

17419

11920

3 Hours / 100 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data, if necessary.
- (5) 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**
- (i) Define horizontal equivalent
 - (ii) State the uses of contour maps
 - (iii) State the advantages of digital planimeter
 - (iv) Define the terms-Latitude and departure
 - (v) Define swing of telescope
 - (vi) State any four objective of tacheometry
 - (vii) Define degree of curve
 - (viii) State the fundamental axes of theodolite
- b) **Attempt any TWO of the following:** **8**
- (i) Explain the procedure of establishing grade contour on ground.
 - (ii) What is GPS? State any four uses of GPS.
 - (iii) Explain the method of repetition to measure horizontal angle using transit theodolite.

P.T.O.

2. Attempt any FOUR of the following:**16**

- a) Draw neat sketch of contour for the following:
 - (i) Hill
 - (ii) Valley
 - (iii) Gentle slope
 - (iv) Ridge line
- b) State direct and indirect methods of contouring? Explain tacheometric method
- c) State the procedure for computing the volume by prizmoidal formula.
- d) Describe the temporary adjustment of theodolite.
- e) Explain the procedure of measurement of deflection angle.
- f) What is meant by permanent adjustment of a theodolite? Enlist any two such adjustment.

3. Attempt any FOUR of the following:**16**

- a) State any four advantages of total station over dumpy level and theodolite.
- b) Enlist any four component parts of digital level. State the functions of each.
- c) Explain the working principle of EDM with a neat sketch.
- d) Explain the procedure for measurement of vertical angle using digital theodolite.
- e) State any four applications of digital theodolite.
- f) Describe the method of setting out simple curve by using the method of offset from long chord with sketch.

4. Attempt any FOUR of the following:**16**

- Define zero circle. How it is found out?
- Give the application of remote sensing.
- Define GIS. Enlist the key components of GIS.
- How would you determine the constants of given tacheometer on field?
- What is the difference between a theodolite and a tacheometer. Give any two characteristics of tacheometer.
- Derive the relation between the radius and degree of curve.

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

- Following are the lengths and bearings of a closed traverse ABCDA

Line	AB	BC	CD	DA
Length(m)	260	240	250	?
Bearing	341°	295°	147°	?

Determine the length and bearing of line DA

- Enlist any eight components of transit theodolite and write their functions.
- A tacheometer was set up at station A and following reading were obtained on a staff held vertically

Station	Staff st ⁿ	Vertical angle	Hair reading
A	BM	+ 7° 30'	0.900, 1.175, 1.530
A	B	- 2° 20'	1.125, 1.330, 1.445

The constant of instrument were 100 and 0.10. Find the horizontal distance AB and R.L of B. if R. L of B. M is 500.00m.

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

- a) Enlist component parts of mechanical planimeter. Calculate area of fig form following data:
- (i) initial reading – 1.586
 - (ii) final reading – 0.392
 - (iii) Multiplying constant – 100
 - (iv) Additive constant – 20
 - (v) Rotation of disc-once in reverse direction.
- b) Two tangent intersect at chainage 2140 mt. The deflection angle being 36° . Calculate all the data necessary for setting out curve with a radius 300 mt. by deflection angle.
- c) Describe layout of small buildings by using total station.
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