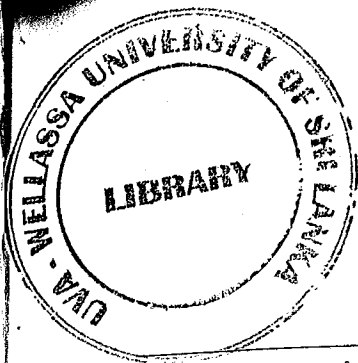
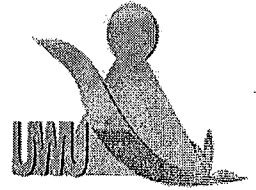




Uva Wellassa University, Sri Lanka
End Semester Examination – February/March 2012
SCT 465-3 Manufacturing Technology



Time: Three (03) Hours

Total 03 Questions
Answer all questions

1.

I. Define the following terms.

- a. Job-shop
- b. Flow-shop

(10 marks)

II. Define the following terms.

- a. Due date
- b. Tardiness
- c. Earliness
- d. Waiting time

(20 marks)

III. Solve the following $8/1//n_T$ problem using the Moore's Algorithm.

Job	1	2	3	4	5	6	7	8
Due Date	15	6	9	23	20	30	12	18
Processing Time	10	3	4	8	12	12	8	6

(20 marks)

IV. Schedule the following $10/2/F/F_{max}$ problem using the Johnson's Algorithm.

Job	Processing Time on Machine	
	M ₁	M ₂
1	6	3
2	2	9
3	4	3
4	1	8
5	7	1
6	4	5
7	7	6
8	5	2
9	5	4
10	8	7

(20 marks)

V. Solve the following $9/2/G/F_{max}$ problem using Johnson's Algorithm.

Job	Processing Time on Machine			
	First Machine		Second Machine	
1	M ₁	8	M ₂	2
2	M ₁	7	M ₂	5
3	M ₁	9	M ₂	8
4	M ₁	4	M ₂	7
5	M ₂	6	M ₁	4
6	M ₂	5	M ₁	3
7	M ₁	9	-	
8	M ₂	1	-	
9	M ₂	5	-	

(30 marks)

2.

- I. What are the flexibilities associates with Flexible Manufacturing Systems?
(10 marks)
- II. What are the types of layouts you find in FMS? Explain using sketches.
(10 marks)
- III. What are the objectives of FMS?
(10 marks)
- IV. What are the three methods to group parts into Group Technology families?
(10 marks)
- V. Six machines will constitute a GT cell. The 'From-To' data for the machines is as follows. Determine the most logical sequence of machines for these data according to/from ratios and construct a flow diagram. Where do parts enter into the system and leave from the system and in what quantity?

To → ↓From	1	2	3	4	5	6
1	0	5	0	45	50	0
2	10	0	0	30	5	0
3	0	20	0	0	0	30
4	0	0	50	0	0	0
5	20	30	0	0	0	0
6	0	0	25	0	0	5

(30 marks)

- VI. What are the advantages of having a Kanban System? Draw and explain a Kanban model for Two Stage Multi Product System with Back orders and Lost Demand?

(30 marks)



3.

- I. What are the applications of sand casting process? What are the metals we can use for this? What may be the reason that sand casting being the most popular type of casting process?

(20 marks)

- II. Name four (4) manufacturing processes we can use for plastics. Describe two of them giving details of the process, applications and materials that are possible to use.

(20 marks)

- III. What is the difference between forming and forging operations? What are the examples of products made using these processes?

(20 marks)

- IV. Name five (5) machining processes and explain about the shapes that you can obtain from each process.

(20 marks)

- V. What are the advantages of having non-traditional methods of manufacturing? Describe two non-traditional manufacturing methods giving the details for their process, materials that can be used and their advantages.

(20 marks)