N. B: (1) Question **No 01** is **compulsory**. Attempt **any four** from remaining question.
(2) Figures to the **right** indicate **full marks**.
(3) Assume additional data if necessary but state the same clearly.
(4) Symbols have their usual meanings and tables have their usual standard design unless stated otherwise.
(5) Use of simple **calculators** and statistical tables is **allowed**.

Q.1 (a)	What is Geospatial Data? Compare them with other forms of data used in usual databases?	10
(b)	Write a detailed note on various GIS operations.	10
Q.2 (a)	Why are projections important in GIS? What are the different types of Map projections used in GIS?	07
(b)	Describe how are raster geographic data represented? What are its merits and demerits?	08
Q.3 (a)	Explain how geographic information system uses object-oriented representations? Give example to explain the concept.	07
(b)	Highlight the usefulness of attribute data query and spatial data query in data exploration in GIS.	08
Q.4 (a)	What is the significance of buffering in GIS? Explain types of buffering.	07
(b)	Explain how layering approach is useful in analyzing and updating information in GIS?	08
Q.5 (a)	What is map based feature manipulations? Explain various feature manipulation techniques.	07
(b)	State and explain any four applications of GIS.	08
Q.6 (a)	What are shape files? What are its salient characteristics?	07
(b)	What is meant by Geo-coding? Explain how the process of Geo-coding of a spatial feature with suitable example.	08
Q.7 (a)	Write note on **any three**	15

   i.   GIS for tracking and positioning
   ii.   Overlay methods
   iii. Slivers
   iv.   Issues in implementing GIS
   v.   DEM

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