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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2014

Fourth Semester

Branch : Civil Engineering

CE 010 405—SURVEYING - II (CE)

(New Scheme—2010 admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. What is meant by eccentricity of signal ?
2. Distinguish between systematic error and accidental error.
3. List the equipments required for sounding.
4. What is relief displacement ?
5. What is declination-hour angle co-ordinate system ?



(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Describe a method of extending a baseline.
7. Explain the method of developing normal equation.
8. With a suitable example, explain the distance measurement using EDM.
9. Explain various parts of aerial camera and their uses.
10. Obtain the relationship among LMT, LAT and equation of time.

(5 × 5 = 25 marks)

Turn over

Part C

Answer all questions.

Each full question carries 12 marks.

11. Two triangulation stations A and B are 40 km apart and have elevations of 170 m and 166 m respectively. Find the minimum height of signal required at B so that the line of sight may not pass nearer the ground than 3 m. The intervening ground may be assumed to have a uniform elevation of 150 m.

Or

12. The attitudes of two proposed triangulation stations A and C, 65 miles apart, are 703 ft and 3520 ft respectively above the level datum, while the heights of two eminences B and D on the profile between A and C are 1170 and 2140 ft respectively. The distance AB and AD being 24 miles and 45 miles respectively. Ascertain if A and C are intervisible and, if necessary, determine a suitable height of a scaffold at C, given that A is a ground station. The earth's mean radius may be taken as 3960 miles, and coefficient of refraction 0.07.
13. The observations closing the horizon at a station are :

$$\begin{aligned} A &= 24^\circ 22' 18''.2 \quad \text{weight 1} \\ B &= 30^\circ 12' 24''.4 \quad \text{weight 2} \\ A + B &= 54^\circ 34' 48''.6 \quad \text{weight 3} \\ C &= 305^\circ 35' 13''.9 \quad \text{weight 2} \\ B + C &= 335^\circ 37' 38''.0 \quad \text{weight 3} \end{aligned}$$

Find the most probable values of the angles A, B and C.

Or

14. Adjust the following station observations :

$$\begin{aligned} A &= 34^\circ 18' 20''.4 \quad \text{weight 1} \\ B &= 23^\circ 32' 12''.8 \quad \text{weight 2} \\ C &= 22^\circ 48' 32''.6 \quad \text{weight 2} \\ A + B &= 62^\circ 50' 29''.6 \quad \text{weight 2} \\ A + B + C &= 85^\circ 39' 08''.6 \quad \text{weight 1} \end{aligned}$$

15. (a) Explain how the soundings are located by :

- (i) Two angles from the shore.
- (ii) Intersecting ranges.

(2 + 2 = 4 marks)





(b) Derive the analytical solution of the three point problem.

(8 marks)

Or

16. Describe a total station. Explain surveying procedure using a total station. What are its advantages and applications ?
17. The elevations of points in an area vary from 136 m to 184 m. Aerial photographs were taken with a camera having a focal length of 200 mm. Determine :
- (i) The flying height required to have a photographic scale of 1 in 8000 ; and
 - (ii) The photographic scale if the flying height is 2500 m.

Or

18. Define remote sensing. Explain the electromagnetic energy and electromagnetic spectrum used in remote sensing.
19. Explain the corrections for refraction, parallax semidiameter and dip, required in astronomical observations.

Or

20. (a) Define and draw the following with neat sketches (i) Declination ; (ii) Hour angle ; and (iii) Right ascension.

(3 × 2 = 6 marks)

- (b) Calculate the local apparent time of an observation taken at local mean time 10 hr. 30 min at longitude 78° 30' E. The equation of time at GMN is 3 min 4.52 sec subtractive from the apparent time and decreasing at the rate of 0.3 sec/hour.

(6 marks)

[5 × 12 = 60 marks]