

PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING

Final Examination: Semester 2

Academic Year : 2007

Date : February 18, 2008

Time : 09:00-12:00

Subject : 226-431 Manufacturing Automation System,
226-433 Manufacturing Automation

Room : R300

ทฤษฎีในการสอบ โทษขั้นต่ำ คือ พักการเรียน 1 ภาคการศึกษา และปรับตกในรายวิชาที่ทฤษฎี

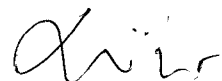
Direction

- There are 10 questions. The total score is 100.
- Write your own answer on the exam paper.
- All materials, books, calculators are allowed.

Name.....Student ID.....

Question	Full Points	Assigned Points
1	5	
2	5	
3	5	
4	15	
5	15	
6	5	
7	5	
8	5	
9	10	
10	30	
Total	100	

Instructor: Mr.Suriya Jirasatitsir



4. A robot is to be used to unload finished parts from a machine onto an AGV and to load raw parts from the AGV to the machine. Assume that there are sensors at the AGV's docking station to indicate the arrival of a vehicle and onboard sensors indicating whether the vehicle has brought a raw part to be processed as well as whether the AGV has space to carry away a finished part. Also assume there are sensors on the machine to indicate whether the machine is loaded with a part and also to signal completion of part processing. The robot is required to unload a processed part from the machine onto the AGV, pick up a new part for processing from the AGV, and load it onto the machine. The AGV is to be dispatched after completion of the cycle. Construct a ladder logic diagram for this task. (15 points)

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5. Apply the rank order clustering technique to the part-machine matrix in the following table to identify logical part families and machine groups. Parts are identified by letters, and machines are identified numerically. (15 points)

Machine	Parts				
	A	B	C	D	E
1	1				
2		1			1
3	1			1	
4		1	1		
5				1	

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Handwritten signature or initials

