B.E. Fifth Semester (Civil Engineering) (CGS)

Surveying - II : 5 CE 04

P. Pages : 3 | AU – 3521 Add

Time : Three Hours | Max. Marks : 80

Notes : 1. All question carry equal marks.
2. Answer **Three** question from Section A and **Three** question from Section B.
3. Illustrate your answer necessary with the help of neat sketches.
4. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION – A

1. a) Derive the distance formula of tacheometry when line of sight is horizontal. 4

b) Explain the use of tangential method when both the angles are angle of depression. 4

c) A tacheometer was set up at station P and the following observations were obtained on a vertically held staff. 6
Station → P
Staff station → B. M. and Q
Vertical angle → – 4° 22' and + 10° 0'
Hair readings → 1.050, 1.103, 1.156, 0.952, 1.055, 1.158
RL. of B. M. → 1958.300 m.
The constant of the instrument were 100 and 0.1. Find horizontal distance from P to Q and RL of Q.

OR

2. a) Explain movable hair method of tacheometry. 4

b) Explain the working of Jeffcott direct reading tacheometer. 4

c) The vertical angles to the vanes fixed at 1m and 3m above the foot of the staff held vertically at station A were +2° 30' and +5° 48' respectively. Find horizontal distance and R. L. of station A if height of instrument axis was 438.556 m. 6

3. a) Define the following – 4

1) Sub-chord 2) Point of tangency

3) Degree of curve 4) Deflection angle.

b) Explain two theodolite method for setting simple circular curve. 3

c) Two tangents intersect at chainage 800m, the deflection angle was 38° calculate all the necessary data for setting out a curve of radius 280m if it is intended to set the curve by deflection angle method. Take peg interval = 30 m. 6

OR

4. a) Define the following – 4

1) Point of compound curve, 2) Spiral angle,

3) Shift of curve, 4) Deflection angle.

b) What is transition curve and what are the functions of transition curve? 4

c) A transition curve is required for a circular curve of 200m radius, the gauge is 1.5m and maximum super elevation is 15cm. The transition curve is to be designed for a velocity so that no lateral pressure is imposed on the rails and the rate of change of radial acceleration is 30 cm/sec^3. 5
Calculate the required length of transition curve and design speed.

5. a) What is secondary triangulation? Give its specifications. 4

b) What is the criteria for selection of triangulation station? 3

c) Two triangulation stations A and B are 60 km apart and have elevations of 240m and 280m respectively. Find the minimum height of signal required at station B so that the line of sight may not pass near the ground than 2m. The intervening ground may be assumed to have uniform elevation of 200m. 6

OR

6. a) Explain various types of signals used in triangulation survey. 4

b) Define the following 4

1) Phase of signal, 2) Conditioned quantity,

3) Most probable value, 4) Well conditioned triangle.

c) Explain about classification of triangulation system. 5

SECTION – B

7. a) Explain the method of locating the sounding by range and one angle from the shore. 4

b) Write about the use of station pointer in locating the sounding. 4

c) How underground surveys differ from ground surveys? 5

OR

8. a) What do you mean by hydrographic surveying? State its usefullness. 4

b) Explain about horizontal and vertical control. 4

c) What are the various instruments used for sounding? 5

9. a) Define the following – 4

1) Nodal point, 2) Fiducial axis,

3) Datum scale, 4) Average scale.

b) Derive the expression to cover number of photographs necessary for a rectangular area. 4

c) A line AB measures 10.92 cm on a photograph taken with a camera having a focal length of 20cm. The same line measures 2.85cm. on a map drawn to a scale of 1:50000 calculate the flying height of aircraft if average elevation of the ground is 320m. 6

OR

10. a) Differentiate between active and passive remote sensing systems. 4

b) What do you mean by relief displacement? Derive formula for relief displacement. 6

c) Differentiate between – 4

1) Tilted and oblique photograph. 2) Crab and Drift.

11. a) Define the following. 4

1) Nadir 2) Parallel of latitude

3) Celestial sphare 4) Vernal equinox.

b) What are the four M's for which geographic information used? 4

c) Explain the declination and Right Assentation system of co-ordinates used for location of heavenly bodies. 5

OR

12. a) Define map and mention different types of maps. 4

b) Distinguish between spatial and non spatial data. 4

c) What are the different advantages and disadvantages of GPS? 5

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