Midterm Examination : Semester 2   Academic Year : 2005
Date : December 17, 2005   Time : 9.00-12.00
Subject : 226-532 Manufacturing Automation   Room : R300

Direction
- There are 6 questions for Part B. The total score is 30.
- Write your own answer in to the exam paper.
- All materials, books, calculators are allowed.

Assist. Prof. Wanida Rattanamanee

Name...**Code**...........................

ข้อ	คะแนนเต็ม	คะแนนที่ได้
1	5	
2	5	
3	10	
4	30	
5	10	
6	5	
7	15	
รวม	**80**	

1. What is the meaning of manufacturing processes? (5 points)

....
....
....
....
....
....
....

2. What is the meaning of manufacturing automation? (5 points)

....
....
....
....
....
....
....

3. What is a problem of Thai manufacturing process in your idea? How can you solve the problem by manufacturing automation theories? (10 points)
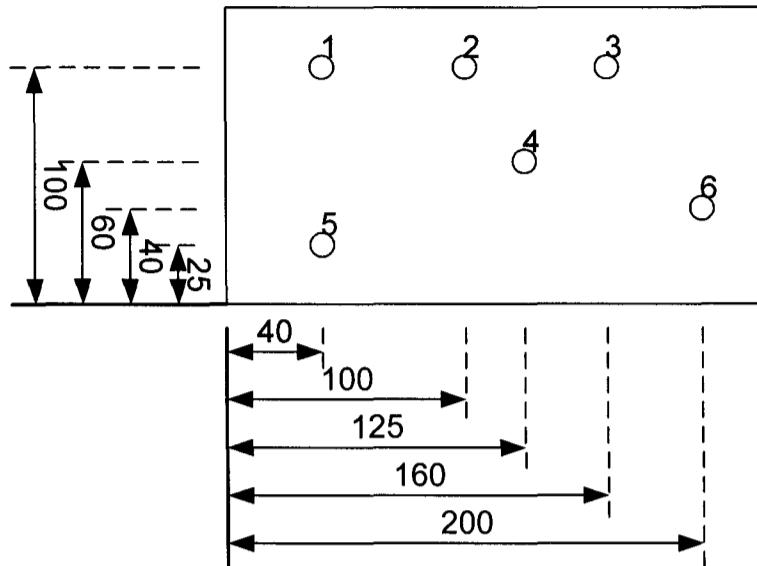
4. Explain the following topics by short answers for each. (30 points)

    4.1 a fuzzy logic controller application for thermal power plants.

    4.2 The STEM was developed for drilling holes with **large depth-to-diameter ratios**. What is the meaning of bold words?

    4.3 Explain the manufacturing process produced vinegar liquid?

    4.4 What is new EDM polishing and texturing process and what is its better result?

    4.5 What is RFID?

    4.6 What is robotic polishing?

5. From the picture, write down the corresponding X and Y axis dimensions in a NC part program by using incremental positioning and absolute positioning systems? Start point is (0,0).   (10 points)

Y dimensions: 100, 60, 40, 25

X dimensions: 40, 100, 125, 160, 200

Points: 1, 2, 3, 4, 5, 6

....
....
....
....
....
....
....
....
....
....
....
....
....
....
....
....
....
....
....

....
....
....
....
....
....

7. A DC sevomotor is used to drive the x axis of a NC milling machine table. The motor is coupled directly to the table leadscrew, which has 4 threads/in. An optical encoder is used to provide the feedback measurement. It is connected to

6. Describe accuracy and repeatability of the CNC machine system. (5 points)

....
....
....
....
....
....
....
....

7. A DC sevomotor is used to drive the x axis of a NC milling machine table. The motor is coupled directly to the table leadscrew, which has 4 threads/in. An optical encoder is used to provide the feedback measurement. It is connected to the leadscreaw using a 1 : 5 gear ratio (1 turn of the leadscrew converts to 5 turns of the encoder disk). The optical encoder emits 125 pulses per revolution. To execute a certain programmed instruction, the table must be moved from point (3.5, 1.5) to point (1.0,7.2) in a straight-line trajectory at a feed rate of 7.5 in./min. Determine (a) the number of feedback pulses for the x axis, (b) the rotational speed of the motor, and (c) the pulse rate (15 points)

....
....
....
....
....
....
....
....
....
....
....
....
....
....
....
....
....
....
....