

B 209

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2005.

Fourth Semester

Civil Engineering

CE 239 — SURVEYING — II

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write the spherical and rectangular coordinate system.
2. State the advantages of reciprocal observation in trigonometric leveling.
3. Define Horizontal and vertical control in surveying.
4. Mention the modern trends in control surveying.
5. Why is accuracy and precision in survey observations necessary?
6. Define true and most probable values.
7. Why map projection necessary.
8. State the use of Nautical almanac.
9. Define cartography.
10. State the use of town survey.

PART B — (5 × 16 = 80 marks)

11. (i) Explain refraction and curvature corrections. (8)
- (ii) Find the difference in level between two points A and B and the refraction correction from the following data. (8)
Horizontal distance between A and B = 6882.384 m
Angle of elevation of B at A = 1°50'20"
Angle of depression of A at B = 1°51'10"

Height of signal at A	= 4.145 m
Height of signal at B	= 3.597 m
Height of instrument at A	= 1.463 m
Height of instrument at B	= 1.554 m

12. (a) (i) Explain the principles and application of electronic distance measurement. (10)
- (ii) Write short notes on cadastral maps. (6)

Or

- (b) (i) What do you mean by Soundings? Describe briefly the various methods of locating soundings in hydrographic surveying. (10)
- (ii) What is strength of fix? Briefly account on its application. (8)
13. (a) (i) Explain briefly the advantages of photogrammetry in mapping. (8)
- (ii) Explain the terms (1) Parallax measurement (2) Stereo pair (3) Stereoscope (4) Photo mosaic. (8)

Or

- (b) (i) Explain the step-by-step procedure in determining azimuth of a line by observation to sun. (10)
- (ii) List the different time system? (4)
- (iii) What is celestial sphere? (2)
14. (a) (i) Explain concept of assigning weight to an observation.
- (ii) Adjust the following angles of the triangle ABC :

$$A = 52^{\circ}35'32'' \quad B = 70^{\circ}46'22'' \quad C = 56^{\circ}38'13''$$

$$52^{\circ}35'30'' \quad 70^{\circ}46'24'' \quad 56^{\circ}38'10''$$

$$52^{\circ}35'31'' \quad 70^{\circ}46'23'' \quad 56^{\circ}38'12''$$

$$52^{\circ}35'28'' \quad 70^{\circ}46'25'' \quad 56^{\circ}38'11''$$

$$52^{\circ}35'26'' \quad 70^{\circ}46'26''$$

$$52^{\circ}35'27''$$

Or

- (b) In running a circuit of precise levels for four bench marks, the following level differences were obtained :

A to B = +4.380 weight 2; P to A = -16.760 weight 1

C to B = -7.620 weight 1 : B to P = +12.520 weight 2

P to C = -4.820 weight 2;

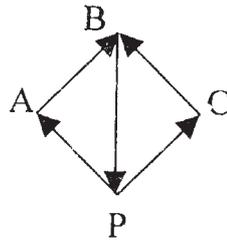


Fig.1

The arrows show the direction in which each line of levels was run. Determine the most probable values of the reduced levels. The reduced level of *P* is 212.52 m above msl.

15. (a) (i) What is meant by "a satellite station"?
- (ii) Explain the reason for using during a trigonometrical survey. Directions were observed from a satellite station, 68 m from station C with the following results :

A $0^{\circ} 0' 0''$

B $71^{\circ} 54' 32''.25$

C $296^{\circ} 12' 00''$

The approximate length of AC and BC are respectively 18024 m and 23761 m. Compute the angle subtended at station C.

Or

- (b) (i) A tacheometer is set up at an intermediate point on a traverse course AB and the following observations are taken on a staff held vertically.

Staff Station	Bearing	Vertical angle	Intercept	Axial reading
A	$40^{\circ}35'$	$-4^{\circ}24'$	2.172	1.962
B	$220^{\circ}35'$	$-5^{\circ}12'$	1.986	1.866

The instrument is fitted with an anallactic lens, and the multiplying constant is 100. The reduced level of A being as 350.75 m. Calculate the length of AB and the reduced level of B. (12)

- (ii) What is substance bar? Where it is used? (4)
