

# 國立臺北科技大學

九十二學年度工業工程與管理系碩士班入學考試

## 生產管理試題

填 准 考 證 號 碼

第一頁 共三頁

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### 注意事項：

1. 本試題共 30 題，配分共 100 分。
2. 請按順序標明題號作答，不必抄題。
3. 全部答案均須答在答案卷之答案欄內，否則不予計分。

一、TOC 所指之 Throughput 如何定義？運用 Drum-Buffer-Rope 從事現場排程時，欲充分運用限制資源創造最大 Throughput，限制資源之排序應把握那些重點？又須有那些配合措施？(10%)

二、生產與作業管理中，與產能相關之規劃有那些階段？各階段之重點為何？說明之。(10%)

三、A firm has 45 units of a certain product on hand. Forecasts for the first two planning periods are 20 units each. A production quantity of 60 units is planned to be available in period 3. Customer orders are 22 for period 1, 17 for period 2 and 35 for period 3.

1. What is the projected on hand inventory at the end of period 2? (2 %)
2. What quantity is available for commitment to new customers in either of the first two periods? (3 %)
3. Discuss the relationship among customer orders, forecasts, ATP, MPS. (5 %)

四、中譯以下英文段落，並申論之。(10%)

An interface between marketing and operations is necessary to provide a business with an understanding from both perspectives. Terry Hill, a professor at the London Business School, has coined the terms order winner and order qualifier to describe marketing-oriented

dimensions that are key to competitive success. An order winner is a criterion that differentiates the products or services of one from another. An order qualifier is a screening criterion that permits a firm's products to even be considered as possible candidates for purchase. Professor Hill states that a firm must requalify the order qualifiers every day it is in business.

五、計算性選擇題(每題3%，共30%)

注意：請將下表畫在答案卷作答。

|   |   |   |   |   |   |   |   |   |    |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|   |   |   |   |   |   |   |   |   |    |

1. A company has introduced a process improvement that reduces processing time for each unit, so that output is increased by 25% with less material, but one additional worker required. Under the old process, five workers could produce 60 units per hour. Labor costs are \$12/hour, and material input was previously \$16/unit. For the new process, material is now \$10/unit. Overhead is charged at 1.6 times direct labor cost. Finished units sell for \$31 each. What increase in productivity is associated with the process improvement?

- A) 15%
- B) 28%
- C) 38%
- D) 48%
- E) none of the above

2. Given the following data for a make or buy decision:

| <u>ALTERNATIVE</u> | <u>FIXED COST</u>  | <u>VARIABLE COST</u> |
|--------------------|--------------------|----------------------|
| Buy                | \$0 per year       | \$8 per unit         |
| Make               | \$100,000 per year | \$4 per unit         |

Which alternative would you select for a quantity of 24,000 units per year?

- A) Buy
- B) Make
- C) none of the above

3. The specification limit for a product is 8 cm and 10 cm. A process that produces the product has a mean of 9.5 cm and a standard deviation of 0.2 cm. What is the process capability,  $C_{pk}$ ?

- A) 3.33
- B) 1.67
- C) 0.83
- D) 2.50
- E) none of the above

Use the following to answer questions 4-6:

Given an order cost of \$100, a per period holding cost of \$.50, and the following requirements schedule:

|     |     |    |    |    |     |    |
|-----|-----|----|----|----|-----|----|
| Pd  | 1   | 2  | 3  | 4  | 5   | 6  |
| Dmd | 120 | 80 | 80 | 70 | 100 | 60 |

注意：背面尚有試題

4. What is the economic part-period (EPP) for ordering this item?

- A) 2    B) 50    C) 100    D) 150    E) 200

5. What is the part-period method lot size for the order for the first period?

- A) 120    B) 200    C) 280    D) 350    E) 450

6. For which period will the second order be submitted using the part period lot sizing method?

- A) period 2    B) period 3    C) period 4    D) period 5    E) period 6

Use the following to answer questions 7-10:

These questions refer to the following data for jobs awaiting processing at a single work center (jobs are shown in order of arrival):

| JOB | PROCESSING<br>TIME (days) | DUE DATE<br>(days) |
|-----|---------------------------|--------------------|
| A   | 2                         | 2                  |
| B   | 5                         | 6                  |
| C   | 6                         | 10                 |
| D   | 3                         | 4                  |
| E   | 4                         | 8                  |

7. If jobs A, B, and C require two operations each, while jobs D and E require one operation each, what is the schedule sequence using the slack per operation (S/O) priority rule?

- A) A-B-C-D-E    B) A-B-D-C-E    C) C-B-D-A-E    D) A-B-E-D-C

8. What is the average completion time for the slack per operation (S/O) priority rule schedule?

- A) 8 days    B) 9 days    C) 10 days    D) 11 days

9. What is the average job tardiness for the slack per operation (S/O) priority rule schedule?

- A) 5 days    B) 6 days    C) 7 days    D) 8 days

10. What is the average number of jobs at the center for the slack per operation (S/O) priority rule schedule?

- A) 2 jobs    B) 2.25 jobs    C) 2.5 jobs    D) 2.75 jobs

六、是非題 (每題1.5%，共15%)

注意：請將下表畫在答案卷作答。

|   |   |   |   |   |   |   |   |   |    |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|   |   |   |   |   |   |   |   |   |    |

- T F 1. Quality-based strategies focus on customer satisfaction by ensuring that each product is carefully and thoroughly inspected prior to delivery.
- T F 2. Removing the seasonal component from a data series (deseasonalizing) can be accomplished by dividing each data point by its appropriate seasonal relative.
- T F 3. Design capacity refers to the maximum output given a product mix, quality factors, and machine maintenance.
- T F 4. In general, Job-Shop systems have a lower unit cost than continuous systems do because continuous systems use costly specialized equipment.
- T F 5. There is no direct link between tolerances and control limits.
- T F 6. The operations manager has primary responsibility for making operations system design decisions, such as system capacity and location of facilities.
- T F 7. Delayed differentiation is a means of increasing product variety at low setup costs and transportation costs.
- T F 8. The fixed-order interval model requires a larger amount of safety stock than the ROP model for the same risk of a stockout.
- T F 9. The use of tables and charts in aggregate planning usually enables planners to arrive at an optimal plan.
- T F 10. The SPT rule minimizes downstream idle time.

七、選擇題 (每題1.5%，共15%)

注意：請將下表畫在答案卷作答。

|   |   |   |   |   |   |   |   |   |    |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|   |   |   |   |   |   |   |   |   |    |

1. Service design generally differs from product design in which of the following ways?
- A) Service design tends to focus on tangible factors.
  - B) There is less latitude in detecting and correcting errors prior to delivery.
  - C) There is a lesser requirement to be aware of competitors' offerings.
  - D) There is less visibility to customers.
  - E) none of the above
2. Which of the following is not a general approach to decision-making?
- A) establishing priorities
  - D) quantitative methods

- B) an emphasis on subjectivity                      E) a systems approach  
 C) analysis of tradeoffs
3. Which of the following is not an ongoing trend in manufacturing competition?  
 A) globalization    D) mass production  
 B) quality improvement                                      E) technological advances  
 C) flexibility and agility
4. Which of the following is not a factor commonly considered in the make-or-buy decision process?  
 A) available capacity      B) expertise      C) nature of demand      D) cost  
 E) revenue
5. Which of the following is not characteristic of preventive maintenance in JIT systems?  
 A) maintaining equipment in good operating condition  
 B) replacing parts before they fail  
 C) workers maintaining their own equipment  
 D) eliminating supplies of spare parts  
 E) perceiving breakdowns as an opportunity for improvement
6. A kanban card is used to signal that:  
 A) work is needed from the subsequent station  
 B) work is ready to be moved to the next station  
 C) a worker has run out of parts  
 D) a machine has broken down  
 E) a machine is ready for preventive maintenance
7. Which of the following is not a characteristic of recent trends in location strategy?  
 A) foreign producers locating in the U.S  
 B) Passage of GATT reduces motivation to locate inside the consuming country.  
 C) information technology reducing need for proximity  
 D) location near suppliers due to JIT emphasis  
 E) construction of larger facilities at one site
8. Supply chain response time is a measure of performance regarding:  
 A) reliability    D) utilization  
 B) flexibility    E) none of the above  
 C) expenses

9. Which of the following is a barrier to integration of separate organization in the supply chain?

- I conflicting objectives of the companies in the chain.
- II different level of capacity of the companies in the chain.
- III reluctance of the organizations in the chain to allow other organizations access to their data.

- A) I only    B) I and II    C) II and III    D) I and III    E) I, II and III

10. Essentially, the output of aggregate planning is:

- A) the marketing plan
- B) the production plan
- C) the rough-cut capacity plan
- D) the master schedule
- E) the material requirements plan