Total No. of printed pages = 4

CE 181403

4/8/22

Roll No. of candidate | | | | | | | | | | |

2022

B.Tech. 4th Semester End-Term Examination

CE

ENGINEERING SURVEYING – II

(New Regulation & New Syllabus)

Full Marks – 70 Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer question No. 1 and any *four* from the rest.

1. Choose the correct answer : (10 × 1 = 10)

(i) If the radius R of the curve is 100 m and deflection angle is 90°, the tangent length is

(a) 100 m

(b) 150 m

(c) 200 m

(d) 250 m

(ii) What is the degree of the curve for a radius of 573m using chain of 30m length?

(a) 1

(b) 2

(c) 3

(d) 5

(iii) The base angles of a well conditioned triangle in triangulation is

(a) 60°

(b) 45°

(c) 56°14′

(d) 54°14′

(iv) Two stations A and B 100 km apart, have elevations 25 m and 432 m above the MSL, respectively. The minimum height of signal required at B is

(a) 5 m

(b) 7 m

(c) 9 m

(d) 12 m

(v) If the angle A is 30°20′ of weight 3, then the weight of 6A is

(a) 2/3

(b) 3/2

(c) 1/12

(d) 1/2

(vi) Among the classification of triangulation system, which posses the highest order?

(a) Primary triangulation

(b) Secondary triangulation

(c) Tertiary triangulation

(d) Quartenary triangulation

(vii) The station which is selected close to the main triangulation station to avoid intervening obstruction is not known as

(a) satellite station

(b) eccentric station

(c) false station

(d) pivot station

(viii) How much inclination must be provided in a tilted photograph?

(a) 1°

(b) 3°

(c) 13°

(d) 90°

(ix) To obtain photographs of an area of 1000 m average elevation, on scale 1 : 10,00, with a camera of 20 cm focal length, the flying height is

(a) 3000m

(b) 4000m

(c) 5000m

(d) 6000m

(x) Which of the following can be used to generate navigational messages?

(a) Control segment

(b) User segment

(c) Space segment

(d) Delivery segment

2. (a) If a curve is designated as a 4° curve on a 30m arc and defection angle is 56°, calculate (5)

(i) Length of long chord

(ii) Length of arc

(iii) Apex distance

(iv) Mid ordinate.

(b) Discuss laws of accidental error with diagram. (5)

(c) Describe how location of a place can be determined by the method of trilateration? (5)

3. (a) Describe how would set a circular curve by perpendicular offsets from the long chord with the help of chain and tape. Also, explain the requirements of a transition curve. (4+4=8)

(b) The following are the mean values observed in the measurement of three angles A, B and C at one station. (7)

A = 76°42′48″ ..... Weight 4

B = 57°52′46″ ..... Weight 2

A+B = 134°36′31″ ..... Weight 3

B+C = 185036′25″ ..... Weight 2

A+B+C = 262°50′10″ .. .. Weight 1

Calculate the most probable value of each angle by the formation of normal equation.

4. (a) The altitude of two proposed stations A and B 110 km apart are respectively 400m and 720m. The intervening obstruction situated at C 65 km from A has an elevation of 395m. Ascertain if A and B are intervisible and if necessary find by how much B should be raised so that the line of sight must nowhere be less than 3m above the surface of the ground. Also draw necessary diagram. (8)

(b) What is phase of signal? Discuss the corrections made for phase of signal. (7)

5. (a) A section line AB 500m long in the area of elevation 150m measures 12 cm on a vertical photograph. The distance of the image of top of a tower PQ in the photograph also measures 8.5cm. The distance between the images of top and bottom of the tower measures 0.6 cm on the photograph. Determine height of the tower. Given, f=15 cm. (7)

(b) Discuss the interaction of EMR with Earth surface features. Define albedo. (6+2=8)

6. (a) The scale of an aerial photograph is 1cm= 100m. The photograph size is 20cm × 20cm. Determine the no. of photographs required to cover an area of 150 sqkm if longitudinal lap is 60% and side lap is 30%. (5)

(b) Discuss the application of remove sensing in disaster management. (5)

(c) The following are the three angles P, Q and R observed at a station O closing the horizon along with their probable errors of measurement. (5)

Determine their corrected values.

P= 78°12'40" ± 5", Q= 130°50'35" ±5", R= 150° 40'23" + 7"

7. Write short notes (any *three*) (3 × 5 = 15)

(a) Types of vertical curves

(b) Station adjustment and Figure adjustment

(c) Functions of EDM

(d) Spherical excess.