

313321

25226

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.
(8) Use of Steam tables, logarithmic, Mollier's chart is permitted.

Marks

1. **Attempt any FIVE of the following :** **10**
- a) State the use of Tacheometry.
 - b) Enlist limitations of Tacheometry.
 - c) Define the term 'Curve'.
 - d) Enlist any four modern surveying equipments.
 - e) State any four uses of digital theodolite.
 - f) Define the term 'Remote sensing'.
 - g) Define the term "Aerial Surveying".

P.T.O.

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

- a) Explain the principle of Tacheometric survey.
- b) State the procedure to determine tacheometric constant in the field.
- c) State the necessity of curves.
- d) Enlist types of curves used in road and railway alignment.

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

- a) In tacheometric surveying, following observations were taken from station P, upon vertically held staff at Q. The tacheometer is provided with anallatic lens and multiplying constant is 100.

Instrument station	HI	Staff Station	Vertical angle	Staff Reading	Remark
P	1.5 m	Q	0°0	1.300 1.800 2.200	RL of P = 100 m

Determine the horizontal distance between P and Q. Also determine gradient from P to Q.

- b) i) Enlist methods of Tacheometry.
ii) Define the term 'photogrammetry'.
- c) Calculate the ordinates at every 10m interval to set out a simple circular curve having long chord of 100m and radius of curve is 150m
- d) Two straights meet at a chainage of 1200 m with deflection angle of 45°. The radius of circular curve is 120 m. Calculate :
 - i) Tangent length
 - ii) Length of long chord
 - iii) Length of curve
 - iv) Chainage of first tangent point

4. Attempt any THREE of the following : 12

- a) i) State any four uses of EDM.
- ii) State any four applications of remote sensing in civil engineering.
- b) Differentiate between active system and passive system of remote sensing.
- c) State and explain four applications of GIS.
- d) State and explain key componts of GIS.
- e) State and explain four applications of photogrammetry in civil engineering.

5. Attempt any TWO of the following : 12

- a) Following readings were obtained on a vertically held staff with a tacheometer (Line of sight being horizontal)

Horizontal distance	Stadia Reading		
100 m	2.100	1.800	1.500
200 m	2.400	2.200	1.800

Determine constants of the tacheometer.

- b) State any six components of EDM and their function.
- c) Explain the procedure of measurement of horizontal and vertical angle by using digital theodolite.

6. Attempt any TWO of the following : 12

- a) Explain the procedure of building site layout using Total Station.
 - b) Define GPS. Enlist applications of GPS in Civil Engineering.
 - c) Enlist merits and demerits of photogrammetry.
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