

國立台灣科技大學一百學年度碩士班招生試題

系所組別：工業管理系碩士班乙組

科目：生產管理

(總分為100分)

1. (a) (5%) Explain CAD, CAPP and CAM and relationship among these three technologies.
(b) (5%) Explain the bullwhip effect and provide two ways to overcome the bullwhip effect.
2. (20%) Notebook computer sales for a firm over the last 10 weeks are shown the following table. Use trend-adjusted exponential smoothing to obtain forecasts for periods 6 and 7, with $\alpha=0.3$ and $\beta=0.4$.
(Suppose that the initial estimate of trend is average of the net change from period 1 to period 4. The starting forecast (period 5) is developed using the previous (period 4) value plus the initial trend estimate. Also, show all your works for full credit.)

Week	1	2	3	4	5	6	7	8	9
Unit Sales	700	724	720	728	740	742	758	750	770

3. (20%) A manufacture will begin stocking boxes. Expected monthly demand is 800 units. The boxes can be purchased from either supplier A or supplier B. Their price lists are as follows:

Supplier A		Supplier B	
Quantity	Unit price	Quantity	Unit price
1-249	\$14.00	1-199	\$14.30
250-499	\$13.80	200-399	\$13.90
500+	\$13.60	400+	\$13.70

Ordering cost is \$40 and annual holding cost is 25 percent of unit price per unit. Which supplier should be used and what order quantity is optimal if the intent is to minimize total annual cost? (Show all your works for full credit.)

4. A company has six tasks to be processed through machine 1 first and then machine 2. Assuming machine 1 works continuously and they are using Johnson's rule. Data are summarized below in hours.

Task	A	B	C	D	E	F
Machine 1	2	5	8	1	3	4
Machine 2	3	6	2	3	5	1

- (a) (5%) What is the sequence of tasks?
- (b) (5%) What is the optimal makespan?



國立台灣科技大學一百學年度碩士班招生試題

系所組別：工業管理系碩士班乙組

科目：生產管理

(總分為100分)

5. (a) (5%) What are the full names of TOC and DBR?
(b) (15%) What are the five major steps of TOC? Please use one example to explain the application of TOC.
6. Please use Critical Path Method to plan the project, with activities, precedence activities, and estimated activity time (in days) as following

Activity	Precedence Activity	Optimistic time	Most Likely time	Pessimistic time
a	-	8	10	12
b	a	6	9	12
c	a	2	3	7
d	b	10	12	14
e	c	6	7	8
f	d, e	6	10	11

- (a) (5%) What is the expected duration for activity a?
(b) (5%) What is the Critical Path?
(c) (5%) What is the duration of the critical path?
(d) (5%) What are the three most important factors in project management?

