22301

12425

03 Hours / 70 Marks Seat No. | | | | | | | | |

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) Use of Non-programmable Electronic Pocket Calculator is permissible.

Marks

1. Attempt any FIVE of the following : **10**

a) Differentiate between Radiation and Intersection methods of plane table surveying.

b) What is function and location of plate bubble and altitude bubble.

c) What are latitude and departure?

d) Write difference between Theodolite and Tacheometer.

e) What is relation between radian and degree of curve.

f) List the component parts of digital theodolite.

g) Write any four uses of GPS.

Marks

2. Attempt any THREE of the following : **12**

a) Write the four advantages and four disadvantages of plane table survey.

b) List the component parts of theodolite with their functions.

c) State any four essential characteristics of tachometer.

d) Write the steps of horizontal curve setting by offset from long chord method.

3. Attempt any THREE of the following : **12**

a) What is table orientation in plane table and state methods of orientation?

b) The record of closed traverse is given below with two distances missing.

Line	Length (m)	Bearing
AB	100.5	N 30°30'E
BC	348.58	S 45°0'E
CD	?	S 40°30'W
DE	50.50	S 60°0'W
EA	?	N 40°15'W

Calculate length of CD and EA.

c) Write the component parts of total station with their functions.

d) What are possible sources of errors in theodolite?

4. Attempt any THREE of the following : **12**

a) State fundamental axis and lines of theodolite and give relations between them.

b) Write the steps of temporary adjustments of theodolite.

c) Explain methods of repetition of horizontal angle measurement.

d) Describe procedure of measurement of vertical angle by micro-optic theodolite.

e) State the different GPS receiver errors.

Marks

5. Attempt any TWO of the following : **12**

a) Calculate independent co-ordinates for following traverse by theodolite.

Line	Length (m)	Bearings (WCB)
AB	162	120º30'
BC	142	17º30'
CD	201	220º30'
DA	120	333º20'

b) The following observations were taken with a tacheometer fitted with an analytic lense the staff being held vertically. The constant of tacheometer is 100.

Instru. Station	Height of Instru.	Staft Station	Vertical Angle	Staff reading (m)	Remark
P	1.255	BM	−4º20'	1.325, 1.825, 2.325	R.L. of B.M. = 255.750 m
P	1.255	A	−6º30'	0.850, 1.600, 2.350	

Calculate the R.L. of A and distance between A and B.M.

c) State principle of EDM with sketch.

6. Attempt any TWO of the following : **12**

a) Define active and passive sensors.

b) State the procedure of building set out using total station.

c) Explain with sketch notations of simple curve.

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