

(2 Hours 30 min)

(Total Marks:60)

N.B:

1. All questions are compulsory.
 2. Figures to the right indicate marks.
 3. Illustration, in-depth answers and diagrams will be appreciated.
 4. Mixing of sub-questions is not allowed.
- Each question carries 5 marks.

- 1 **Attempt any Two** 12
 - a Explain Dijkstra's algorithm
 - b Explain Social networks vs. link analysis
 - c Explain Ego-centric and socio-centric density.
 - d Briefly Explain Adjacency matrices
- 2 **Attempt any Two** 12
 - a Explain the cutpoints with its advantages and disadvantages.
 - b Explain about K-plexes and K-cores.
 - c How do N-cliques and N-clans "relax" the definition of a clique?
 - d Write the Google PageRank Algorithm ?
- 3 **Attempt any Two** 12
 - a .How are network roles and social roles different from network "substructures" as ways of describing social networks?
 - b Explain the differences among structural, automorphic, and regular equivalence.
 - c Actors who are structurally equivalent have the same patterns of ties to the same other actors. How do correlation, distance, and match measures index this kind of equivalence or similarity?
 - d Regularly equivalent actors have the same pattern of ties to the same kinds of other actors -- but not necessarily the same distances to all other actors, or ties to the same other actors. Why is this kind of equivalence particularly important in sociological analysis?
- 4 **Attempt any Two** 12
 - a Illustrate how the results of correspondence analysis can be interpreted
 - b Describe the quantitative analysis in social network using suitable example.
 - c Compare SVD with two-mode factor analysis
 - d What are the two alternative methods used in bipartite network?
- 5 **Attempt any Two** 12
 - a Explain Social networks vs. link analysis
 - b How do you calculate Centralization and graph centers?
 - c Explain Brute Force and Tabu Search
 - d What is two-mode network? Explain with example
