SAMPLE PAPERS

DIPLOMA THIRD SEMESTER EXAMINATION 2025 (JUT)

MODERN SURVEYING

DIPLOMA WALLAH

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Full Marks: 70 marks | Time: 3 Hours

Instructions:

- Question No. 1 is compulsory.
- Answer any **FOUR** questions from the remaining (Q.2 to Q. 7 marks).

Q.1 Multiple Choice Questions (Compulsory) [2 × 7 = 14 Marks]

(i) The vertical angle between the horizontal line of sight and the inclined line of sight is called:

(a) Angle of elevation (b) Angle of dip (c) Angle of declination (d) Azimuth

(ii) Which error is NOT eliminated by the method of repetition?

(a) Error due to eccentricity of verniers

(b) Error due to displacement of station signals

(c) Error due to wrong leveling

(d) Error due to inadjustment of line of collimation

(iii) A closed contour line with one or more lower ones inside represents:

(a) Hill (b) Depression (c) Cliff (d) Saddle

(iv) GPS stands for:

(a) Global Positioning System (b) Global Placing System (c) Geographical Position System (d) General Positioning System

(v) In GIS, "Vector Data" represents features using:

(a) Grid cells (b) Pixels (c) Points, Lines, Polygons (d) Rows and Columns

(vi) The additive constant (C) of a tacheometer provided with an anallatic lens is:

(a) 100 (b) f+d (c) Zero (d) f/i

(vii) A total station measures:

(a) Only Angles (b) Only Distances (c) Angles and Distances electronically (d) Only Elevation

Q.2 (A) Explain the Principle of Tacheometry (Stadia Method). What is an Anallatic Lens, where is it fitted, and what is its main advantage? [7 Marks]

Q.2 (B) (Numerical) The areas enclosed by contour lines of a reservoir are given below:

- Contour (m): 100, 105, 110, 115
- Area (m^2): 600, 1400, 3200, 5000

Calculate the Volume (Capacity) using the Prismoidal Rule. [7 Marks]

Q.3 (A) Explain the different methods of Theodolite Traversing. How do you check the accuracy of a closed traverse? [7 Marks]

Q.3 (B) Distinguish between Aerial Surveying and Drone Surveying. What are the advantages of using drones in modern surveying? [7 Marks]

Q.4 (A) (Numerical) Find the RL of the top of a chimney (Q) from two stations P and R in the same vertical plane.

- Distance PR = 50 m.
- Angle of elevation from P =22°.
- Angle of elevation from R = 14°.
- RL of Benchmark at P = 200.00 m. Height of Instrument = 1.5 m (same for both). **[7 Marks]**

Q.4 (B) What is **Remote Sensing**? Draw a flow chart showing the stages of Remote Sensing and explain the interaction of energy with the atmosphere. **[7 Marks]**

Q.5 (A) Explain the detailed process of Data Gathering (Field Work) using a Total Station. [7 Marks]

Q.5 (B) Describe the method of Reiteration for measuring horizontal angles. When is this method preferred over Repetition? [7 Marks]

Q.6 (A) Explain the characteristics of contours for: (a) Valley Line, (b) Overhanging Cliff, (c) Uniform Slope vs Concave Slope. [7 Marks]

Q.6 (B) What are the sources of Errors in Total Station work? How can they be minimized? [7 Marks]

Q.7 Write Short Notes on (Any FOUR): [3.5 × 4 = 14 Marks]

(a) GPS Segments (Space, Control, User)

(b) Uses of Contour Maps

(c) Swinging vs Transiting the Telescope

(d) Application of GIS in Civil Engineering

(e) Temporary Adjustments of Total Station