?  
unit=58&lesson=62)

Lecture 58-  
Schelling  
Model  
Implementation-  
2 (Base Code)  
(unit?  
unit=58&lesson=63)

Lecture 59-  
Schelling  
Model  
Implementation-  
Visualization  
and Getting a  
list of boundary  
and internal  
nodes (unit?  
unit=58&lesson=64)

Lecture 60-  
Schelling  
Model  
Implementation

☒ It is an unstable graph but It will have only one balanced triangle.

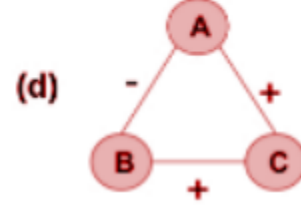
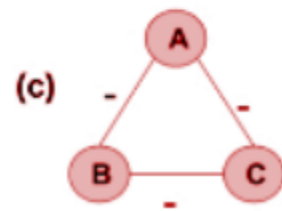
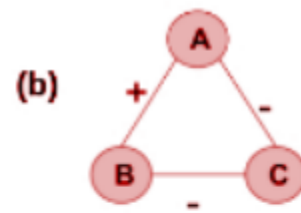
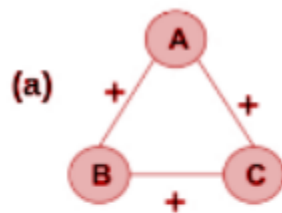
3) In a graph having 8 nodes, how many possible edges can be present?

1 point

- ☒ 28  
☐ 36  
☐ 56  
☐ 58

4) Which of the following graphs are stable?

1 point



- ☐ (b) & (d) ONLY  
☐ (a) & (c) ONLY  
☐ (c) & (d) ONLY  
☒ (a) & (b) ONLY

5) Which of the triangles shown in Figure displayed in Ques 4 follows the social belief that 'Enemy of my enemy is my friend' ?

1 point

- ☐ (a)  
☒ (b)  
☐ (c)  
☐ (d)

6) A friend's friend tends to become a friend, and so does an enemy's enemy. The reasons for the same are

1 point

- ☐ Social influence and clustering respectively  
☐ Social influence and structural balance respectively  
☒ Triadic closure and structural balance respectively

- Getting a list of unsatisfied nodes (unit? unit=58&lesson=65)

X

● Lecture 61- Schelling Model Implementation - Shifting the unsatisfied nodes and visualizing the final graph (unit? unit=58&lesson=66)

● Lecture 62- Positive and Negative Relationships - Introduction (unit? unit=58&lesson=67)

● Lecture 63- Structural Balance (unit? unit=58&lesson=68)

● Lecture 64- Enemy's Enemy is a Friend (unit? unit=58&lesson=69)

● Lecture 65- Characterizing the structure of balanced networks (unit? unit=58&lesson=70)

● Lecture 66- Balance Theorem (unit? unit=58&lesson=71)

● Lecture 67- Proof of Balance Theorem (unit? unit=58&lesson=72)

☐ Triadic closure and clustering respectively

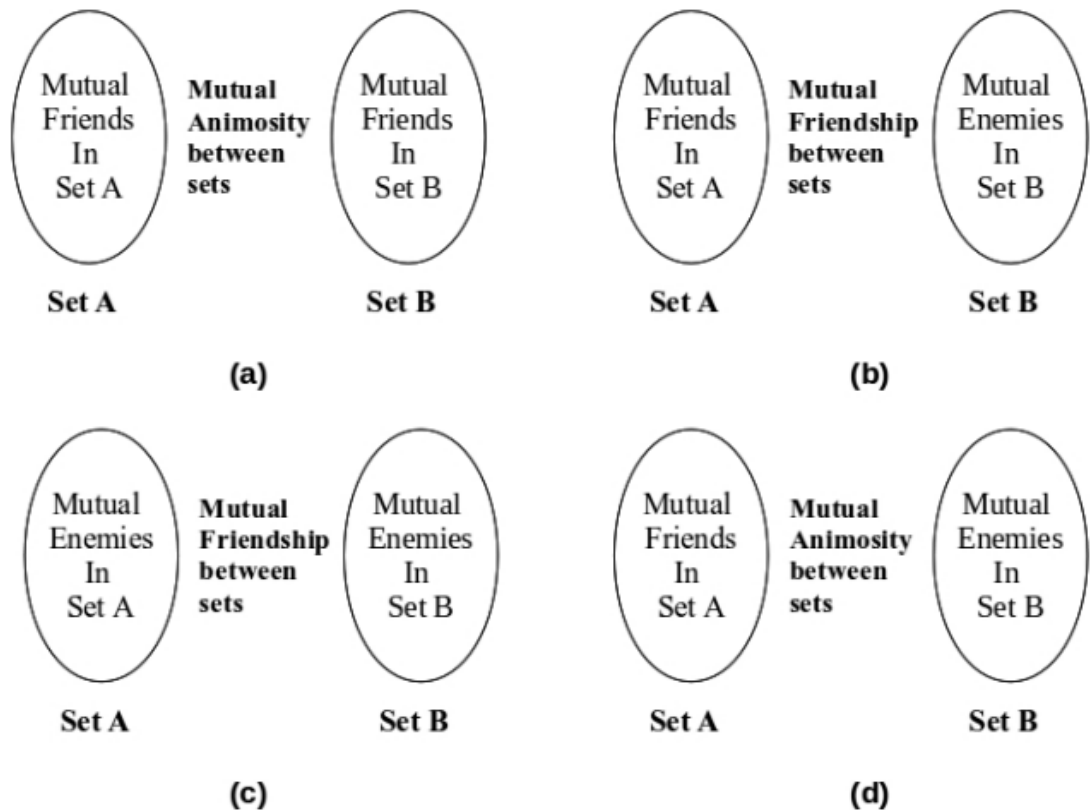
7) A signed graph is balanced if and only if it contains no cycle with

1 point

- ☐ An even number of negative edges  
☐ An odd number of negative edges  
☐ An even number of positive edges  
☒ An odd number of positive edges

8) Which of the following structures of graphs is/are balanced?

1 point



- ☒ Both (a) and (c)  
☐ Only (a)  
☐ Only (b)  
☐ Both (b) and (d)

9) Can we have a complete signed graph on 4 nodes ( $K_4$ ) and 5 nodes ( $K_5$ ) respectively, each having exactly one unstable triangle?

1 point

- ☐  $K_4$  - Yes,  $K_5$  - Yes

Assessment submitted.  
X

● Lecture 68-  
Introduction to  
positive and  
negative edges  
(unit?  
unit=58&lesson=73)

● Lecture 69-  
Outline of  
Implementation  
(unit?  
unit=58&lesson=74)

● Lecture 70-  
Creating graph,  
displaying it  
and counting  
unstable  
triangles (unit?  
unit=58&lesson=75)

● Lecture 71-  
Moving a  
network from  
an unstable to  
stable state  
(unit?  
unit=58&lesson=76)

● Lecture 72-  
Forming two  
coalitions  
(unit?  
unit=58&lesson=77)

● Lecture 73-  
Forming two  
coalitions  
(Continued)  
(unit?  
unit=58&lesson=78)

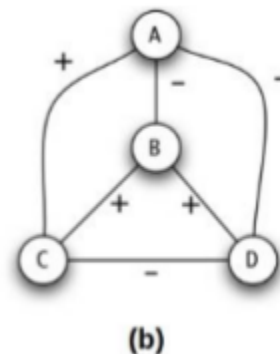
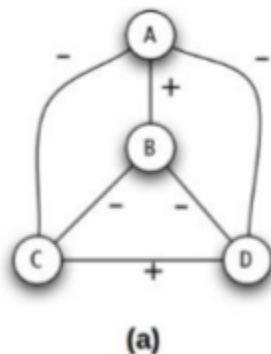
● Lecture 74-  
Visualizing  
coalitions and  
the evolution  
(unit?  
unit=58&lesson=79)

● Quiz :  
**Assignment 5**  
(assessment?  
name=204)

- ☐ K4 - Yes, K5 - No  
☐ K4 - No, K5 - Yes  
☒ K4 - No, K5 - No

10) Which of the following graphs is/are balanced?

1 point



- ☐ Only (b) and not (a)  
☐ Neither (a) nor (b)  
☐ Both (a) and (b)  
☒ Only (a) and not (b)

You may submit any number of times before the due date. The final submission will be considered for grading.

**Submit Answers**

Week 5  
Assessment submitted.  
Feedback  
X (unit?  
unit=58&lesson=214)

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### Week 6

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