TIME: 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 topology? Explain spatial relationships with the help of suitable diagram.
b. What is GIS? Give any five GIS applications of real life.
c. What is map? Explain how modelling helps in representing real world?
d. Write short note on i) Spatial databases and spatial analysis, ii) Data types and values
e. Explain regular tessellation with the help of diagrams.
f. State and explain the a set of rules defines the topological consistency for simplex of that space with the help of suitable diagrams.

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

a. Distinguish between Vector data and Raster Data.
b. Explain Raster encoding with the help of example.
c. Explain the functional components in GIS architecture and functionality with the help of suitable diagram.
d. Write short note on:
i) Spatial data capture and preparation ii) Spatial data storage and maintenance
e. Explain the linking GIS and DBMS.
f. Explain the relational data model using suitable example.

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

a. Explain 2D geographic coordinate system using suitable example.
b. Explain Root Mean Square used to mean location accuracy.
c. Write short notes on i) Vectorization ii) Lineage
d. Explain Geoid and ellipsoid with suitable diagram.
e. What is Kriging? Explain.
f. Explain the Map projection with it's types with the help of diagrams.

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

a. Explain the various Neighbourhood functions.
b. Perform the raster overlay operation to find:
R1:=CON((A="F")AND(B<5), 1, 0)
R2:=CON((A="F")XOR(B<5), 1, 0)

A=

F	F	F		F
F	F	F		
	F	F		F
	F	F	F	F
F			F	F

B=

7	6	7	7	4
7	7	6	7	4
4	4	6	4	4
6	6	4	4	4
6	7	6	6	7

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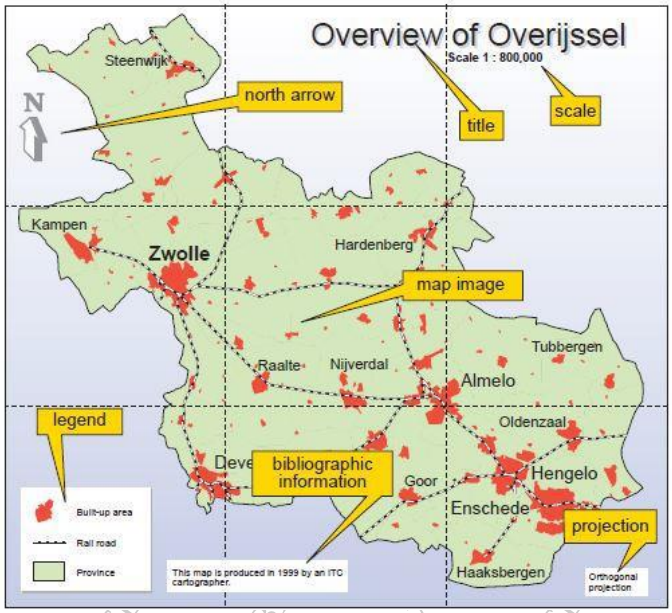
c. List any five examples where advanced computations on continuous fields are required.
d. Explain using example how Raster overlay operation can be performed using decision table?
e. Explain vector overlay operations using suitable diagram.
f. Lists any five common sources of error introduced into GIS analyses.

5. Attempt <u>any three</u> of the following: 15

a. Explain Bertin's six categories of visual variables.
b. Write short note on i) Topographic map. ii) Thematic map
c. What is cartography? Explain visualization process.
d. Explain the map terrain elevation.
e. Describe the cosmetics shown in map given below.



f. Write short note on i) On screen map, ii) Multimedia map, iii) Static map

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