# 國立中央大學 108 學年度碩士班考試入學試題

所別： 企業管理學系 碩士班 一般丁組(一般生)　　共 4 頁 第 1 頁

科目： 管理會計學

本科考試可使用計算器，廠牌、功能不拘

[注意] 1.可不按題號順序作答，但須標明題.號。
2.可用中文或英文作答。
3.計算題請列出必要之計算式，否則不予計分。

一、 "In my opinion, we ought to stop making our own drums and accept that outside supplier's offer," said Wim Niewindt, managing director of Antilles Refining, N.V., of Aruba. "At a price of 18 florins per drum, we would be paying 5 florins less than it costs us to manufacture the drums in our own plant. (The currency in Aruba is the florin, denoted below by fl.) Since we use 60,000 drums a year, that would be an annual cost savings of 300,000 florins." Antilles Refining's present cost to manufacture one drum is given below (based on 60,000 drums per year):

| | |
|---|---|
| Direct materials | fl10.35 |
| Direct labor | 6.00 |
| Variable overhead | 1.50 |
| Fixed overhead (fl2.80 general company overhead, fl1.60 depreciation and, fl0.75 supervision) | 5.15 |
| Total cost per drum | fl23.00 |

A decision about whether to make or buy the drums is especially important at this time because the equipment being used to make the drums is completely worn out and must be replaced. The choices facing the company are:

*Alternative 1:* Rent new equipment and continue to make the drums. The equipment would be rented for fl135,000 per year.
*Alternative 2:* Purchase the drums from an outside supplier at fl18 per drum.

The new equipment would be more efficient than the equipment that Antilles Refining has been using and, according to the manufacturer, would reduce direct labor and variable overhead costs by 30%. The old equipment has no resale value. Supervision cost (fl45,000 per year) and direct materials cost per drum would not be affected by the new equipment. The new equipment's capacity would be 90,000 drums per year.

The company's total general company overhead would be unaffected by this decision.

*Required:* (28%)

1. Prepare an analysis showing the total cost and the cost per drum for each of the two alternatives given above. Assume that 60,000 drums are needed each year. Which course of action would you recommend to the managing director? (10%)
2. Would your recommendation in (1) above be the same if the company's needs were 90,000 drums per year? Show computations to support your answer, with costs presented on both a total and a per unit basis as in (1). (10%)
3. What is the quantity of drums needed for the company each year when these two alternatives are indifferent? (8%)

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科目： 管理會計學

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二、 In five years, Kent Duncan will retire. He is exploring the possibility of opening a self-service car wash. The car wash could be managed in the free time he has available from his regular occupation, and it could be closed easily when he retires. After careful study, Mr. Duncan determined the following:

a. A building in which a car wash could be installed is available under a five-year lease at a cost of $1,700 per month.
b. Purchase and installation costs of equipment would total $200,000. In five years the equipment could be sold for about 10% of its original cost.
c. An investment of an additional $2,000 would be required to cover working capital needs for cleaning supplies, change funds, and so forth. After five years, this working capital would be released for investment elsewhere.
d. Both a wash and a vacuum service would be offered. Each customer would pay $2.00 for a wash and $1.00 for access to a vacuum cleaner.
e. The only variable costs associated with the operation would be 20 cents per wash for water and 10 cents per use of the vacuum for electricity.
f. In addition to rent, monthly costs of operation would be: cleaning, $450; insurance, $75; and maintenance, $500.
g. Gross receipts from the wash would be about $1,350 per week. According to the experience of other car washes, 60% of the customers using the wash would also use the vacuum.

Mr. Ducan will not open the car wash unless it provides at least a 12% return.

*Required:* **(24%)**

1. Assuming the car wash will be open 52 weeks a year, compute the expected annual net cash receipts (gross cash receipts less cash disbursements) from its operation. (Do not include the cost of the equipment, the working capital, or the salvage value in these computations.) (四捨五入至個位數)(6%)
2. What is the net present value (NPV) of the investment in the car wash? (四捨五入至個位數) (6%)
3. What is the internal rate of return (IRR) of the investment in the car wash? (採用直線內插法計算而四捨五入至%之小數點後第二位) (6%)
4. Would you advise Mr. Duncan to open the car wash? (6%)

EXHIBIT 1　Present Value of $1; $\frac{1}{(1+r)^n}$

| Periods | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 11% | 12% | 13% | 14% | 15% | 16% | 17% | 18% | 19% | 20% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.962 | 0.952 | 0.943 | 0.935 | 0.926 | 0.917 | 0.909 | 0.901 | 0.893 | 0.885 | 0.877 | 0.870 | 0.862 | 0.855 | 0.847 | 0.840 | 0.833 |
| 2 | 0.925 | 0.907 | 0.890 | 0.873 | 0.857 | 0.842 | 0.826 | 0.812 | 0.797 | 0.783 | 0.769 | 0.756 | 0.743 | 0.731 | 0.718 | 0.706 | 0.694 |
| 3 | 0.889 | 0.864 | 0.840 | 0.816 | 0.794 | 0.772 | 0.751 | 0.731 | 0.712 | 0.693 | 0.675 | 0.658 | 0.641 | 0.624 | 0.609 | 0.593 | 0.579 |
| 4 | 0.855 | 0.823 | 0.792 | 0.763 | 0.735 | 0.708 | 0.683 | 0.659 | 0.636 | 0.613 | 0.592 | 0.572 | 0.552 | 0.534 | 0.516 | 0.499 | 0.482 |
| 5 | 0.822 | 0.784 | 0.747 | 0.713 | 0.681 | 0.650 | 0.621 | 0.593 | 0.567 | 0.543 | 0.519 | 0.497 | 0.476 | 0.456 | 0.437 | 0.419 | 0.402 |
| 6 | 0.790 | 0.746 | 0.705 | 0.666 | 0.630 | 0.596 | 0.564 | 0.535 | 0.507 | 0.480 | 0.456 | 0.432 | 0.410 | 0.390 | 0.370 | 0.352 | 0.335 |
| 7 | 0.760 | 0.711 | 0.665 | 0.623 | 0.583 | 0.547 | 0.513 | 0.482 | 0.452 | 0.425 | 0.400 | 0.376 | 0.354 | 0.333 | 0.314 | 0.296 | 0.279 |

EXHIBIT 2　Present Value of an Annuity of $1 in Arrears; $\frac{1}{r}\left[1-\frac{1}{(1+r)^n}\right]$

| Periods | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 11% | 12% | 13% | 14% | 15% | 16% | 17% | 18% | 19% | 20% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.962 | 0.952 | 0.943 | 0.935 | 0.926 | 0.917 | 0.909 | 0.901 | 0.893 | 0.885 | 0.877 | 0.870 | 0.862 | 0.855 | 0.847 | 0.840 | 0.833 |
| 2 | 1.886 | 1.859 | 1.833 | 1.808 | 1.783 | 1.759 | 1.736 | 1.713 | 1.690 | 1.668 | 1.647 | 1.626 | 1.605 | 1.585 | 1.566 | 1.547 | 1.528 |
| 3 | 2.775 | 2.723 | 2.673 | 2.624 | 2.577 | 2.531 | 2.487 | 2.444 | 2.402 | 2.361 | 2.322 | 2.283 | 2.246 | 2.210 | 2.174 | 2.140 | 2.106 |
| 4 | 3.630 | 3.546 | 3.465 | 3.387 | 3.312 | 3.240 | 3.170 | 3.102 | 3.037 | 2.974 | 2.914 | 2.855 | 2.798 | 2.743 | 2.690 | 2.639 | 2.589 |
| 5 | 4.452 | 4.329 | 4.212 | 4.100 | 3.993 | 3.890 | 3.791 | 3.696 | 3.605 | 3.517 | 3.433 | 3.352 | 3.274 | 3.199 | 3.127 | 3.058 | 2.991 |
| 6 | 5.242 | 5.076 | 4.917 | 4.767 | 4.623 | 4.486 | 4.355 | 4.231 | 4.111 | 3.998 | 3.889 | 3.784 | 3.685 | 3.589 | 3.498 | 3.410 | 3.326 |
| 7 | 6.002 | 5.786 | 5.582 | 5.389 | 5.206 | 5.033 | 4.868 | 4.712 | 4.564 | 4.423 | 4.288 | 4.160 | 4.039 | 3.922 | 3.812 | 3.706 | 3.605 |



注意:背面有試題

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三、 (24%)

Clearview Window Company manufactures windows for the home-building industry. The window frames are produced in the Frame Division. The frames are then transferred to the Glass Division, where the glass and hardware are installed. The company's best-selling product is a three-by-four-foot, doublepaned operable window.

The Frame Division also can sell frames directly to custom home builders, who install the glass and hardware. The sales price for a frame is $80. The Glass Division sells its finished windows for $190. The markets for both frames and finished windows exhibit perfect competition.

The standard variable cost of the window is detailed as follows:

| | Frame Division | Glass Division |
|---|---|---|
| Direct material | $15 | $30* |
| Direct labor | 20 | 15 |
| Variable overhead | 30 | 30 |
| Total | $65 | $75 |

*Not including the transfer price for the frame.

**Required:**

1. Assume that there is no excess capacity in the Frame Division. (6%)
   - *a.* Use the general rule to compute the transfer price for window frames.
   - *b.* Calculate the transfer price if it is based on standard variable cost with a 10 percent markup.

2. Assume that there is excess capacity in the Frame Division. (15%)
   - *a.* Use the general rule to compute the transfer price for window frames.
   - *b.* Explain why your answers to requirements (1*a*) and (2*a*) differ.
   - *c.* Suppose the predetermined fixed-overhead rate in the Frame Division is 125 percent of direct-labor cost. Calculate the transfer price if it is based on standard full cost plus a 10 percent markup.
   - *d.* Assume the transfer price established in requirement (2c) is used. The Glass Division has been approached by the U.S. Army with a special order for 1,000 windows at $155. From the perspective of Clearview Window Company as a whole, should the special order be accepted or rejected? Why?
   - *e.* Assume the same facts as in requirement (2d). Will an autonomous Glass Division manager accept or reject the special order? Why?

3. Comment on the use of full cost as the basis for setting transfer prices. (3%)

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四、The controller of ABC Corporation instructs the cost supervisor to use algebraic distribution (simultaneous method) of service departments' costs to producing departments. There are three service departments, and each receives services from the other two. After all factory overhead is distributed among the producing and service departments, the account balances and the interdependencies of service departments were tabulated as follows:

| Department | Departmental Overhead Before Distribution of General Service Departments | Services Provided | | |
|---|---|---|---|---|
| | | Powerhouse | Personnel | Factory |
| Mixing | $200,000 | 25% | 35% | 25% |
| Refining | 90,000 | 25 | 30 | 20 |
| Finishing | 105,000 | 20 | 20 | 20 |
| Powerhouse | 16,000 | — | 10 | 20 |
| Personnel | 29,500 | 10 | — | 15 |
| General Factory | 42,000 | 20 | 5 | — |
| | $482,500 | 100% | 100% | 100% |

*Required:* **(24%)**

1. Compute the final amount of factory overhead of each service department after reciprocal transfer costs have been calculated algebraically by using simultaneous method. (12%)
2. Compute the final total factory overhead of each producing department. (12%)



注意:背面有試題