3687

Surveying - I
(1020)

P. Pages : 2

Time : Three Hours   **Max. Marks : 100**

Instructions to Candidates :
1. Do not write anything on question paper except Seat No.
2. Answer sheet 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. Use of non-programmable calculator is allowed.
7. Answers to all the questions should be written in the same answer book.

UNIT – I

1. a) Explain briefly the procedure of carrying out route survey.   **10**

   b) The following notes refer to the reciprocal levels taken with the level.   **10**

Instrument Station	Staff reading on A	Staff reading on B	Remarks
A	1.030	1.630	Distance AB = 800m
B	0.950	1.540	RL of A = 450m

   Find –
   i) True RL of B.
   ii) Combined correction for curvature and refraction.
   iii) The error in collimation adjustment of the instrument.

   c) Describe the processes of profile levelling and cross-secting.   **10**

UNIT – II

2. a) State the permanent adjustments of a transit theodolite and explain the object of each of these adjustments.   **10**

   b) What is mean by face left & face right of a theodolite. How would you change face ? What instrumental errors are eliminated by face left & face right observations ?   **10**

c) Explain : **10**
   i) Bowditch Rule.
   ii) Transit Rule.

UNIT – III

3. a) What do you understand by tacheometry ? State the circumstances **10**
   under which you will prefer this type ? How are the constants
   determined in it.

   b) To determine the elevation of station P in a tacheometer survey. **10**
   The following observations were made with the staff held vertical.
   The instrument was fitted with anallactic lens & its multiplying
   constant was 100.

Instruction	HI (m)	Staff station	Vertical angle	Staff Readings (m)		
O	1.45	B.M.	- 6°.00'	1.335	1.895	2.460
O	1.45	CP	+8°.30'	0.780	1.265	1.745
P	1.40	CP	- 6°.30'	1.155	1.615	2.075

   The RL of BM is 250 m. Calculate RL of P.

   c) Explain : **10**

   i) Anallactic lens.

   ii) Errors in Tacheometry.

UNIT – IV

4. a) What are the elements of a simple circular curve ? Explain how a **10**
   simple circular curve is designated.

   b) Explain clearly the importance of introducing a transition curve on **10**
   highways ? State requirements of a transition curve ?

   c) What do you understand by a vertical curve ? Where it is used ? **10**
   What are its different types ?

UNIT – V

5. a) State various methods of plane tabling and explain the procedure **10**
   of radiation and its suitability.

   b) What do you understand by orientation ? What are the different **10**
   methods of orientation explain.

   c) Write short notes on : i) Box sextant   ii) Abney level. **10**

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