

22301

11819

3 Hours / 70 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. Attempt any FIVE of the following :

10

- (a) State the situations where plane table survey is suitable.
- (b) Define telescope inverted & telescope normal.
- (c) State any four uses of transit theodolite.
- (d) State any two objects of tacheometry.
- (e) Enlist the types of curves used in roads & railway alignment.
- (f) State any two features of digital theodolite.
- (g) State the object of remote sensing.

2. Attempt any THREE of the following :

12

- (a) State accessories required for plane table survey along with their use.
- (b) Explain the function of lower tangent screw, upper tangent screw, lower clamping screw & upper clamping screw while measuring horizontal angle using theodolite.

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P.T.O.

- (c) Differentiate theodolite & tacheometer. Give any 2 characteristics of tacheometer.
- (d) Draw a neat sketch of circular curve & show the following element :
- (i) Tangent length
 - (ii) Deflection angle
 - (iii) Apex distance
 - (iv) Length of long chord

3. Attempt any THREE of the following :

12

- (a) Explain temporary adjustment of theodolite.
- (b) State 4 component parts of digital theodolite & state their purpose.
- (c) Explain the procedure of measurement of vertical angle using one second micro optic theodolite.
- (d) Define the following terms & give any 2 components of each :
 - (i) GIS
 - (ii) GPS

4. Attempt any THREE of the following :

12

- (a) State any 4 advantages & 4 disadvantages of plane table survey.
- (b) Find the length & bearing of line AB. If two co-ordinates A & B as below.

Point	Co-ordinates
A	970.50, 850.40
B	1200.40, 602.20

- (c) Following are the latitudes & departures for closed traverse ABCDE. Compute the missing length & WCB of side EA.

Line	AB	BC	CD	DE	EA
Length	194.1	201.20	164.40	172.6	?
WCB	85°30'	15°30'	285°30'	195°30'	?

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- (d) Following observation were made by tacheometer :

Distance	25 m	50 m
Stadia Reading	1.900, 1.655, 1.410	2.220, 1.725, 1.230

Find the constants of tacheometer.

- (e) Calculate the ordinates at 25 m interval to set a circular curve having long chord of 300 m & versed sine of 10 m.

5. Attempt any TWO of the following :

12

- (a) Calculate independent co-ordinates of all the survey lines of the traverse :

Size	AB	BC	CD	DA
Length (m)	335	850	408	828
Bearing	180°20'	90°20'	357°	365°

- (b) Explain Bowditch Rule as applicable in a theodolite traverse.
- (c) A tacheometer fitted with anallatic lens was set up at station P & the following readings were obtained on vertically held staff.

Inst. Stn.	Staff Stn.	Vertical angle	Staff Reading
P	BM	-12°42'	0.220, 1.000, 1.780
P	Q	+9°36'	0.415, 1.240, 2.065

The RL of BM is 400 m, the constant of tacheometer was 100. Find the horizontal distance PQ & RL of Q.

6. Attempt any TWO of the following :

12

- (a) Write short notes on :
- (i) Uses of digital level
 - (ii) Salient features of total station
- (b) Explain procedure of measuring distance using EDM.
- (c) Explain the applications of remote sensing in the following area :
- (i) Land use
 - (ii) Disaster management
 - (iii) Environment
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