Section C

6. (a) What do you mean by triangulation ? Briefly describe the classification of triangulation system in detail. **7.5**

(b) If A = 9°48′36′′ with weight 2, B = 54°37′48′′ with weight 3 and A + B = 104°36′22′′ with weight 4 are the observed, find the most probable values of angles A and B. **7.5**

7. (a) Define relief. Derive an expression for the displacement due to ground relief. **7.5**

(b) An object has an elevation of 400 m above mean sea level. When the photograph was taken to the image of that point on the photograph is 4.86 cm. If the datum scale is 1/12000 and focal length of the camera is 24 cm, determine the relief displacement of the point. **7.5**

Section D

8. (a) Describe briefly the various methods of GPS surveying. Also give the applicability and limitations of each technique. Also describe the three segments of GPS. **7.5**

Roll No. ..... **Total Pages : 05**

Sep-21-00047

B. Tech. EXAMINATION, 2021

Semester IV (CBCS)

ENGINEERING SURVEYING–II

CE-403

Time : 2 Hours *Maximum Marks : 60*

The candidates shall limit their answers precisely within 20 pages only (A4 size sheets/assignment sheets), no extra sheet allowed. The candidates should write only on one side of the page and the back side of the page should remain blank. Only blue ball pen is admissible.

Note : Attempt *Four* questions in all, selecting *one* question from any of the Sections A, B, C and D. Q. No. **1** is compulsory. Assume missing data, if any, suitably.

(Compulsory Question)

1. Describe the following : **1.5×10=15**

(i) Law of stadia method

(ii) Errors in stadia surveying

(iii) Compound circular curve

(iv) Super-elevation

(v) Methods of curve ranging

(vi) Geodetic observation

(vii) Relief displacement

(viii) Components of GIS

(ix) Raster and vector data structures

(x) Tilt and drift.

Section A

2. (a) Define tacheometry. Differentiate between tacheometer and theodolite. **7.5**

(b) Explain the procedure to determine tacheometric constants by fixed hair method. **7.5**

3. A tacheometer is placed at a station A and readings on staff held vertical upon a B.M. of R.L. 100.20 m and at a station B are 0.640, 2.200, 3.760 and 0.010, 2.120, 4.230 m, respectively. The angle of depression of the telescope in the first case is 6°19′ and in the second case is 7°42′. Find the horizontal distance from A to B and R.L. of station B, if the instrument has constants 100 and 0.5. **15**

Section B

4. (a) What do you mean by vertical curve ? Explain the different types of vertical curves with neat sketches. **7.5**

(b) Two straight lines intersect at a deflection angle of 80° and are connected by a circular curve of radius 10 chains. Find the length of 'each end tangent', the 'curve', and the 'long chord'. the Apex distance; the 'Mid ordinate of the curve' and the 'Degree of the curve'. **7.5**

5. (a) What are the elements of transition curve ? Describe the characteristics of transition curve. **7.5**

(b) Two tangents meet at chainage 1022 m; the deflection angle is 36°. A circular curve of radius 300 m is introduced in between them. Find the following :

(i) Tangent length

(ii) Chainage of the tangent points

(iii) Length of the circular curve. **7.5**

(b) What is remote sensing ? Describe briefly the development of remote sensing in India and its utility. **7.5**

9. (a) What are the different advanced techniques used in surveying ? Describe the application of E.D.M. instruments. **7.5**

(b) Describe the different components, data input and output mechanism for GPS and GIS in detail. **7.5**