

April 2019

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. What is meant by oblique offset?
2. Define reduced bearing.
3. Define consecutive and independent co-ordinates.
4. What is meant by double plane method in trigonometrical levelling?
5. State the errors in tacheometric surveying.
6. What is the function of prism reflectors in total station?
7. Define the term horizontal equivalent.
8. State the fundamental of GPS.

PART – B

9. What do you understand by dip of the compass needle? How do you compensate it?
10. State the advantages of internal focussing telescope over external focussing telescope.
11. What do you mean by changing face? Explain the errors eliminated by changing face.
12. Explain the procedure to determine the elevation of top of object, when the base is accessible.
13. Explain the fundamental principle of stadia tacheometry.
14. Explain the terms contour interval and contour gradient.

[Turn over.....]

15. List out the components of GIS.
16. Calculate the volume of the reservoir using trapezoidal rule.

Contour	Area in m ²
101	1000
102	12800
103	95200

PART - C

17. (a) (i) What is meant by local attraction? How it is detected? How are the observed bearings corrected for local attraction?
- (ii) What do you mean by ranging a line? Explain the procedure of ranging a line by direct method.

(Or)

- (b) The following staff readings were taken with a dumpy level. 3.185, 3.845, 2.165, 2.645, 2.780, 0.985, 2.645, 0.430, 1.465, 1.570, 0.790, 1.945, 0.650, 1.340, 0.530. The level was shifted after fourth, eighth and twelfth readings. The first reading was taken on a BM of RL 200.000m. Enter the staff readings in a level book form and reduce the level of all the points by rise and fall method. Apply the usual check.

18. (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) To determine the elevation of top of chimney the following observations were made.

Instrument at	Reading on BM	Angle of elevation	Remarks
P	1.375	11°53'	RL of BM = 50.15 m
Q	1.265	8°05'	

Stations 'P' and 'Q' and the chimney are in the same vertical plane. Find the elevation of the chimney if the distance between 'P' and 'Q' was 30m.

19. (a) A tachometer is set up at an intermediate point on a traverse course 'PQ' and the following observations were made on a vertically held staff.

Staff station	Vertical angle	Staff intercept	Axial hair reading
P	+9°30'	2.250	2.105
Q	+6°00'	2.055	1.875

The instrument was fitted with an analatic lens. Compute the length of PQ and the RL of 'Q' if the RL of 'P' is 350.50m.

(Or)

- (b) Describe briefly the salient features of total station.

20. (a) A cutting of 1000m length is made in a flat ground with a base width of 20m throughout. The depth of cutting is 10m at one end and 15m at the other end. The side slopes are 1.5:1 on one side and 2:1 on the other side. Calculate the volume of earth work by prismoidal rule.

(Or)

- (b) (i) Define contour and explain their uses.
- (ii) Describe with neat sketch, the graphical method of interpolation of contour.

21. (a) Explain the application of GPS in civil engineering.

(Or)

- (b) Briefly explain the different types of maps.
