Q. P. Code:28072

(2 ½ Hours) **[Total Marks: 60]**

N.B: (1) **All questions are compulsory.**
(2) Figures to the **right** indicate full marks.
(3) **Assume additional data if necessary** but state the same clearly.
(4) Symbols have their usual meanings and tables have their usual standard design unless stated otherwise.
(5) Use of **calculators** and statistical tables are **allowed**.

Q.1 Attempt **any two** of the following **(12)**

a) How do social network data differ from conventional data? Briefly explain. **6**

b) 'Social network analysis is more mathematical than statistical'. Comment. **6**

c) What is an ego centric network? Give an example. Write any two advantages and disadvantages of it. **6**

d) Why do you think graphs and matrices are important in social network analysis? Justify your answer. **6**

Q.2 Attempt **any two** of the following **(12)**

a) Briefly explain important features of socio-metric tradition of social network analysis. **6**

b) Define density of a network. Why density is called a measure of inclusiveness? Explain. **6**

c) Draw an elementary network of your choice. Illustrate following concepts with respect to the network drawn: **6**

Walk (ii) Closed walk (iii) Cycle (iv) Path

d) What are the different roles played by an ego in brokering relations with other nodes in a network? Illustrate. **6**

Q.3 Attempt **any two** of the following **(12)**

a) Briefly explain: (i) Clique (ii) n-clique (iii) n-clan (iv) k-plex **6**

b) What are cut points? Elaborate that 'cut points are important as they mostly act as brokers'. **6**

c) What is structural equivalence? What is the significance of structural equivalence analysis? Discuss. **6**

d) Write a note on automorphic equivalence. **6**

Q.4 Attempt **any two** of the following **(12)**

a) What is a bi-partite matrix? Discuss significance of it in two mode networks. **6**

b) What is core and periphery? Distinguish between them. **6**

c) What are factions? Briefly discuss two mode factions analysis. **6**

d) Briefly explain the significance of cross product method and minimums method in two mode network analysis. **6**

Q.5 Attempt **any two** of the following **(12)**

a) What are the two different approaches to examine relations in a social network data? Briefly explain. **6**

b) What do you mean by **6**

(i) Geodesic distance (ii) Eccentricity

Illustrate with examples.

c) Write a short note on betweenness centrality. **6**

d) Discuss page rank algorithm as a measure of centrality. **6**

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