Paper / Subject Code: 88704 / Principles of Geographic Information Systems

(2½ Hours)

[Total Marks: 75

N. B.: (1) **All** questions are **compulsory**.

    (2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.

    (3) Answers to the **same question** must be **written together**.

    (4) Numbers to the **right** indicate **marks**.

    (5) Draw **neat labeled diagrams** wherever **necessary**.

    (6) Use of **Non-programmable** calculators is **allowed**.

1. Attempt *any three* of the following: **15**

a. What is GIS? Explain any four application areas of GIS.

b. What are Geospatial data, Geoinformation, quality and metadata? What are the key components of spatial data? Why do they play important role in assessment of data quality?

c. Explain the concept of Spatialtemporal data models. Explain the different concepts of time.

d. Define Geographic Objects. Explain four parameters that define it.

e. Write a note on Irregular Tessellations.

f. Construct a quad tree for the following three valued raster.
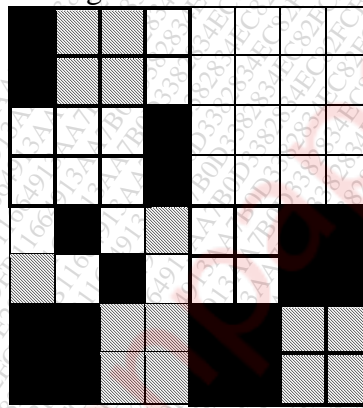
2. Attempt *any three* of the following: **15**

a. List the functional components of GIS. Explain any two of them in details.

b. What are the different ways of spatial data capture and preparation? Explain.

c. Differentiate between Vector data and Raster Data.

d. Explain the relational data model using suitable example.

e. What is the reason for using DBMS in GIS?

f. Write a note on Spatial Data presentation.

3. Attempt *any three* of the following: **15**

a. Write a note on the Geoid and vertical datum.

b. Explain 2D geographic coordinate system using suitable example.

c. What is secondary data in GIS? Explain any two ways to obtain secondary data in GIS.

d. What is satellite based positioning? Explain.

e. List the four issues in combining data from multiple sources. Explain any two of them.

f. Write a note on GLONASS.

4. Attempt *any three* of the following: **15**

a   Write a note on neighborhood functions.

b   What is Classification of data in GIS? Explain using suitable example.

c   Explain vector overlay operations using suitable diagram.

[TURN OVER]

d   Perform the raster overlay operation to find **R4 = R1 AND (R2 OR R3)**

R1

1	1	0	1
0	1	0	0
0	0	1	1
1	0	1	0

R2

1	0	0	0
1	1	0	0
1	1	1	0
1	1	1	1

R3

1	1	1	1
0	1	1	1
0	0	1	1
0	0	0	1

e   Write a note on GIS and application models.

f   How error propagates in data processing? Explain.

5.   Attempt _any three_ of the following: 15

a.   What do you mean by "How do I Say What to Whom and is it effective?" in GIS? Explain.

b.   Explain visualization strategies in GIS.

c.   How to map quantitative data? Explain.

d.   What are Bertin's six categories of visual variables?

e.   How to distinguish between three temporal cartographic techniques? Explain.

f.   Write a note on Map Disseminations.

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