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E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2006.

Fourth Semester

Civil Engineering

CE 239 — SURVEYING II

Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

What do you mean by Tacheometric Survey?

Explain the use of subtense bar in Surveying.

What are the different classifications of triangulation system?

Write the method of calculating the distance between two stations using trigonometrical leveling?

Distinguish between true error and residual error.

What do you mean by figure adjustment in triangulation?

Name the properties of spherical triangle.

What is the correction for parallax when the altitude of celestial body is observed?

Define photogrammetry.

0. Write the concept of Map-making in Cartography.

11. (a) (i) Distinguish between fixed hair and movable hair method in tacheometry. (4)

    (ii) Explain the procedure of estimating the horizontal and vertical distances where the line of collimation is inclined to the horizontal and the staff is held normal to the line of collimation. (12)

Or

(b) (i) Distinguish between vertical and normal holding a staff in tacheometry survey? (4)

    (ii) The following readings were taken with an anallatic tacheometer. The value of the constant was 100 and the staff was held vertically.

(12)

Inst. Station	Height of Axis	Staff Station BM	Vertical Angle	Staff Readings	Remarks
A	1.46	BM	−5°30'	0.92 1.76 2.59	RL of BM 209.05
A	1.46	B	+3°24'	0.95 1.70 2.45	
B	1.40	C	+6°12'	0.90 1.97 3.04	

Determine the horizontal distances between A , B and C and also the elevations of the three stations.

12. (a) (i) What are the different corrections to be applied while measuring base line in geodetic surveying? (4)

    (ii) From an eccentric station E, 24.24 m from C, the following angles were measured to three triangulation stations A, B, and C, the stations B and E being on opposite sides of AC.

AEB = 62° 32' 40" ; AEC = 78° 24' 30"

The approximate lengths of AC and BC were 4705.5 m and 5695.8 m respectively. Find the angle ACB. (12)

Or

(b) (i) How do you calculate the curvature and refraction corrections in Trigonometrical leveling? (4)

    (ii) Two stations A and B are 3791.712 m apart. The following observations were recorded. (12)

Height of Instrument of A   =   1.463 m

Height of Signal of A   =   5.09 m

Height of Instrument of B   =   1.494 m

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Height of Signal of B	=	4.511 m
Vertical angle from A to B	=	+1°54'30"
Vertical angle from B to A	=	−1°50'25"
Reduced level of A	=	1275.60 m

Find the reduced level of B.

(a) (i) What do you mean by station adjustment? Explain. (4)

(ii) Find the most probable values of M,N,O from the following observations. (12)

M	=	32° 15' 36".2 weight 2
N	=	40° 16' 18".4 weight 1
O	=	35° 12' 26".6 weight 1
M + N	=	72° 31' 50".2 weight 1
M + N + O	=	107° 44' 25".5 weight 2

Or

(b) (i) Write the various rules that are adopted for corrections to the observed angle of triangle in figure adjustment. (4)

(ii) In running a closed line of levels, the following results were obtained. (12)

B.M.	Difference of level in m.	Distance in km.	Remarks
A to B	+5.372	9	Elevation of A = 825.654
B to C	−6.465	12	
C to D	+7.216	18	
D to E	+4.138	15	
E to A	−1.727	6	

Calculate the most probable elevations of the bench marks.

14. (a) (i) Write briefly about the observational correction to be applied when observing the altitude of a celestial body. (4)

(ii) Determine the hour angle and declination of a star from the following data : (12)

(1) Latitude of the place = 48° 30' N

(2) Azimuth of the star = 50° W and

(3) Altitude of the star = 28° 24'.

Or

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(b) (i) Write the procedure for determination of true meridian.

(ii) A star was observed at western elongation at a place in latitude 5? 20' N and longitude 52° 20' E when its clockwise horizontal ang from a survey line was 105° 49' 55''. Find the azimuth of the surv line, and the local mean time of elongation, given that the sta declination was 73° 27' 30'' N. and its right ascension 14 h. 50 54 s., the G.S.T. of G.M.N. being 5 h. 16 m. 54 s.

15. (a) (i) Explain the procedure of Map making using photogrammetry?

(ii) What is the role of EDM in surveying?

Or

(b) (i) Explain the application of three point problem in Hydrographi surveying?

(ii) Write short note on Cadastral mapping?