2554

Surveying - I
(New) (1020)

P. Pages : 3

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :
1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Solve **any two** questions from each unit.
5. Assume additional suitable data, if necessary.
6. Figures to the right indicate full marks.
7. Use of non-programmable calculator is allowed.
8. Answers to all the questions should be written in the same answer book.

UNIT - I

1. a) Dumpy level was set up exactly midway between two pegs A and B, 85 m. Apart and observed staff readings on A and B were 1.850 and 3.195 respectively. The level was then shifted to station C, 16m. beyond A on line BA produced, the respective readings on A and B were 1.250 and 2.525. Calculate the staff readings on A and B, to place the line of collimation truely horizontal. 10

   b) i) What are the circumstances under which reciprocal levelling is selected ? How the accuracy is obtained in it ? 5

   ii) Write a short note on correction for curvature and refraction. 5

   c) i) Explain location of obligatory points and preliminary survey in Route survey. 5

   ii) What is the object of permanent adjustments ? What are the different relationships between fundamental lines of dumpy level ? 5

UNIT - II

2. a) Write short notes on following. 10

   i) Method of repetition.

   ii) Spire test.

b) Following are length and bearing of closed traverse calculate length and bearing of DA. **10**

Line	Length in m.	Bearing
AB	248.50	30°48'
BC	315.50	138°24'
CD	175.60	215°12'
DA	?	?

c) How is the closing error in a traverse is balanced ? Explain in detail different rules for correction for latitude and departure. **10**

UNIT - III

3. a) Following observations were made with a tacheometer and the constants of the instrument were 100 and 0.4. The staff was held vertically. Calculate horizontal distance from L to B and R. L. of B. **10**

Inst. stn.	Staff station	Vertical angle	Staff readings in m.	Remarks
L	Bm	−2°18'	3.225, 3.550, 3.875	R. L. of Bm
L	B	+8°36'	1.650, 2.515, 3.380	is 437.655 m

b) In tacheometric surveying following observations are taken with anallatic lens and staff being held vertically. Find the R. L. of X, Y, Z and horizontal distances XY and YZ. **10**

Inst. stn.	Height of axis in m.	Staff station	Vertical angle	Hair Readings in m	Remarks
X	1.20	B.M.	−6°14'	0.955, 1.615, 2.060	R.L. of
X	1.50	Y	+8°20'	0.820, 1.350, 1.865	B. M.
Y	1.60	z	+14°30'	1.875, 2.465, 3.035	= 500 m.

c) i) Explain the use of anallatic lens in tacheometry. **5**

   ii) Explain with neat sketch tacheometric contouring. Where it is used ? **5**

UNIT - IV

4. a) Two tangents intersect at a chainage of 1700m. the deflection angle being 28°. Calculate the necessary data for setting out the circular curve of radius 250m. by method of offsets from chords produced. Consider peg interval of 20 m. Draw a neat sketch of curve. **10**

b)   i)   State and explain methods of calculation of length of transition curve.   **5**

     ii)   Write a short note on vertical curves.   **5**

c)   Explain with neat sketch the Rankine's method of tangential angles for setting out circular curve. Write the procedure for setting out the curve by this method.   **10**

UNIT - V

5.   a)   Write short notes on the following.   **10**

     i)   Indian pattern clinometer.

     ii)   Abney level.

b)   i)   Write in detail the accessories of plane table.   **5**

     ii)   Distinguish clearly between radiation and intersection method of plane tabling and state the circumstances under which you would recommend them.   **5**

c)   i)   Explain plane table traversing.   **5**

     ii)   Write a short note on errors in plane tabling.   **5**

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