Northern Borders University **Faculty of Engineering** **Industrial Engineering Department**	**IE 453 Facilities Planning** **Mid Term Exam** **Date: 10/6/1434 Time Allowed: 1:30**

Solve the following Problems:

Problem #1

Chart the facilities planning process for a university campus

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Problem #2

Let four existing facilities be located at $P_1 = (0, 10)$, $P_2 = (5, 10)$, $P_3 = (5, 15)$, and $P_4 = (10, 5)$ with $w_1 = 15$, $w_2 = 20$, $w_3 = 5$, and $w_4 = 30$. Determine the optimum location for a single new facility when cost is proportional to rectilinear distance. Construct a contour line passing through the point having coordinates (10, 10).

Problem #3

For the machine-part matrix shown below, form cells using the direct clustering algorithm and, if conflicts exist, propose alternative approaches for resolving the conflicts.

	Machine #				
Part #	1	2	3	4	5
1	1		1		
2					
3		1		1	1
4	1		1		
5		1			
6				1	1

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