

Total No. of Questions : 8]

SEAT No. :

P594

[Total No. of Pages : 2

[5869]-207

S.E. (Civil)

SURVEY

(2019 Pattern) (Semester - IV)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) Answer Q. 1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Neat sketches must be drawn wherever necessary.
- 3) Figures to right indicate full marks.
- 4) Assume suitable data if necessary.
- 5) Use of electronic pocket calculator is allowed.
- 6) Use of cell phone is prohibited in examination hall.

- Q1) a) Explain theory of stadia tacheometry? [6]  
b) State the procedure for tacheometric contouring? [6]  
c) What is mean by profile levelling and cross-sectioning? [6]

OR

- Q2) a) State characteristics and uses of contour lines. [5]  
b) The following observations were made using a tacheometer fitted with an anallatic lens, Staff held vertically and multiplying constant being 100.

Instr <sup>n</sup> . Station	Instr <sup>n</sup> . Height.	Staff Station	Vertical Angle	Hair Reading	Remark
P	1.450	BM	-6° 12'	0.980, 1.540, 2.100.	RL of B.M =
P	1.450	Q	+7° 5'	0.830, 1.360, 1.890.	384.25m

Determine RL of point Q and distance PQ. [7]

- c) State the principle of stadia tacheometry? What are the types of stadia? [6]
- Q3) a) Draw a neat sketch of curve and write equation for the following in terms of radius of curve (R) and deflection angle ( $\phi$ ). [5]
- i) Long Chord
  - ii) Versed sine
  - iii) Apex distance

P.T.O.

- b) Two straight road intersects at a chainage of 2550.50m. The angle of deflection being  $70^\circ$ . Taking chord length of 30 m, calculate –
- Radius of curve
  - Length of curve
  - Tangent length
  - Length of long chord
  - Chainage at starting point ( $T_1$ ) and end point ( $T_2$ ) of Curve [7]
- c) Derive the expression for setting out of curve by offset from long chord method. [5]

OR

- Q4)** a) State various obstacles in setting out curves. Explain the procedure of setting out simple curve when point of intersection is inaccessible. [5]
- b) What is transition curve, state the applications of transition curve? [4]
- c) Two straight AB and BC meet at chainage of 3450 m. A right handed simple circular curve of 250 m radius joins them. The deflection angle between two straight is  $50^\circ$ . Tabulate the necessary data to layout the curve by Rankine's method of deflection angle. Take chord length as 20 m. [8]

- Q5)** a) State segments and uses of Space Based Positioning System (SBPS). [6]
- b) Explain the procedure of establishing alignment of road? [6]
- c) Enlist different names of satellite and state features of any two of them. [6]

OR

- Q6)** a) Describe the procedure of setting out drainage line. [6]
- b) Explain in brief procedure of setting out of tunnel centreline and transferring underground? [6]
- c) State the applications of SBPS surveying? [6]

- Q7)** a) What do you mean by triangulation and trilateration in geodetic survey? [6]
- b) State the applications of aerial photogrammetry in surveying? [5]
- c) Define Sounding and state any one method of sounding with sketch? [6]

OR

- Q8)** a) What are different methods of sounding, State any one method in detail? [6]
- b) State the working principle and applications of total station? [6]
- c) Differentiate between Map and aerial photograph? [5]

