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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.

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

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 :

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

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

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

$\alpha + \beta + \gamma = 262^\circ 18' 10.4''$ 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)