

# 22301

**21819**

**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) 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 purpose of alidade and ‘U’ fork in plane table surveying.
- b) Define swinging and transiting in theodolite surveying.
- c) What is face left and face right observations.
- d) State the principle of tacheometry.
- e) Define horizontal curve and vertical curves.
- f) State uses of Total Station.
- g) State uses of GPS.

P.T.O.

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

- a) Define orientation and explain back sight method of orientation with sketch.
- b) State the functions of optical plummet and shifting head in theodolite.
- c) Explain method of repetition of horizontal angle measurement.
- d) Explain with sketch notations of simple circular curve.

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

- a) Explain measurement of bearing of line using theodolite.
- b) State any four essential characteristics of tacheometer.
- c) State the procedure of building setout using total station.
- d) Define active and passive sources.

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

- a) Explain with sketch intersection method of plane table surveying.
- b) A traverse survey was conducted and following data is received, find missing length and bearing of line DA

Line	Length (m)	Bearing
AB	155.80	78° 30'
BC	175.00	155° 35'
CD	238.50	248° 42'
DA	?	?

- c) State fundamental axis and lines of theodolite and give relations between them.
- d) State the features of electronic theodolite.

5. Attempt any THREE of the following:

12

- a) Calculate consecutive co-ordinates of following traverse:

Line	Length (m)	WCB
AB	162	120° 30'
BC	142	17° 30'
CD	201	220° 30'
DA	120	333° 20'

- b) Following observations were made using tacheometer, find constants of given tacheometer:

Distance	50 m	100 m
Staff readings	1.20, 1.40, 1.60	1.25, 1.45, 1.65

- c) List any four features of total station.  
d) State various applications of GIS.

6. Attempt any THREE of the following:

12

- a) State errors eliminated by the method of repetition.  
b) Explain offset from long chord methods of curve setting.  
c) State the principle of EDM with sketch.  
d) State the different sources of errors in GIS.
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