

國立成功大學

113學年度碩士班招生考試試題

編 號：229

系 所：工業與資訊管理學系

科 目：生產與作業管理

日 期：0202

節 次：第 2 節

備 註：可使用計算機

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第1頁，共4頁

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1. (15%) What are the five major factors affecting the decision of “make or buy” in capacity planning? Why?
2. (12%) The operations strategy must comply with the organizational strategy. Please list the possible operations strategies and examples if its organizational strategy is “differentiations”.
3. (12%) Please give possible qualitative forecasting methods and their examples.
4. (11%) What is mass customization? Please give an example to explain it.

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5. TechGadgets.com deals in a range of electronic devices. Imagine TechGadgets.com is the sole client of IIM Electronics for a particular type of earbuds. TechGadgets.com consistently orders its EOQ of 100 units from IIM Electronics. The annual demand for these earbuds is 20,000 units. IIM Electronics incurs a setup cost of \$80 per production run, and its annual holding cost per unit is \$0.5. What is the optimal production quantity for IIM Electronics (assuming an essentially infinite production rate)? (8%)

6. Consider the following table. Five jobs must be scheduled. Each of the jobs must be processed on three machines (*A*, *B* and *C*) in the same order. The processing times are listed below. In what order should the jobs be processed to minimize the total processing time for the jobs? (8%)

Job	<i>A</i>	<i>B</i>	<i>C</i>
1	6	30	7
2	23	2	5
3	1	7	10
4	4	3	1
5	8	8	2

7. Consider the following table. Six jobs must be scheduled. Suppose that today is day 3. (8%)

- a) (4%) In what order should the jobs be processed to minimize the number of late jobs?
- b) (4%) How many jobs are late?

Job	Process Time	Due Date
<i>A</i>	3	18
<i>B</i>	5	12
<i>C</i>	9	17
<i>D</i>	2	5
<i>E</i>	7	21
<i>F</i>	8	19

8. MagicTreats is a bakery known for its exquisite pastries. They have an annual demand of 500 boxes for their Premium Delight pastries. The cost for initiating each order is \$10, and they face an annual holding cost of 15% of the pastry's value. Usually, the Premium Delight pastries are sold at a wholesale price of \$6 per box. To decrease their stock, MagicTreats' supplier is offering a 50% discount on these pastries for a two-day sale. Assuming the pastries will remain fresh for a long time, what quantity should MagicTreats order during this special sale? (8%)

9. A perishable dairy product is ordered daily at a particular supermarket. The product, which costs \$1.19 per unit, sells for \$1.65 per unit. If units are unsold at the end of the day, the supplier takes them back at a rebate of \$1 per unit. Assume that daily demand is approximately normally distributed with mean 150 and standard deviation 30. In addition, $z_{0.29231} = 0.547$ and $z_{0.70769} = -0.547$. (8%)

- What is your recommended daily order quantity for the supermarket? (4%)
- What is the probability that the supermarket will sell all the units it orders? (4%)

Multiple Choice Questions (10%)

10. The purpose of aggregate planning is to: (2%)

- Determine approximate work-force levels, overtime production, inventory, etc. needed to meet monthly demand for a product group.
- Determine accurate work-force levels, overtime production, inventory, etc. needed to meet weekly demand for a particular product.
- Determine planned order releases for component parts that are needed to meet the master production schedule.
- Determine whether the master production schedule is doable.

11. The master production schedule calls for production of 1000 units of product X in a given week. If 2.5 standard hours are required per unit and drill department time has historically been 30% of the total time, use rough-cut capacity planning to determine how many hours of capacity will be required in the drill department to meet this master schedule? (2%)

- 2,500
- 1,000
- 750
- 250

12. The purpose of a dummy activity in a PERT diagram is: (2%)

- A) To use up slack time.
- B) To indicate an activity that is not needed.
- C) To indicate precedence.
- D) To make scheduling easier.

13. Rough-cut capacity planning is used to: (2%)

- A) Test whether capacity is adequate for the aggregate plan.
- B) Test whether capacity is adequate for the master production schedule.
- C) Plan how much overtime will be scheduled each month.
- D) Plan the building of a new facility.

14. A company uses a low-skilled workforce to make a product that has seasonal variations in demand. New employees are readily available and the company's objective is to keep costs low. Storage costs are quite expensive. Which pure strategy of aggregate planning would most likely be used? (2%)

- A) They could not use a pure strategy.
- B) Vary workforce size by hiring and layoffs.
- C) Use inventory to absorb demand fluctuations.
- D) Use overtime and subcontracting to meet peak demand.