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Question Paper Code : 57159

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Fourth Semester

Civil Engineering

CE 6404 – SURVEYING – II

(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. What is meant by control surveying ?
2. Define weight of an observation.
3. Define the principle of least squares.
4. Define hand held receivers.
5. What is a Satellite station and reduction to center ?
6. Define Anti spoofing.
7. What is EDM ?
8. List out the errors in total station.
9. Define hydrographic surveying.
10. Distinguish between aerial photogrammetry and terrestrial photogrammetry.

PART - B (5 × 16 = 80 Marks)

11. (a) (i) What is meant by triangulation and describe classification of triangulation? (8)
- (ii) A steel tape 20m long standardized at 55°F with a pull of 98.1 N was used for measuring a baseline. Find the correction per tape length, if the temperature at the time of measurement was 80 °F and the pull exerted was 156.96 N. Weight of 1 cubic meter of steel = 77107 N. Weight of tape = 7.85 N and $E = 2.05 \times 10^5 \text{ N/mm}^2$, coefficient of linear expansion of tape per °F = 6.2×10^{-6} . (8)

OR

- (b) (i) From an eccentric station S, 12.25 m to the west of main station B, the following angles were obtained.

$$\angle \text{BSC} = 76^\circ 25' 32'' \quad , \quad \angle \text{CSA} = 54^\circ 32' 20''$$

The stations S and C are opposite sides of the line AB. Calculate the correct angle ABC, if the lengths of AB and BC are 5286.5 m and 4932.2 m respectively. (7)

- (ii) Find the difference of levels of the points A and B and the R.L of B from the following Data.

Horizontal distance between A and B = 5625.389 m

Angle of depression from A and B = $P 28' 34''$

Height of signal of B = 3.886 m

Height of instrument at A = 1.497 m

Coefficient of refraction = 0.07

$R \sin 1'' = 30.876 \text{ m}$. R.L of A = 1265.85 m (9)

12. (a) (i) Discuss various laws of weight. (8)

- (ii) The following are mean values observed in the measurement of three angles α , β and γ at one station :

$$\alpha = 76^\circ 42' 46.2'' \text{ with weight } 4$$

$$\alpha + \beta = 134^\circ 36' 32.6'' \text{ with weight } 3$$

$$\beta + \gamma = 185^\circ 35' 24.8'' \text{ with weight } 2$$

$$\alpha + \beta + \gamma = 262^\circ 18' 10.4'' \text{ with weight } 1$$

Calculate the most probable value of each angle. (8)

OR

(b) A surveyor carried out levelling operations of a closed circuit ABCDA starting from A and made the following observations :

B was 8.164m above A, weight 2

C was 6.284m above B, weight 2

D was 5.626m above C, weight 3

D was 19.964m above A, weight 3 and

Determine the probable heights of B, C and D above A by method of correlates. (16)

13. (a) What is a total station ? Explain in detail the features of total station and merits and demerits of a total station. (16)

OR

(b) (i) Describe in detail the pulse method and phase difference method. (10)

(ii) Explain in detail the sources of error in total station. (6)

14. (a) What is GPS ? Explain in detail the segments of GPS. (16)

OR

(b) Explain in detail the orbit determination and orbit representation of GPS. (16)

15. (a) Two straights T_1V and VT_2 are to be connected by a simple curve (based on chord of 20 m). Calculate the components of simple curve by Rankine's deflection angle method. The angle of intersection = 140 degrees. Degree of the curve = 5 degree. The chainage of V is 1618.8metres. (16)

OR

(b) (i) Explain in detail the methods of locating soundings by sextant and theodolite. (8)

(ii) Calculate the sun's azimuth and hour angle at sunset at a place in latitude $42^\circ 30' N$, when its declination is (1) $22^\circ 12' N$ (2) $22^\circ 12' S$ (8)