

T.Y.I.T - GIS 201617

Sem VI - A.T.K.T
Subject: Elective: GIS.

2016-17

QP Code : 78186

(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 two of the following: 10
a. List various GIS operations. Explain any two of them.
b. Convert the following into degrees
i. $45^{\circ} 15' 45''$ ii. 1745 rad
c. Explain with suitable example Coverage Data Structure.
d. Explain the data structure used in the geodatabase data model.
2. Attempt any two of the following: 10
a. List various data sources that can be used to create new geospatial data. Explain any one.
b. Explain the Neutral format data exchange with suitable example.
c. Define
i. Digitizing ii. Vectorization iii. Resampling iv. RMS v. Scanning
d. Explain Affine transformation.
3. Attempt any two of the following: 10
a. What is attribute data in GIS? List and explain different types of attribute table.
b. List different types of database design. Explain any two.
c. Write a short note on map production.
d. List and explain different types of maps.
4. Attempt any two of the following: 10
a. What is descriptive statistics? Explain.
b. Explain spatial aggregation.
c. What is the output of the following for a statement?
(slope = 1) AND (NOT(Aspect = 3))

Aspect							
3	2	1	1	1	2	2	2
2	3	3	3	3	3	1	1
1	2	3	3	2	1	1	3
2	2	3	1	1	1	2	2
2	2	2	1	1	1	1	1
3	2	2	1	2	1	2	3
3	2	3	3	3	2	2	3
2	2	2	1	3	1	3	3

Slope							
1	2	2	2	1	1	1	2
2	3	1	1	2	2	1	1
1	2	3	3	2	1	1	3
2	2	3	1	1	1	2	2
2	2	2	1	1	3	3	1
3	1	2	1	1	1	2	3
3	1	3	3	1	2	2	3
1	1	1	2	3	2	3	3

- d. Explain with suitable example spatial data query.

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5. Attempt any two of the following:

- List and explain various overlay operations based on feature type.
- What do you mean by pattern analysis? Explain Nearest Neighbor analysis.
- What is local operation? Explain local operation with a single raster
- Explain the neighborhood operations with suitable example

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6. Attempt any two of the following:

- Explain the Thin-Plate Splines local method.
- Write a short note on regression method.
- What is kriging? Explain universal kriging.
- List and explain the elements of spatial interpolation.

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7. Attempt any three of the following:

- Consider the following information on a 30-meter DEM:

- UTM coordinates in the lower left corner 560635,4816399.
- UTM coordinates in meters at the upper right corner 570595,4830380.

How many rows and columns does the DEM have?

What are the UTM coordinates at the center of the cell(row 1, column 1)?

- Write a short note on metadata.
- Explain the different commonly used data classification methods.
- Explain feature selection by spatial relationship data query with suitable example.
- Explain the following map manipulation operations with example.
 - Dissolve
 - Append
- Write a short note on density estimation.

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