

國立成功大學

110學年度碩士班招生考試試題

編 號：195

系 所：製造資訊與系統研究所

科 目：生產管理

日 期：0202

節 次：第 2 節

備 註：不可使用計算機

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. The following activities are part of a project to be scheduled using CPM: (20%)

ACTIVITY	IMMEDIATE PREDECESSOR	TIME (WEEKS)
A	—	6
B	A	3
C	A	7
D	C	2
E	B, D	4
F	D	3
G	E, F	7

- (a) Draw the network. (5%)
- (b) What is the critical path? (5%)
- (c) How many weeks will it take to complete the project? (5%)
- (d) How much slack does activity B have? (5%)

2. The demand for bracket assemblies (X) is 130 units. The following is the BOM in indented form: (15%)

Item	Usage
X	1
A	4
B	2
D	3
E	1
C	3
F	4
G	2

The following is a table indicating current inventory levels:

Item	X	A	B	C	D	E	F	G
Inventory	25	16	60	20	180	160	1000	100

- (a) Create the MRP using the information provided. (5%)
 (b) What are the net requirements of each item in MPS? (10%)

X	A	B	C	D	E	F	G
105	404	150	295	270	-10	180	490

3. Historical demand for one product is as displayed in the table. Assume $L_0=176.6$

Period	Demand
1	173
2	177
3	180
4	151
5	168
6	184
7	198
8	191
9	167
10	177

- Develop a forecast for this data using simple exponential smoothing with an alpha of 0.66. Then calculate MAD and MSE. (25%)

4. The following matrix shows the costs in thousands of dollars for assigning Individuals A, B, C and D to Job 1, 2, 3 and 4. Solve the problem showing your final assignments in order to minimize cost. Assume that each job will be assigned to one individual. (20%)

Individuals	Jobs			
	1	2	3	4
A	7	9	3	5
B	3	11	7	6
C	4	5	6	2
D	5	9	10	12

5. Schedule the following six jobs through two machines in sequence and draw the Gantt chart to minimize the flow time using Johnson's rule: (20%)

Hint: Johnson's rule:

Step1. List the operation time for each job on each machine.

Step2. Select the shortest operation time.

Step3. If the shortest time is on the Machine 1, sequence the job first and if the shortest time is on Machine 2 sequence it last and ties may be broken by placing it first.

Step4. Repeat steps 2 to 3 for each remaining job until the schedule is complete.

Job	Operation time	
	Machine 1	Machine 2
A	5	2
B	16	15
C	1	9
D	13	11
E	17	3
F	18	7