

系級	會計學系碩士班	考試時間	100 分鐘
科目	成本及管理會計學	本科總分	100 分

※一律作答於答案卷上(題上作答不予計分)；並務必標明題號，依序作答。

1. Multiple Choice – Select the best answer (20%)

(1) Cost-volume-profit analysis is based on certain general assumptions. Which of the following is **not** one of these assumptions? (A) Product prices will remain constant as volume varies within the relevant range. (B) Costs can be categorized as fixed, variable, or semivariable. (C) The efficiency and productivity of the production process and workers will change to reflect manufacturing advances. (D) Total fixed costs remain constant as activity changes. (E) Unit variable cost remains constant as activity changes.

(2) Assume the following cost information for Fernandez Company:

Selling price	\$120 per unit
Variable costs	\$80 per unit
Total fixed costs	\$80,000
Tax rate	40%

What is the margin of safety in units if Fernandez Company wants to earn an after-tax net income of \$42,000? (A) 3,750 units (B) 2,000 units (C) 3,050 units (D) 1,750 units

Use the following information to answer questions (3) and (4):

Consider the following standard costing data regarding operations for April 2017, and assume the use of a flexible budget for control of variable and fixed manufacturing overhead based on machine-hours.

Fixed manufacturing overhead incurred	\$23,180
Denominator level in machine-hours (to compute budgeted rate per machine-hour)	1,000
Variable manufacturing overhead (per standard machine-hour)	\$42
Budgeted fixed manufacturing overhead	\$20,000
Production-volume variance	\$4,000 F
Variable manufacturing overhead spending variance	\$2,282 F
Variable manufacturing overhead efficiency variance	\$2,478 F

(3) What is the standard machine-hours allowed for actual output achieved during the period? (A)1,000 machine-hours. (B)800 machine-hours. (C)1,200 machine-hours. (D)1,159 machine-hours. (E)Some other amount.

(4) What is the amount of variable manufacturing overhead incurred during the period? (A)\$45,640. (B)\$55,160. (C)\$50,400 (D)\$47,922. (E)Some other amount.

(5) To discourage producing for inventory, management can (A)discourage using nonfinancial measures such as units in ending inventory compared to units in sales. (B)evaluate performance over a quarterly period rather than a single year. (C)incorporate a carrying charge for inventory in the internal accounting system (D)implement absorption costing across all departments

(6) Which one of the following is a measure of the balanced scorecard's internal process perspective? (A)Service response time (B)Customer satisfaction (C)Gross profit percentage (D)Cost reduction

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(7) For 2010, Jake's Dog Supply Manufacturing uses machine-hours as the only overhead cost-allocation base. The accounting records contain the following information:

	<u>Estimated</u>	<u>Actual</u>
Manufacturing overhead costs	\$200,000	\$240,000
Machine-hours	40,000	50,000

Using normal costing, the amount of manufacturing overhead costs allocated to jobs during 2010 is: (A) \$300,000 (B) \$250,000 (C) \$240,000 (D) \$200,000

(8) An unfavorable sales-mix variance would most likely be caused by which of the following?
 (A) a new competitor providing better service in the high-margin product sector (B) a competitor having distribution problems with high-margin products (C) the company offering low-margin products at a higher price (D) the company experiencing quality-control problems that get negative media coverage of low-margin products

(9) Dandy Manufacturing Company uses two different independent variables (machine-hours and number of packages) in two different equations to evaluate costs of the packaging department. The most recent results of the two regressions are as follows:

Machine-hours:

<u>Variable</u>	<u>Coefficient</u>	<u>Standard Error</u>	<u>t-Value</u>
Constant	\$748.30	\$341.20	2.19
Independent Variable	\$52.90	\$35.20	1.50

$$r^2 = 0.33$$

Number of packages:

<u>Variable</u>	<u>Coefficient</u>	<u>Standard Error</u>	<u>t-Value</u>
Constant	\$242.90	\$75.04	3.24
Independent Variable	\$5.60	\$2.00	2.80

$$r^2 = 0.73$$

What is the estimated total cost for the coming year if 1,200 machine hours are incurred and the department has 12,700 packages to be handled, based upon the best cost driver?

(A)\$71,363 (B)\$64,228 (C)\$898,013 (D)\$291,486

(10) Garfield Company has the following information for the current year:

Beginning fixed manufacturing overhead in inventory \$250,000
 Fixed manufacturing overhead in production 850,000
 Ending fixed manufacturing overhead in inventory 70,000

Beginning variable manufacturing overhead in inventory \$40,000
 Variable manufacturing overhead in production 100,000
 Ending variable manufacturing overhead in inventory 30,000

What is the difference between operating incomes under absorption costing and variable costing? (A) \$180,000 (B) \$100,000 (C) \$50,000 (D) \$110,000

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2. (20%) Billings Corporation is a decentralized wholesaler with five autonomous divisions. The divisions are evaluated on the basis of return on investment (ROI), with year-end bonuses given to the divisional managers who have the highest ROIs. Operating results for the company's Office Product Division for the most recent year are give below:

Sales	\$10,000,000
Variable expenses	6,000,000
Contribution margin	4,000,000
Fixed expenses	3,200,000
Net operating income	\$ 800,000
Divisional operating assets	\$4,000,000

The company had an overall ROI of 15% last year (considering all divisions). The Office Product division has an opportunity to add a new product line that would require an additional investment in operating assets of \$1,000,000. The cost and revenue characteristics of the new product line per year would be:

Sales	\$2,000,000
Variable expenses	60% of sales
Fixed expenses	\$640,000

The company's headquarters wants the Office Product Division to add the new product line. Dell Havasi, manager of the Division, is cautious, because his division's ROI has led the company for three years, and he doesn't want any letdown.

Required:

- (1) Compute the Office Product Division's ROI for the most recent year; also compute the ROI as it would appear if the new product line is added. (4%)
- (2) If you were in Dell Havasi's position, would you accept or reject the new product line? Explain. (3%)
- (3) Why do you suppose headquarters is anxious for the Office Product Division to add the new product line? (3%)
- (4) Suppose the company's minimum required rate of return on operating assets is 12% and the performance is evaluated using residual income. (7%)
 - a. Compute the Office Product Division's residual income for the most recent year; also compute the residual income as it would appear if the new product line is added.
 - b. Under these circumstances, if you were in Dell Havasi's position, would you accept or reject the new product line? Explain.
- (5) Which measure, ROI or residual income, is more likely to achieve goal congruence, if it is used to evaluate the subunit manager's performance? Explain. (3%)

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3. (20%) International Appliance Company is a diversified corporation with separate and distinct operating divisions. Each division's performance is evaluated on the basis of total dollar profits and return on division investment.

The **Fridge Division** manufactures and sells refrigerators. The Division expected to sell 15,000 units in the coming year, with selling price budgeted at \$400 per unit. Fridge's division manager believes sales can be increased if sales price is reduced. A market research study conducted by an independent firm indicates that a 5% reduction in the sales price (\$20) will increase sales volume to 17,500 units. Fridge has sufficient production capacity to manage this increased volume with no increase in fixed cost. At the present time, Fridge uses a compressor in its refrigerators, which it purchases from an outside supplier at a cost of \$70 each.

The company has another division, the **Compressor Division**, which currently manufactures a compressor that is similar to the one used by the Fridge and sells it exclusively to outside firms. The division manager of Fridge has approached the manager of the Compressor Division, proposing to buy compressors from the Compressor Division. The manager of Fridge wants all compressors it uses to come from one supplier and has offered to pay \$50 for each compressor. Specifications for the Fridge compressor are slightly different. They would reduce the Compressor Division's raw materials cost by \$2 per unit. In addition, the Compressor Division would not incur any variable marketing cost for the unit sold to Fridge.

The Compressor Division has the capacity to produce 75,000 units. The coming year's budgeted income statement for the Compressor Division shown below is based on a sales volume of 64,000 units, without considering Fridge's proposal.

**Compressor Division
Budgeted Income Statement
For the Year 20xx**

	Per unit	Total
Sales revenue	\$ 100	\$6,400,000
Manufacturing costs:		
Raw materials	\$ 12	\$ 768,000
Direct labor	8	512,000
Variable factory overhead	10	640,000
Fixed factory overhead	11	704,000
Total manufacturing costs	\$ 41	\$2,624,000
Gross profit	\$ 59	\$3,776,000
Commercial expenses		
Variable marketing	\$ 6	\$ 384,000
Fixed marketing	4	256,000
Fixed administrative	7	448,000
Total commercial expense	\$ 17	\$1,088,000
Income before income tax	\$ 42	\$2,688,000

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Required : (須列出計算過程，計算至整數位)

- (1) Compute the estimated effect on the Compressor Division, from its own viewpoint, if the 17,500 units are supplied to Fridge Division at \$50 each. Would the Compressor division accept the offer? (5%)
- (2) Determine if it is in the best interest of International Appliance Company for the Compressor Division to supply the 17,500 units to Fridge Division at \$50 each. Show your calculation and explain. (5%)
- (3) What is the minimum internal transfer price that would guarantee the result of division managers' decision be congruent with the best interest of the Company as a whole? Show your calculation and explain. (2%)
- (4) Now suppose Fridge Division is located at France and is subject to a 40% income tax rate, whereas Compressor Division is located at U.S. and its income tax rate is only 30%. Furthermore, there is a 10% import duty computed on the transfer price that will be paid by the Fridge Division and is deductible when computing Fridge Division's taxable income. Tax laws of the two countries allow transfer prices to be set at U.S. manufacturing cost or the selling prices of comparable imports in France (\$70).

Given the tax consideration, what is the internal transfer price that would guarantee the result of division managers' decision be congruent with the best interest of the Company as a whole? Show your calculation and explain. (8%)

4. (20%) The job costing system at Smith's Custom Framing has five indirect cost pools (purchasing, material handling, machine maintenance, product inspection, and packaging). The company is in the process of bidding on two jobs; Job 215, an order of 15 intricate personalized frames, and Job 325, an order of 6 standard personalized frames. The controller wants you to compare overhead allocated under the current simple job-costing system and a newly-designed activity-based job-costing system. Total budgeted costs in each indirect cost pool and the budgeted quantity of activity driver are as follows:

	Budgeted Overhead	Activity Driver	Budgeted Quantity of Activity Driver
Purchasing	\$ 70,000	Purchase orders processed	2,000
Material handling	87,500	Material moves	5,000
Machine maintenance	237,300	Machine-hours	10,500
Product inspection	18,900	Inspections	1,200
Packaging	39,900	Units produced	3,800
	\$453,600		

Information related to Job 215 and Job 325 follows. Job 215 incurs more batch-level costs because it uses more types of materials that need to be purchased, moved, and inspected relative to Job 325.

	<u>Job 215</u>	<u>Job 325</u>
Number of purchase orders	25	8
Number of material moves	10	4
Machine-hours	40	60
Number of inspections	9	3
Units produced	15	6

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Required:

- (1) Compute the overhead allocation rate and the total overhead allocated to each job under a simple costing system, where overhead is allocated based on machine-hours. (4%)
 - (2) Compute the total overhead allocated to each job under an activity-based costing system using the appropriate activity drivers. Show first your computation of the allocation rate for each of the cost pools. (8%)
 - (3) Which job would be undercosted if simple costing system is used, based on your analysis in (1) and (2)? Which job would be overcosted? Briefly explain. (2%)
 - (4) For each cost pool(s), explain how the allocation under simple costing system would have resulted in the cost distortion. (6%)
5. (20%) Tim Cook manages the Xinchu plant of The Aurora Company. A representative of Honeywell Hardware approaches Cook about replacing a large piece of manufacturing equipment that Aurora uses in its process with a more efficient model. While the representative made some compelling arguments in favor of replacing the 2-year-old equipment, Cook is hesitant. Cook is hoping to be promoted next year to manage the larger Kaohsiung plant, and he knows that the accrual-basis net operating income of the Xinchu plant will be evaluated closely as part of the promotion decision. The following information is available concerning the equipment-replacement decision:

	<u>Old Machine</u>	<u>New Machine</u>
Original costs	\$300,000	\$135,000
Useful life (years)	5	3
Current age (years)	2	0
Remaining useful life of equipment (years)	3	3
Accumulated depreciation	\$120,000	Not acquired yet
Current disposal value (in cash)	\$ 95,000	Not acquired yet
Terminal disposal value (in cash, 3 years from now)	\$0	\$0
Annual cash operating costs	\$ 920,000	\$ 890,000
Annual revenue	\$1,000,000	\$1,000,000

Aurora faces a 30% income tax rate and uses straight-line depreciation on all equipment. The company uses net present value method and a required rate of return of 12% for its capital budgeting decisions.

Required

- (1) Should Aurora replace the equipment? Show your calculations to support your conclusion. (6%)
- (2) What are the potential problems or disadvantages of using NPV method for capital budgeting decisions? (4%)
- (3) Assume that Tim Cook's priority is to receive the promotion and he makes the equipment-replacement decision based on the next one year's accrual-basis operating income. Which alternative would Cook choose? Is this choice in the best interests of the company? Show your calculations and briefly explain. (6%)
- (4) At what cost would Cook be willing to purchase the new equipment? Explain. (4%)