



**Faculty of Engineering
Prince of Songkla University**

Mid-Term Examination
October 14th , 2014
220-361,221 – 361 surveying II

1st Semester 2014
Room S201
Time: 09:00-12:00 (3 hours)

This is a closed book exam. Books, lecture notes, needed materials, and all other documents are definitely **not** allowed. However, dictionary, scientific calculator and needed stationery are exempted.

Instructions

1. There are 5 problems in this exam. (100 points)
2. Attempt all problems.
3. Books and lecture notes are not allowed.
4. Students can bring in a calculator and a dictionary.
5. Students can use pencils in the answer-books.

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นาย รุจ ศุภวีไล ผู้ออกข้อสอบ

- 1) What is Trilateration? In your opinion, please discuss the differences between Trilateration and Triangulation. (15 points)

- 2) From the control stations A and B, the horizontal angles $\angle PAB(\alpha)$ and $\angle PBA(\beta)$ were measured respectively. Please calculate the coordinates of the unknown station P (X_p and Y_p) by using the given field data.

From	To	Face	Horizontal Circle Readings	Horizontal Angles	Remarks
A	P	L	127° 05' 33"		Angle PAB
	B	L	185° 31' 15"		
	B	R	05° 31' 18"		
	P	R	307° 05' 37"		
B	P	L	217° 27' 05"		Angle β
	A	L	290° 09' 20"		
	A	R	110° 09' 23"		
	P	R	37° 27' 12"		

Given $X_A = 15,400.812$ m. $X_B = 17,901.905$ m.
 $Y_A = 10,425.406$ m. $Y_B = 10,425.406$ m. (25 points)

- 3) What is the meaning of control points in Surveying? Explain and name the types of control that are very common in a Mapping Project. Also discuss and describe the applications of each type of controls in Civil-Engineering projects. (15 points)

- 4) How many types of the chain of figures that are basis in construction of the network in Triangulation? Discuss the advantages and disadvantages for each type of the chains. Could these chains be combined to form the National Network of a country? (15 points)

- 5) From the given quadrilateral ABCD, please adjust the interior angles until they satisfy both geometric conditions and trigonometric condition. Also check the results of your final adjustment (30 points)

$$\begin{aligned} 1 &= 32^\circ 21' 21'' \\ 2 &= 41 \quad 29 \quad 54 \\ 3 &= 48 \quad 12 \quad 26 \\ 4 &= 45 \quad 55 \quad 10 \end{aligned}$$

$$\begin{aligned} 5 &= 44^\circ 22' 44'' \\ 6 &= 34 \quad 34 \quad 56 \\ 7 &= 55 \quad 07 \quad 32 \\ 8 &= 57 \quad 56 \quad 29 \end{aligned}$$


