Time: 3 Hours   **Marks: 80**

N.B.: (1) Question **No 1** is **compulsory**.
   (2) Attempt any **THREE** questions from the remaining questions.
   (3) Assumptions made should me clearly stated.
   (4) **Figures** to the **right** indicate **full marks**

Q1. All questions are compulsory   **20**

   a) Distinguish between land survey and construction survey.

   b) Distinguish between digital level and auto level

   c) Distinguish between block contouring and radial contouring.

   d) Distinguish between conventional theodolite and electronic theodolite.

Q2. (a) Explain with neat sketch various elements of simple curve and also derive the relation between
   degree of the curve and its radius   **10**

Q2. (b) Explain the stepwise procedure to check the verticality of building.   **10**

Q3. (a) Two tangent intersect at chainage of 1230m the deflection angle being 30° calculate all the data
   required for setting out a simple circular curve of 330m radius by Rankines method   **10**

Q3. (b) What is GPS? What are the advantages of space based positioning system and enlist the various
   applications of GPS in surveying   **10**

Q4. (a) What is transition curve? What are the requirements of an ideal transition curve? Enlist the
   objectives of providing transition curve and mention the different types of transition curve.   **10**

Q4.(b) A 0.5% rising gradient meets -0.7% down gradient. The chainage and RL of intersection are 550m
   and 375.50m respectively. Calculate the RL of the points on the curve if PI is 20m.The rate of change
   of grade is 0.1% per 20m. Tabulate the results.   **10**

Q5.(a) Explain the method of radial contouring in detail with proper diagram that is performed during the
   project   **10**

Q5.(b) What is electro digital theodolite? Explain all its field applications   **10**

Q6. All questions are compulsory   **20**

   a) Short note on site square.
   b) Explain 7/12 utara.
   c) Objectives of GIS.
   d) Objectives of hydro graphic surveying.

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