

October 2017

Time - Three hours  
(Maximum Marks: 75)

- (N.B: (1) Q.No. 8 in PART - A and Q.No. 16 in PART - B are compulsory. Answer any FOUR questions from the remaining in each PART - A and PART - B.  
(2) Answer division (a) or division (b) of each question in PART-C.  
(3) Each question carries 2 marks in PART - A, 3 marks in Part - B and 10 marks in PART - C.]

PART - A

1. Define the term transiting and face lift.
2. What do you mean by stadia diaphragm and sketch the different types of stadia diaphragm?
3. State any two advantages of using anallatic lens.
4. Define sounding and state the instruments used for sounding.
5. What is meant by single plane method?
6. Define simple circular curve with sketch.
7. Mention any four application fields of GIS.
8. Calculate the radius of the circular curve, if the degree of the curve is  $6^\circ$ .

PART - B

9. What are the fundamental lines of a theodolite and mention the relationship between them.
10. What are the errors in tacheometric work?
11. Define remote sensing and state their uses.
12. What are the purposes of sounding?
13. Derive the relationship between the degree and radius of the curve.
14. State the applications of total station.
15. Explain the application of GIS in waste land management.
16. A tacheometer has a diaphragm with three cross hairs, spaced at 0.6mm apart. The focal length of the object glass is 210mm. The distance from the object glass to the trunnion axis is 100mm. Calculate the tacheometric constants.

PART - C

17. (a) (i) Explain the method of measuring horizontal angle by reiteration method with a neat sketch.  
(ii) Write short notes on electronic modern theodolite.

(Or)

- (b) The following table gives the length and bearings of the lines of a traverse ABCDE. The length and bearing of line EA have been omitted. Calculate the length and bearing of the line EA.

Line	Length(m)	Bearings
AB	204	87° 30'
BC	226	20° 20'
CD	187	280° 00'
DE	192	210° 30'
EA	?	?

18. (a) A tacheometer having multiplying constant 100 and additive constant 0.30 was setup over a BM of RL 250.000m and the following readings were taken.

Staff station	Stadia readings	Vertical angle
A	0.450, 1.035, 1.620	+5° 14'
B	0.860, 1.270, 1.680	-7° 23'

Calculate the distances of staff stations from instrument station and also their elevation. The height of instrument was 1.415m.

(Or)

- (b) Determine the multiplying constant of a tacheometer. The following observations were taken on a staff held vertically at distances measured from the instrument.

Observation	Horizontal distance (m)	Vertical angle	Staff intercept (m)
1	50	+3° 48'	0.500
2	100	+1° 06'	1.000
3	150	+0° 36'	1.500

19. (a) Find the elevation of the top of a tower from the following data.

Instrument station	Staff reading on BM	Angle of elevation	Remarks
A	0.865m	18° 30'	RL of BM = 400.000m
B	1.225m	10° 12'	AB = 75.000m.

Station A and B and top of the tower are in the same vertical plane.

(Or)

- (b) (i) What is hydrographic surveying? Explain the uses.  
(ii) Explain in detail, an ideal remote sensing system.

20. (a) (i) Explain the types of curves with neat sketches.  
(ii) Draw neat sketch of a simple circular curve and explain its various components.

(Or)

- (b) Two tangents intersect at chainage 1265m with an angle of intersection as 140°. If the radius of curve is 300m, calculate the necessary data for setting out the curve by Rankine's method. The pegs are to be driven at 20m interval.

21. (a) (i) Explain the field procedure of total station to run a traverse.  
(ii) Explain the characteristics of total station.

(Or)

- (b) (i) Briefly explain the component of GIS.  
(ii) State the types of maps and explain any two maps.

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