GEO-INFORMATICS

Paper Code: Introduction to Geographical Information System & Spatial Modelling

Course Code: GI 202T   **Course ID: 23152**

Time: 2 Hrs.   **Full Marks: 40**

The figures in the margin indicate full marks
Candidates are required to give their answers in their own words as far as practicable
Answer any four questions selecting at least one from each unit

Unit-1 (History and Principle of Geographical Information System)

1. Explain why map overlays are so crucial to GIS analysis. What is the spaghetti data model for vectors and what are its advantages and disadvantages of use? What is meant by a 4D GIS database?   3+5+2=10

2. Provide a timeline of the historical evolution of GIS developments in computation and analysis from the 1960s till the present. What is the difference between a DEM and a TIN dataset and what are their respective utilities for topographic representation and analysis?

5+5=10

Unit-2: Data Management in GIS

3. Elaborate on the different data encoding methods used in GIS. What do you mean by Pseudo Nodes? Define attribute data.   6+2+2=10

4. Briefly outline the basic principles of the Structure from Motion Close-range Digital photogrammetry technique for generating point cloud datasets. What are the basic structures of the NAND and NOR logic gates? What is the self-intersection error in a polygon vector dataset?   5+3+2=10

Unit-3: GIS Modelling for decision support

5. Mention any four file formats of Vector data. Write down the different Vector Data encoding processes. Briefly explain the function of the "Selection by Spatial Relationship" Query.   2+4+4=10

6. What are the basic guidelines of a FOSS in terms of its source code and interoperability principles? How do the Random Forest and Frequency Ratio models function to analyse raster/vector datasets?   4+6=10

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