QP Code : 3452

(3 Hours)   [Total Marks : 80]

N.B. (1) Question no. **1** is compulsory.
        (2) Attempt any **three** from the remaining questions.
        (3) Assumption **mode** should be clearly stated
        (4) **Figures** to the **right** indicate **full** marks.

1. Attempt any **two** questions:-   20
    (a) Explain in detail the field procedure for setting out the curve by Rankine's method of deflection angles.
    (b) Explain in detail the procedure along with neat sketch the tachometric radial contouring project along with method employed for plotting the contours.
    (c) Explain   (i)   Principle of EDM   (ii)   Principle of tacheometry

2.   (a) Differentiate between   10
        (i)   Stadia system and tangential system of tacheometry
        (ii)   Fixed hair method and moveable hair method of stadia tacheometory
  (b) To determine the distance between two points X and Y and their elevations.   10
Following observations were recorded upon vertically held staves from two travers stations R and S. The tacheometer was fitted with an anallatic lens and instrument constant was 100. Compute the distance XY gradient from X to Y and bearing of XY

Travase Stn	RL (m)	HI (m)	Co-ordinates of station		Staff Stn	Beaing	Vertical Angles	Staff Reading
			Lat.	Dep.				
R	1020.60	1.50	800	1800	X	$15^0 14'$	$+8^0 9'$	1.10,1.85,2.60
S	1021.21	1.53	950	2500	Y	$340^0 18'$	$+2^0 3'$	1.32, 1.91,2.50

3.   (a) Explain in brief the procedure for setting out a simple circular curve by the method of offset from chord produced.   10
  (b) In making a survey for a new road, the intersection point of two straights was found to be inaccessible. Four points P, Q, R, S were therefore selected two on each straight, and the distance between Q and R was found to be 122.20m. If the angle PQR was $169^0 47'40''$ and angle QRS $148^0 22'20''$; Draw up a table of deflection angles and chainages for setting out a 200m radius curve by pegs driven at every 20m chain . Chainage of Q=(140 +90) chains.   10

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4. (a) Define setting out of works and explain in brief the detailed procedure for setting out of bridge — 10

    (b) What is Total station. Mention the advantages of total station over level and theodolite along with the uses of total station. Mention the features of Total station — 10

5. (a) What is transition curve? What are the requirements of an ideal transition curve. Enlist the objectives of providing transition curve and mention the differen types of transion curves. — 10

    (b) A 3% vising gradient meels a 2% down gradiants the vartical curve 200m long is to be used. the pegs are to be field at 20m interval . Calculate the elevation of the curve points by tangent correction method and calculate the staff readings required given that the height of collimation is 350m, RL of the apex is 350.0m and its chainges is 1000.0 m — 10

6. (a) What is GPS? What are te advantages of space based positioning system and enlist the various application of GPS in surveging — 10

    (b) Explain in brief:- — 10
         (i)   Auto level
         (ii) objectives and advantages of GIS