

October 2018Time - 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. Write the various types of theodolite.
2. State the advantages and disadvantages of tangential tacheometry.
3. What do you mean by base accessible in trigonometrical levelling?
4. State the steps involved in hydro graphic surveying.
5. Calculate the degree of curve, if the radius is 500m.
6. State any six characteristics of total station.
7. Mention any two objectives of GIS.
8. Calculate the relative error of closure, if the algebraic sum of latitude is -0.22 and algebraic sum of departure is +2.91.

PART - B

9. Describe the field procedure of determining the constants for a tacheometer.
10. Brief about any six important parts of a theodolite.
11. Write short notes on distomats.
12. Write the procedure to determine the elevation of top of a tower whose base is accessible.
13. Define sounding and state the purpose of sounding.
14. What is meant by transition curve? State the objectives of transition curve.
15. Brief about the components of GIS.

16. Calculate tangent length and length of curve of a simple circular curve of radius 300m connecting two straights, intersect at an angle of 120°.

PART - C

17. (a) The latitude and departure of the lines of a closed traverse are given below. Calculate the area of the traverse.

Line	Latitude (m)	Departure (m)
AB	-298	+169
BC	-151	+362
CD	+630	+383
DE	+301	-560
EA	-482	-354

(Or)

- (b) The following are the length and bearings of a closed traverse ABCDE. Calculate the length and bearing of EA.

Line	Length (m)	W.C.B.
AB	458.00	198° 59'
BC	262.50	282° 14'
CD	160.00	320° 13'
DE	398.50	35° 13'
EA	?	?

18. (a) A tacheometer fitted with an anallatic lens having the multiplying constant 100 was used and the following observations were obtained. The staffs were held vertical.

Inst. Station	H.I	Vertical angle	Staff at	Staff reading
P	1.500	+2° 25'	M	1.200, 1.830, 2.460
P	1.500	-4° 36'	Q	1.350, 1.820, 2.290

RL of station M is 100.000 m. Calculate the RL of 'P' and 'Q' and the distance PQ.

(Or)

- (b) Explain in detail about the systems of tacheometry.

19. (a) A theodolite was set up in two stations 25m apart P and R to determine the reduced level of top of a temple tower. The vertical angles measured from P and R are 15° and 8° 20' respectively. The staff readings taken at bench mark 100.000 are 1.570m and 2.125m respectively from P and R. If the base is inaccessible and the stations P, R are in the same vertical plane on the elevation object, find the RL of top of temple tower.

(Or)

- (b) (i) Explain in detail the basic process of remote sensing.
(ii) What is hydrographic survey? State any five uses of hydrographic surveying.

20. (a) Explain the different types of circular curves with neat sketches.

(Or)

- (b) A road of curve 80° deflection angle consists of a circular curve of 150m radius. The chainage of the intersection point is 2723m. Make out necessary calculation for setting out the curve by Rankine's method of deflection angle. Peg interval may be taken as 20m.

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

(Or)

- (b) Briefly explain the applications of GIS.
