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| 考試科目 | 微積分 | 系所別 | 企管研究所 (MBA) 乙組 | 考試時間 | 2月2日(五)第三節 |
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Question 1 (30 points)

A media company is producing DVDs. It costs \$12,000 to set up machines to make the copies. The marginal cost for producing q copies is $5 + \frac{q}{5000}$. In addition, based on the market research, the highest price at which the company can sell all q copies is $\$20 - \frac{q}{10000}$. How many DVD should this media make and sell to be financially benefited?

Question 2 (30 points)

A new cell phone is introduced. The company estimates that they will sell 200 thousand phones. After 1 month they have sold 20 thousand. How many will they have sold after 9 months?

Question 3 (40 points)

A toy retailer sells three models (type A, B, and C). Annual demand are $D_A = 12000$ units for type A, $D_B = 1200$ units for type B, and $D_C = 120$ units for type C. Each model's procurement cost is \$500. A fixed transportation cost of \$4000 is incurred each time an order is delivered. For each model ordered and delivered on the same truck, an additional fixed cost of \$1000 is incurred for receiving and storage. This retailer incurs an annual holding cost: 20 percent of the unit procurement cost (e.g., $\$500 \cdot 0.2 = \100 per unit kept in the backyard for one year). In the following questions, consider this retailer's annual procurement cost, holding cost, and transportation cost.

- Consider the case that three types of models are ordered independently. What is the minimum total cost? (20 points)
- Consider the case that three types of models are aggregated each time this retailer places an order. What is the minimum total cost? Comparing to (a), will this retailer save money or spend extra money? (20 points)

備註

- 作答於試題上者，不予計分。
- 試題請隨卷繳交。