U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

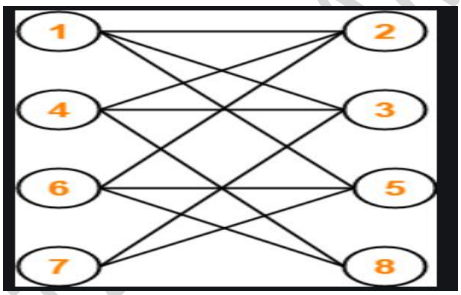
Programme: B.E | **Semester: VI**
Branch: Information Science and Engineering | **Duration: 3 hrs.**
Course Code: 20IS6PESNA | **Max Marks: 100**
Course: Social Network Analysis | **Date: 22.09.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

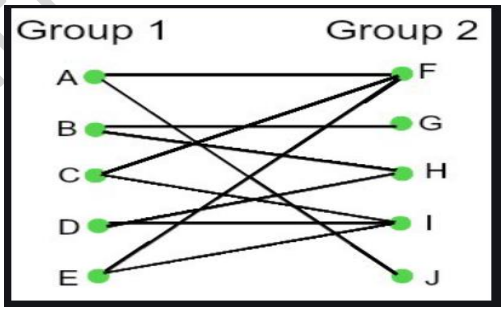
Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

UNIT - I

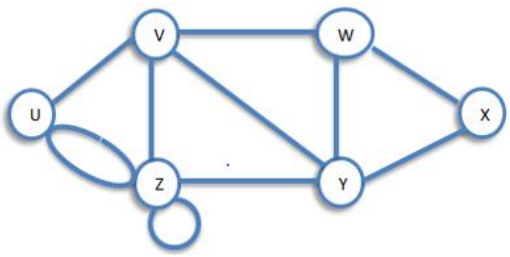
1 a) Identify the graph type and write the adjacency matrix for the given graphs. **06**



b) Differentiate between dyads and triads. List the same for the given graph. **06**

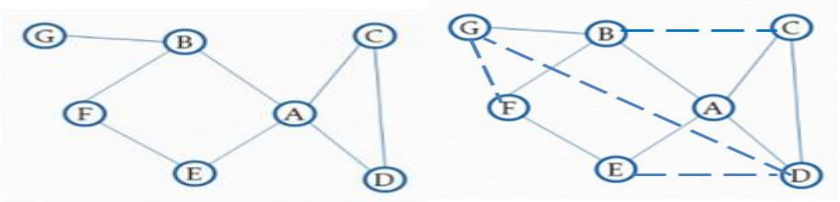


c) Identify the given graph. What are its salient features when compared to an ordinary graph? **08**

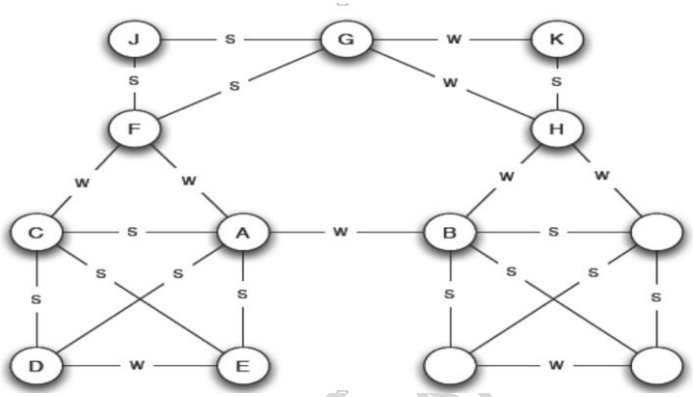


UNIT - II

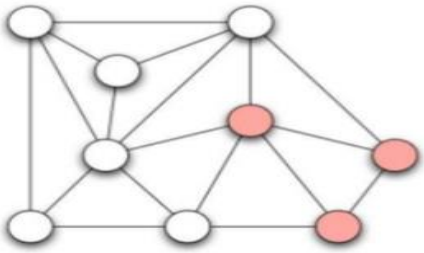
2 a) Identify the graph property which makes the second snapshot different from the first snapshot, explicate the process **06**



b) Considering the given graph, identify which node violates the strong triadic closure. **06**



c) Describe Affiliation networks and structural hole with suitable examples. For the given model, identify if homophily exists. Also predict the measure of homophily. Justify your answer. **08**

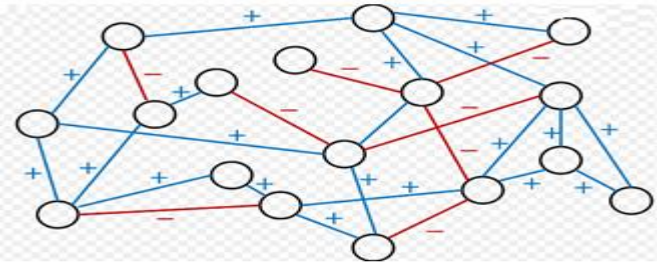


UNIT - III

3 a) Assume the following entities to prepare the graph: Consumer, company and a product. **06**
Identify various types of relationships possible for the graph to be balanced/unbalanced.
Add a celebrity to endorse the product to predict if the graph is balanced?

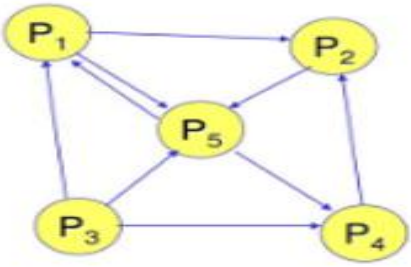
b) Illustrate Information networks, Hypertext and Associative memory with suitable examples **06**

c) Consider the given graph and identify the triangles as balanced or unbalanced. Justify your claim **08**

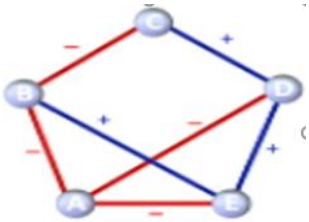


UNIT - IV

4 a) Compute Hub and Authority weights for the following graph**.** **06**



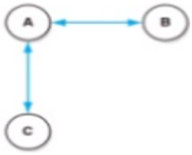
b) Consider the given graph, draw the possible balanced and unbalanced graphs based on triadic closure. **06**



c) Explain Associative memory. Consider entities : breakfast, dinner, lunch, snacking, sleeping and draw graphs to depict associative memory for human activity recognition. **08**

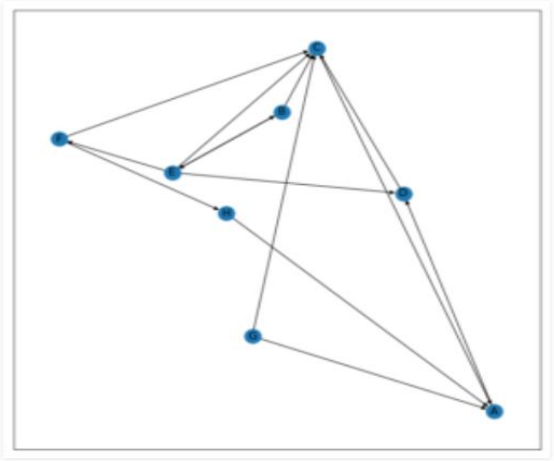
OR

5 a) Consider the graph –three web pages A, B and C. Apply page rank algorithm with two iterations. **06**



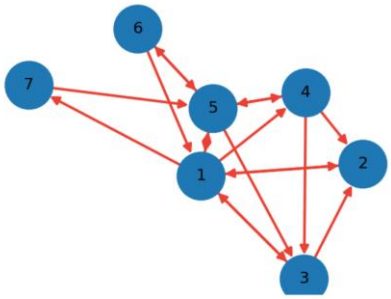
b) Describe the steps of HITS algorithm. Illustrate with an example **06**

c) Consider the graph and apply HITS algorithm for k=3 **08**

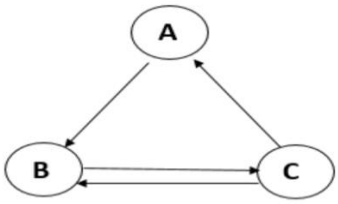


OR

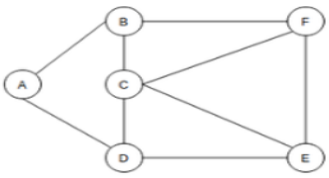
6 a) Define Hub and Authority. **06**
Compute Hub and Authority weights for the following graph.



b) Consider the graph and apply HITS algorithm for k=2. **06**



c) Show the cascading behavior for the given graph. Consider A and C to be initial adopters. **08**



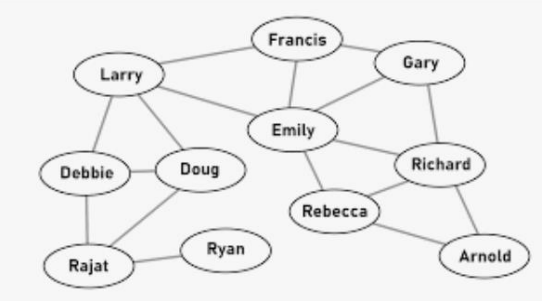
UNIT - V

7 a) Describe Milgrams experiment on six degree of separation with suitable example. **06**

b) Justify the argument statements: (i) Triadic closure reduces the growth rate and (ii) Pure exponential growth produces a small world with suitable examples **06**

c) Consider the figure given, calculate the path for each node with all possible paths to reach every other node. Consider the given source and destination paths. **08**

i. Larry to Richard
ii. Francis to Richard
iii. Arnold to Francis
iv. Rajat to Richard



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