VIT

Vellore Institute of Technology

School of Computer Science and Engineering
Continuous Assessment Test I

Fall Semester 2018-2019, Slot: A2+TA2

Course: CSE 3021 – Social and Information Networks

Time: 90 Minutes **Max. Marks: 50**

Answer ALL Questions (5 * 10 = 50 Marks)

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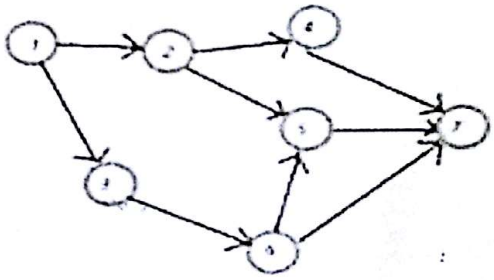
1. a) Identify one semi walk, semi path and semi cycle for the graph given below. [3]



b) Distinguish between one mode and two mode networks with examples. [3]

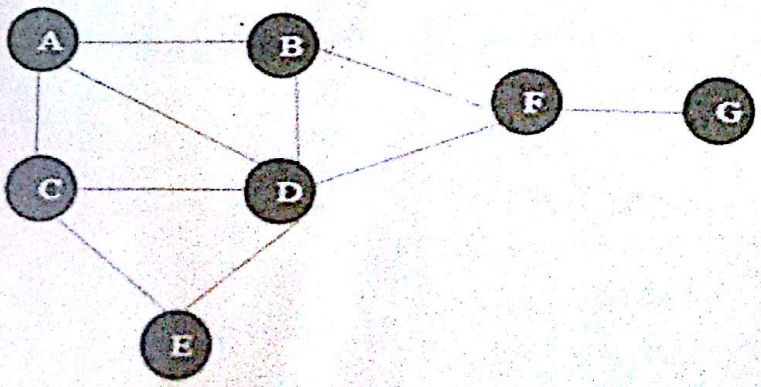
c) How do we represent Hypergraphs? Give an example with an appropriate data structure. [4]

2. a) How are structural holes beneficial in the context of an EGO Network? [3]

b) For the adjacency matrix given below draw the graph and identify the best EGO based on any two measures of EGO Network. [7]

	A	B	C	D	E	F	G
A	0	1	0	1	0	0	0
B	1	0	0	1	0	0	0
C	0	0	0	1	0	0	0
D	1	1	1	0	1	0	0
E	0	0	0	1	0	1	1
F	0	0	0	0	1	0	1
G	0	0	0	0	1	1	0

3. Consider the graph given below. [3+3+4]

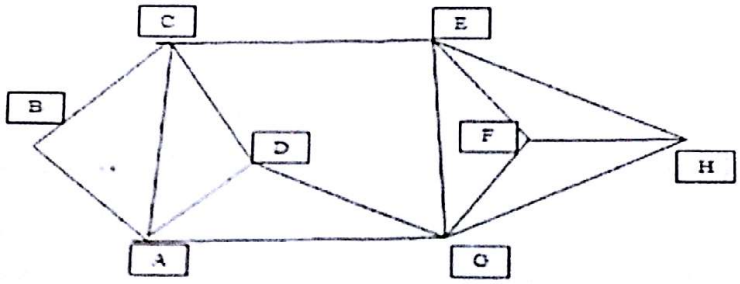


i) Assume the above network as a Food Web. What centrality measure would you use to identify the actor who is connected with the wider network? Compute the same measure (normalized) for all actors in the given network.

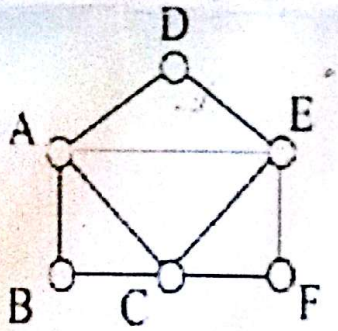
ii) Consider the above network as an information flow network. What centrality measure would you use to find good broadcaster in the network who can influence the entire network most quickly? Compute the same measure (normalized) for all the nodes in the given network.

iii) Suppose that the given network is a Companionship network. Name the centrality measure you would use to identify nodes acting as bridges between nodes in the network. Compute the same measure (normalized) for all the nodes in the given network.

4. Find 1-clique(s), 2-clique(s), 2-club, 2-clan from the given graph. [10]



5. a) Compute global clustering coefficient for the given graph. [5]



b) Identify the percentage of balanced triads in the graph given below. [5]