

17963

16117

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any SIX of the following :

12

- (a) Define contour.
- (b) Define zero circle.
- (c) Define transiting and swinging.
- (d) What is face left condition of theodolite ?
- (e) State the values of constants of tachometer.
- (f) State any two advantages of digital theodolite over vernier theodolite.
- (g) Define simple curve and compound curve.
- (h) State the necessity of curve.

(B) Attempt any TWO of the following :

08

- (a) Explain any four characteristics of contour with neat sketch.
- (b) Explain in brief the procedure of measurement of horizontal angle by repetition method.
- (c) Explain field applications of remote sensing technique.

2. Attempt any FOUR of the following : 16

- (a) State any four uses of contour maps.
- (b) Explain arithmetical mean method of interpolation of contours.
- (c) Enlist any eight components of transit theodolite with their functions.
- (d) Explain the procedure to measure deflection angle using vernier theodolite.
- (e) Define the following :
 - (i) Latitude
 - (ii) Departure
 - (iii) Consecutive co-ordinates
 - (iv) Independent co-ordinates.
- (f) State the relationship between fundamental axes of theodolite.

3. Attempt any FOUR of the following : 16

- (a) State the component parts of micro-optic theodolite.
- (b) How will you make set up of total station at survey station ?
- (c) Explain the procedure of layout using total station.
- (d) Explain the use of digital level for determination of reduced level.
- (e) State the classification of curve.
- (f) What is the concept of Remote Sensing ?

4. Attempt any FOUR of the following : 16

- (a) Calculate the area of figure using following data :
 - (i) Initial Reading = 9.452
 - (ii) Final Reading = 7.775
 - (iii) $M = 100 \text{ cm}^2$ and $C = 20$
 - (iv) $N =$ Once in anticlockwise direction.
 - (v) Anchor point was inside the figure.
- (b) State the conditions to use tacheometric survey.
- (c) Define Geographic Information System. State its components.

- (d) State any two advantages and two disadvantages of remote sensing.
- (e) Explain the procedure of determining constants of tacheometer.
- (f) State the procedure of setting of simple circular curve by Deflection Angle Method.

5. Attempt any TWO of the following :

16

- (a) Following are the observations of a closed traverse ABCDA on field. Determine length and bearing of line DA.

Line	Length	Bearing
AB	182	279°
BC	72	192°
CD	112	112°
DA	?	?

- (b) Following are the observation taken while running closed traverse by theodolite. Find consecutive co-ordinates of points. Use Bowditch Rule for corrections.

Line	Length	Bearing
AB	345	180° 20'
BC	860	90° 20'
CD	418	357°
DA	838	265°

- (c) A tacheometer fitted with an analytic lens and having multiplying constant = 100 was used and following observations were made with staff held vertical.

Inst. station	H.I	Staff at	Vertical angle	Stadia Readings
P	1.50	BM	+3° 30'	1.2, 1.3, 1.4
P	1.50	Q	-2° 45'	1.65, 1.75, 2.00

RL of station B.M. = 100. Calculate R.L. of P and Q. Also find distance PQ.

P.T.O.

6. Attempt any TWO of the following :**16**

- (a) Define grade contour. Explain the process of establishing grade contour on ground.
 - (b)
 - (i) Enlist any four components of polar planimeter stating functions of each.
 - (ii) Explain in brief the procedure to measure area using polar planimeter.
 - (c) State any four uses of total station. Also state any four salient features of total station.
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