T.Y. B.Sc. (IT) : Sem. VI

Geographic Information Systems

Time : 2½ Hrs.] Prelim Question Paper **[Marks : 75**

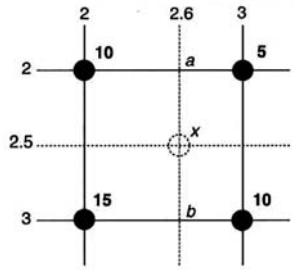
Instruction : (1) Each question carries 5 marks.
(2) Draw diagrams neatly using pencil.
(3) Questions should be answered in a proper sequence.
(4) Use of scientific calculator is allowed. Mobile phones are NOT allowed.

1. Attempt any **TWO** question of the following : **[10]**

(a) Explain the applications of GIS related to Crime Management.
(b) Explain State Plane Co-ordinate system with neat diagram.
(c) Explain the various map projection types with suitable diagram.
(d) Convert the following into degrees :
(i) 45° 15′ 45″ (ii) 1745 rad

2. Attempt any **TWO** question of the following : **[10]**

(a) What is metadata? What constitutes metadata in GIS?
(b) List the various sources of obtaining existing GIS Data. Explain any two.
(c) Explain the concept of 'Resampling of Pixel Values.'
(d) Perform bi-linear interpolation to find the value of x in the diagram below:



3. Attempt any **TWO** question of the following : **[10]**

(a) Explain the concept of 'Layout' and 'Visual Hierarchy'.
(b) Explain various types of relationships in database tables.
(c) Explain any two types of Database Designs with suitable diagrams.
(d) Explain : (i) Dot map, (ii) Choropleth map

4. Attempt any **TWO** question of the following : **[10]**

(a) Explain the various 'Descriptive Statistics' used in GIS.
(b) Explain Raster Data Query with example.
(c) What are the different types of graphs used for data exploration?
(d) Explain the terms 'Spatial Aggregation' and 'Map Comparison'.

5. Attempt any **TWO** question of the following : **[10]**

(a) Explain the concept of Overlay with suitable diagram.
(b) Explain Slivers from overlay operation.
(c) Explain the following map manipulation operations with example :
(i) Dissolve (ii) Clip
(d) Explain Local Operations on Multiple raster inputs with suitable examples.

6. Attempt any **TWO** question of the following : **[10]**

(a) What is spatial interpolation? What are its types?
(b) What are Thiessen Polygons? Give an example.
(c) Explain trend surface model with suitable example.
(d) Define following :
(i) Nugget (ii) Range (iii) Sill (iv) Partial Sill (v) Anisotrophy

7. Attempt any **THREE** question of the following : **[15]**

(a) Explain modern applications of GIS related to GPS and wireless technology.

(b) What is geometric transformation? Explain map-to-map and image-to-map transformation methods.

(c) Explain Zonal Operations on Raster Data with suitable example.

(d) Explain with suitable example cell-by-cell encoding raster data structure.

(e) Write short note on Map production.

(f) Explain universal kriging.

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