

(17)

B.E (Full Time) End Semester Examination April 2011
B.E. (Geoinformatics Engineering)
Subject: GI 281 Engineering Survey II
Answer all the questions

Time 3

Hours Marks 100

Part A (10 x 2 =20 marks)

1. Explain Plane and geodetic surveying
2. What do you mean by Subtense bar
3. Explain the need for Precise levelling
4. Explain the concept of Traverse adjustment
5. Explain the use of DTM and DEM.
6. Explain Accuracy requirement positioning for Topographic surveys.
7. Explain Error propagation in levelling and level nets.
8. Explain the technique of River surveys.
9. Explain the use of Sextant
10. Explain the Electronic distance measurement and its accuracy standards.

Part B (5x16 =80 marks)

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

(4marks)

(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 cm² the coefficient of expansion per 1° C=0.0000035, and the modulus of elasticity =2.1x10⁶ kg/cm².

(12marks)

12 (a) (i) What is the necessity of satellite station

(4marks)

(ii) From an eccentric station E, 13.8 m from station A, the angle measured to three trigonometrical stations A, B and C are as follows, the stations C and E being opposite sides of the line AB: $\angle BEC = 68^\circ 26'36''$; $\angle CEA = 32^\circ 45'48''$ The length of AC and AB are 5588.4m and 4371.0m respectively. Calculate the angle BAC. **(12marks)**

(OR)

(b) Suppose the angles in an equilateral triangle ABC were each measured by the same observer using the same instruments, but the number of repetitions for each angle varied. The results were $A = 45^\circ 15' 25''$, $n = 4$, $B = 83^\circ 37' 22''$, $n = 8$, and $C = 51^\circ 07' 39''$, $n = 6$. Adjust the angles. **(16marks)**

13 (a) (i) Explain temporary and permanent adjustment of vernier theodolite.

(8marks)

(ii) Explain how will you adjust the omitted measurement of traverse surveying.

(8marks)

(OR)

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

(8marks)

(ii) Explain different methods of measurement of current and discharge
(8marks)

14. (a) (i) Explain refraction and curvature corrections (8marks)

(ii) Find the difference in level between two points P and Q and reduced level of P from the following data (8marks)

Horizontal distance between P and Q = 7118 m

Angle of depression to P at Q = $1^{\circ}32'12''$

Height of signal at P = 3.87 m

Height of instrument at Q = 1.27 m

Coefficient of refraction = 0.07

R sin 1" = 30.88:m = 0.07, RL of Q = 417.860

(OR)

(b) Explain the modern trends in Topographic surveying. (16marks)

15.(a) Explain the principles which various methods of determining distance with the help of a theodolite are based and state how each one differs from the other.

(16marks)

(OR)

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

From	to	Bearing	Vertical angle	Hair reading		
C	A	320°	$+12^{\circ}$	0.906	1.728	2.550
C	B	50°	$+10^{\circ}$	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. (16marks)