

國立臺灣科技大學 107 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)

(Total 100 Points.) *There are 6 problems in this exam. Show intermediate steps and formulas for partial credit. You must explain how you compute your results or answers for full credit.*

- (15 points) A company has five workers. They can produce 60 units per hour. Labor costs are \$12/hour, and material input is \$16/unit. Overhead is charged at 1.6 times direct labor cost. Finished unit sells for \$31 each. Please compute the productivity of this company.
- (20 points) A small business owner is planning an additional production line. Capacity increase and equipment will result in an increase in annual fixed costs of \$50,000. Variable cost will be \$25 per unit.
 - What unit selling price must the owner obtain to break-even on a volume of 2,500 units a year? (10 points)
 - If the owner feels a revenue of \$47/unit is preferred. What volume of output will be required to achieve a profit of \$16,000 using this revenue? (10 points)
- (15 points) Compute a weighted average forecast using a weight of 0.4 for the most recent period. 0.3 for the next most recent. 0.2 for the next and 0.1 for the next.

Period	Demand
1	42
2	40
3	43
4	40
5	41

- (20 points) Taiwan Tech Research Center is considering using ABC analysis to classify laboratory SKUs into three categories: those that will be delivered daily from their supplier (Class A items), those that will be controlled using a continuous review system (Class B items), and those that will be held in a two-bin system (Class C items). The following table shows the annual dollar (NT\$) usage for a sample of eight SKUs. Rank the SKUs, and assign them to their appropriate category.

SKU Code	Dollar Value	Annual Usage	Class
1	\$450	\$315,000	
2	\$100	\$3,000,000	
3	\$55	\$6,100	
4	\$150	\$22,500	
5	\$20	\$1,300,000	
6	\$90	\$31,500	
7	\$2	\$2,300	
8	\$1	\$1,100	



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5. (20 points) Eric produces playing card using six distinct work elements. He would like to produce 10 cards in an 8-hour session every day. Work-element data are as follows:

Work Element	A	B	C	D	E	F
Time (minutes)	10	10	20	15	10	5
Immediate Predecessor(s)	None	A	B	B	D	C, E

- (a) Drew a precedence diagram. (10 points)
(b) What cycle time is required to satisfy the required output rate? (10 points)
6. (10 points) Define and brief explain the following terminology.
(a) Lean Systems. (5 points)
(b) Bullwhip Effect. (5 points)

