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Question Paper Code : 31203

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Fourth Semester

Civil Engineering

CE 2254/CE 45/CE 1254/080100021 — SURVEYING — II

(Regulation 2008)

(Common to PTCE 2254 – Surveying II for B.E. (Part-Time) Second Semester – Civil Engineering – Regulation 2009)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Differentiate Plane and geodetic surveying.

2. Explain the different method of angular measurement.

3. Enlist the procedure of Permanent adjustment of a theodolite.

4. What do you mean by Horizontal and vertical datum in mapping?

5. Explain the accuracy requirement of Traversing.

6. What do you mean by Trilateration?

7. Explain the accuracy requirement of village traversing.

8. What do you mean by True north and magnetic north.

9. Explain the use of Sextant.

10. Explain the Slope correction in horizontal measurement.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain step-by-step method to measure the base line for triangulation survey. (4)

(ii) A Base line was measured with a steel tape, which was exactly 30m at 20° C, and a pull of 6 kg and the measured length was 459.242m. Temperature during measurement was 30° C and the pull applied was 10 kg. The tape was uniformly supported during the measurement. Find the true length of the line if the cross-sectional area of the tape was 0.02 cm^2, the coefficient of expansion per 1° C = 0.0000035, and the modulus of elasticity = 2.1×10^6 kg/cm^2. (12)

Or

(b) (i) Explain the order of triangulation and its specification

(ii) The angle of a triangle ABC were recorded as follows:

A = 77° 14' 20" weight 4

B = 49° 40' 35" weight 3

C = 53° 04' 52" weight 2

Give the corrected values of angles.

12. (a) A surveyor carried out levelling operation 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 and

D was 19.964m above A, weight 3

Determine the probable heights of B, C and D above A by methods of correlates.

Or

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

α = 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.

13. (a) (i) Explain cartographic concepts in map preparation for civil engineering. (8)

(ii) Explain the objectives of cadastral surveying. (8)

Or

(b) (i) Explain three point problem and strength of fix in hydrographic surveying. (8)

(ii) A, B and C are three Visible stations in hydrographical survey. The computed sides of the triangle ABC are: AB = 1130m. BC= 1372m: and CA = 1889m. Outside this triangle AC, a station P is established and its position is to be found by three point resection on AB and C, the angles APB and BPC being respectively 42° 35' and 54° 20'. Determine the distances PA and PC. (8)

14. (a) (i) Explain celestial sphere and celestial coordinate system. (8)

(ii) Explain step-by-step method to determine the azimuth of a line by observation to SUN. (8)

Or

(b) (i) Explain different time systems in astronomy. (8)

(ii) A tacheometer fitted with an anallactic lens was used to observe the following.

From	to	Bearing	Vertical angle	Hair reading		
C	A	320°	+12°	0.906	1.728	2.550
C	B	50°	+10°	0.744	2.199	3.654

The value of the constant was 100 and the staff was held vertically. Determine the length and gradient of AB. (8)

15. (a) From an eccentric station S, 12.25m to the west of the main station B, the following angles were measured <BSC = 76° 25' 32"; <CSA = 54° 32'20". The stations S and C are to the opposite sides of the line AB. calculate the correct angle ABC if the lengths AB and BC are 5286.5m and 4932.2m respectively.

Or

(b) (i) Explain refraction and curvature corrections. (8)

(ii) Find the R.L of Q from the following observations;

Horizontal distance between P and Q	=	9290m
Angle of elevation from P to Q	=	2° 06' 18"
Height of signal at Q	=	3.96m
Height of instrument at P	=	1.25m
Coefficient of refraction	=	0.07
R sin 1"	=	30.88m
R. L. of P	=	396.58m