

Faculty of Engineering
Prince of Songkla University
Final Examination 1st Semester 2003

Subject: 220-261 Survey I

Room: R201

Date: October 10th, 2003

Time : 9:00-12:00 (3 Hrs.)

Instructions

- 1) There are 5 problems in the examination. (100 points)
 - 2) Attempt all problems.
 - 3) Books and Notes are not allowed.
 - 4) Student may use an electronic calculator.
 - 5) Student may bring in a dictionary.
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Student I.D. #

- 1) From the given data below, compute and adjust the traverse by using the compass rule. Also calculate the coordinates of all traverse stations. Given the azimuth of line 1-2 is $106^{\circ} 20' 00''$ and the coordinates $X_1 = 4,382.09$ m. $Y_1 = 6,150.82$ m. respectively. (25 points)

Hint: Corrections for the compass rule are,

$$\delta(\text{latitude})_i = [L_i/\Sigma L] \text{ error in latitude}$$

$$\delta(\text{departure})_i = [L_i/\Sigma L] \text{ error in departure.}$$

Station	Observed Angles	Distance	Azimuth	Remark
1	$66^{\circ} 40' 30''$			
		405.24	$106^{\circ} 20' 00''$	Azimuth 1-2
2	$131^{\circ} 35' 00''$			
		336.60		
3	$97^{\circ} 35' 00''$			
		325.13		
4	$64^{\circ} 00' 30''$			
		212.91		
5	$227^{\circ} 26' 30''$			
		252.19		
6	$132^{\circ} 45' 30''$			
		237.69		
Σ	$720^{\circ} 03' 00''$	1,769.76		

Student I.D. #

Sta	to	Dist. (m.)	Azimuth ° ' "	Dep.	Lat.	Corr. Dep.	Corr. Lat.	Adj. Lat	Adj. Dep
1	2								
2	3								
3	4								
4	5								
5	6								
6	1								

Stations	Adj. Dep.	Adj. Lat.	Adj. Cor. (X)	Adj. Cor. (Y)	Remark
1	_____	_____	4,382.09	6,150.82	Given
			_____	_____	
2	_____	_____			
			_____	_____	
3	_____	_____			
			_____	_____	
4	_____	_____			
			_____	_____	
5	_____	_____			
			_____	_____	
6	_____	_____			
			_____	_____	
1	_____	_____			

Student I.D. #

2) Describe and explain these following terms in details. (20 points)

2.1) Bench Marks

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2.2) Tilting Screw.....

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2.3) Turning Point

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2.4) Trigonometric Leveling

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2.5) Fore Sight.....

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2.6) Error of Closure

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2.7) Simpson's Rule

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2.8) Index Contour

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2.9) Reciprocal Leveling

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2.10) Double Meridian Method (D.M.D)

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Student I.D. #

- 3) Name and explain the types of contour lines that are commonly used to display relief on a topographic map. From the given grid elevations, draw contour lines between the elevations 850.00 – 860.00 m. Let the contour interval equal to 2.00 m. (20 points)

Student I.D. #

- 4) Complete the differential-level notes shown below by filling the missing blanks. Determine the error of closure of the level circuit and adjust the elevations of BM_2 and BM_3 , assuming that the error is a constant per setup. (20 points)

Stations	B.S.	H.I.	F.S.	Elevation	Remark
B.M. ₁	4.127		—	100.000	
T.P. ₁	3.831		9.346		
T.P. ₂	4.104		10.725		
T.P. ₃	2.654		12.008		
B.M. ₂	4.368		7.208		
T.P. ₄	6.089		6.534		
T.P. ₅	8.863		4.736		
B.M. ₃	12.365		2.100		
T.P. ₆	10.781		3.662		
T.P. ₇	12.365		4.111		
B.M. ₁	—		9.059		

- 5) Name and explain types of leveling in surveying works. Explain in details the procedure, equipment and characteristic of each leveling type. Also give examples of applications of these leveling works in engineering projects. (15 points)
