Reg. No. | | | | | | | | | | | | |

**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 $E = 2.05 \times 10^5$ N/mm$^2$, coefficient of linear expansion of tape per °F = $6.2 \times 10^{-6}$. **(8)**

**OR**

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

$\angle BSC = 76° 25' 32"$ , $\angle CSA = 54° 32' 20"$

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

Rsin 1 " =30.876 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 $\alpha$, ($\beta$ and $\gamma$ at one station :

$\alpha = 76° 42' 46.2"$ with weight 4

$\alpha + \beta = 134° 36' 32.6"$ with weight 3

$\beta + \gamma = 185° 35' 24.8"$ with weight 2

$\alpha + \beta + \gamma = 262° 18' 10.4"$ 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° 30' N, when its declination is (1) 22° 12' N (2) 22° 12' S **(8)**

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