Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Science and Technology
300 Level 2nd Semester Examination – December 2018/ January 2019
SCT 319-2 Maintenance, Production and Project Management

Uva Wellassa University

Instructions to candidates
Duration: Two (02) hours
Number of questions: Four (04)
Mark allocation: 100 Marks
Answer all questions

1.

a. What is the 'bath-tub curve'? Draw it and explain.

(6 marks)

b. What are the three basic types of maintenance methods? Briefly explain them taking any production facility as an example.

(9 marks)

c. For the university engineering workshop, what are the maintenance procedures you suggest and how they can be implemented?

(10 marks)

2.

In international transportation, loaded truck trailers are shipped between railroad terminals on special flatbed carts. Figure 1 shows the location of the main railroad terminals in the United States and the existing railroad tracks. The objective is to decide which tracks should be 'revitalized' to handle the intermodal traffic. In particulr, the Los Angeles (LA) terminal must be linked directly to Chicago (CH) to accomadate expected heavy traffic. Other than that, all the remaining terminals can be linked, directly or indirectly, Such that the total length (in miles) of the selected tracks is minimized. Determine the segments of the railroad tracks that must be included in the revitalization program.

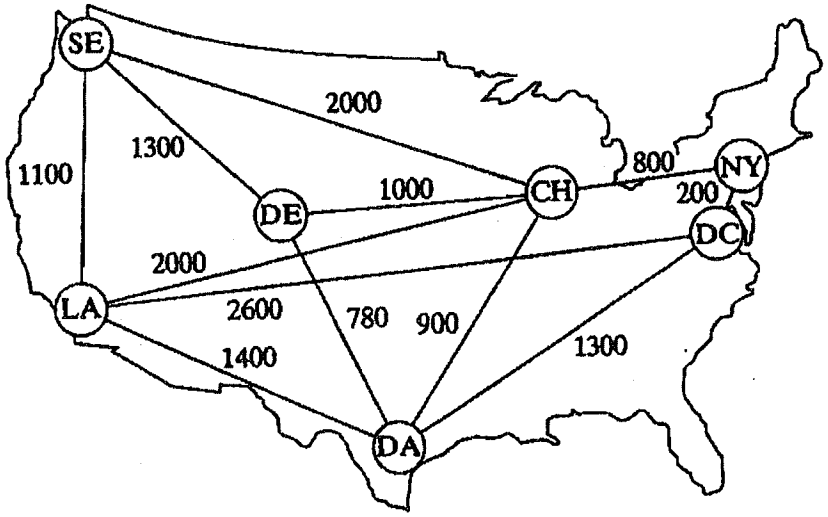

Figure 1

(25 marks)

8.9

Use Dijkstra's Algorithm to find the shortest route between node 1 and every other node in the network of Figure 2.

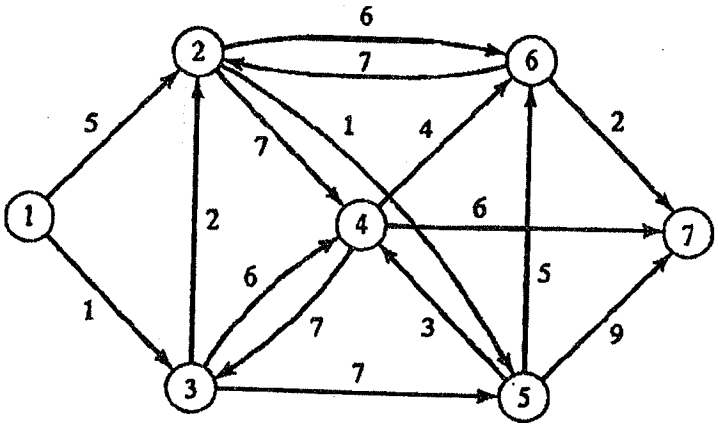

Figure 2

(25 marks)

4.

Scheduling plays an important role in production and maintenance activities. This question covers discrete (part by part) manufacturing plants.

a) Name 5 performance measures which are possible to apply for a discrete manufacturing environment.

(5 marks)

b) For the following $7/1//\bar{F}$ problem, find the optimal schedule using the shortest processing time method and calculte $\bar{F}$.

Job	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Processing Time	6	8	7	5	1	4	10

(8 marks)

c) Schedule the $7/2/F/F_{max}$ problem using Johnson's Algirithm with following data.

	Processing Time	
1	6	3
3	4	3
5	7	1
7	7	6

(12 marks)