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Question Paper Code : 71559

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

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 phase of signal?

2. What is a base net?

3. What are the kinds of errors possible in survey work?

4. Distinguish between true error and residual error.

5. Compare the microwave and the electro — optical systems adopted in total station.

6. What is Total station?

7. What do you understand from the satellite configuration?.

8. What is GPS?

9. What are the function of transition curve?

10. Define hydrographic surveying.

PART B — (5 × 13 = 65 marks)

11. (a) (i) What are signals? Classify them, Enumerate the requirements to be fulfilled by signal. (5)

(ii) A steel tape of nominal length 30m was suspended between two supports to measure the length of a line. The measured length on a slope of 4°25' is 29.861m. The mean temperature during measurement was 15°C and pull applied was 120N. If standard length of the tape was 30.008 m at 27°C and the standard pull of 50 N. Calculate the correct horizontal length. Take the weight of the tape as 0.16N, its cross sectional area equal to 2.75m² co-efficient of thermal expansion = 1.2×10^{-5} per degree Celsius and E = 2.05×10^5 N/m². (8)

Or

(b) (i) Following are the observations made between two stations.

Observation altitude = +3° 32' 36".

Height of the instrument = 1.15 m

Height of signal = 4.85 m

Horizontal distance = 4895 m

Co-efficient of refraction = 0.07 m

R sin 1" = 30.88 m

Correct the observed altitude for the height of signal-refraction and curvature. (5)

(ii) From a satellite station S, 5.8 m from the main triangulation A, the following directions were observed.

A 0° 0' 0"
B 132° 18' 30"
C 232° 24' 6"
D 296° 6' 11"

The lengths AB, AC and AD were computed to be 3265.5 m, 4022.2 m and 3086.4 m respectively. Determine the directions of AB, AC and AD. (8)

12. (a) Find the most probable values of A, B, C from the following observations.

$A = 32^\circ\ 15'3.62''$ weight 2

$B = 40^\circ 16'18.4''$ weight 1

$C = 35^\circ 12'\ 26.6''$ weight 1

$A + B = 72^\circ\ 31'50.2''$ weight 1

$A + B + C = 107^\circ\ 44'\ 25.5''$ weight 2. (13)

Or

(b) The following angles were measured at a station 'O' so as to close the horizon

<POQ = 83°42' 28.75" weight 3

<QOR = 102°15' 43.26" weight 2

<ROS = 94° 38' 27.22" weight 4

<SOP = 79°23' 23.77" weight 2

Adjust the angles by method of correlates. (13)

13. (a) Enumerate the features of a total station. (13)

Or

(b) Discuss the different sources of errors which are encountered in a total station. (13)

14. (a) Explain the different segment of GPS. (13)

Or

(b) (i) Discuss the hand held receiver and geodetic receiver of GPS. (7)

(ii) Explain the task of control segment in GPS. (6)

15. (a) (i) A simple curve is to have a radius of 300 m. The tangents intersect at chainage of 1192.00 m and the deflection angle at intersection is 50.5°. Find the tangent distance, chainage of beginning and end, length of long chord, degree of the curve, and the number of full and sub chord. (8)

(ii) How Reconnaissance survey for railway project is conducted. (5)

Or

(b) Explain the various sounding methods. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Discuss the various steps in triangulation survey. (15)

Or

(b) Briefly explain the application of remote sensing. (15)