



MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL

A Constituent Institution of Manipal University

Reg. No.

VII SEMESTER B.TECH. (COMPUTER SCIENCE & ENGINEERING)

MAKEUP EXAMINATION, JANUARY 2018

SUBJECT: SOCIAL NETWORK ANALYSIS – (CSE – 4012)

REVISED CREDIT SYSTEM

02-01-2018

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitable assumed.

- 1A.** Explain with a neat diagram some of the basic structures that are known for describing and understanding networks. **4M**
- 1B.** Write a note on small worlds. **2M**
- 1C.** Define mathematically, betweenness centrality and closeness centrality. **4M**
- 2A.** What makes a good layout? Explain random layout, circular layout, grid layout and force directed layout. **5M**
- 2B.** Consider the network below shown in Figure 2B(a). Find the closeness centrality and betweenness centrality of all nodes. **5M**

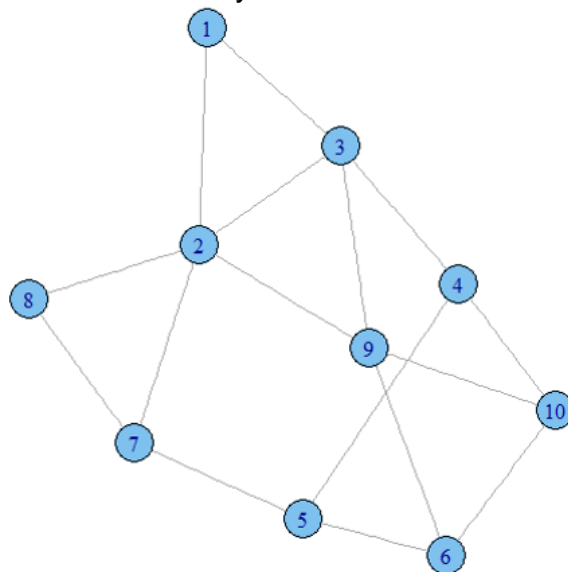


Figure 2B(a)

- 3A.** Define tie strength. Write and explain the other factors that measures tie strength. **4M**
- 3B.** Explain briefly link prediction and entity resolution. **2M**
- 3C.** Explain with an example multi-level graph partitioning. **4M**
- 4A.** Consider the below network shown in Figure 4A(a) with seven nodes. **5M**
Determine the link prediction score for all the node pairs using,
i) Shortest path length
ii) Common Neighbors
iii) Jaccard Index
iv) Adamic and Adar method
v) Preferential attachment

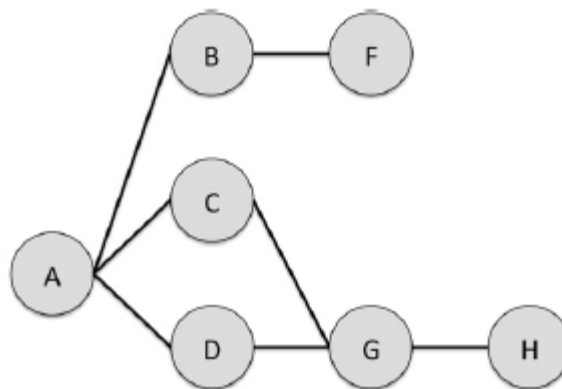


Figure 4A(a)

- 4B.** Write and explain with an example Girwan-Newmann's Divisive algorithm for identifying community. **5M**
- 5A.** Write an algorithm for Markov clustering. What is the advantage and disadvantage? **4M**
- 5B.** What are the different mechanism that supports the phenomenon of homophily? Explain. **3M**
- 5C.** Write a note on Node measures. **3M**

