

中原大學 107 學年度碩士班考試入學

107/3/7 10:10 AM~11:40 AM

會計學系

誠實是我們珍視的美德，
我們喜愛「拒絕作弊，堅守正直」的你！

科目： 成本及管理會計 (共 5 頁，第 1 頁)

可使用計算機(僅限於四則運算、三角函數及對數等基本功能，可程式之功能不可使用)

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----- (不可直接作答於試題，請作答於答案卷) -----

一、 The JR Corporation produces bucket loader assemblies for the tractor industry. The product has a long term life expectancy. JR has a traditional manufacturing and inventory system. JR is considering the installation of a just-in-time (JIT) inventory system to improve its cost structure. In doing a full study using its manufacturing engineering team as well as consulting with industry JIT experts and the main vendors and suppliers of the components JR uses to manufacture the bucket loader assemblies, the following incremental cost-benefit relevant information is available for analysis:

- a. The JR cost of investment capital hurdle rate is 15%.
- b. One time cost to rearrange the shop floor to create the manufacturing cell workstations is \$275,000.
- c. One time cost to retrain the existing workforce for the JIT required skills is \$60,000.
- d. Anticipated defect reduction is 40%. Currently there is a cost of quality defect assessment listed as \$150,000 per year.
- e. The setup time for each of the existing functions will be reduced by 67%. Currently the forecast for setup costs are \$225,000 per year.
- f. JR will expect to save \$200,000 per year in carrying costs as a result of having a lower inventory.

The suppliers will require a 15% premium over the current level of prices in order to position themselves to supply the material on a smaller and more frequent schedule. Currently the materials purchases are \$1,500,000 per year.

Required: (16%)

Determine whether it is in the best interest of JR Corporation to install a JIT system.

二、 ST, Inc., manufactures shoes and clothing. The company has two product lines (clothing and shoes), which are produced in separate manufacturing facilities; however, both manufacturing facilities share the same support services for information technology and human resources. The following shows total costs for each manufacturing facility and for each support department.

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科目： 成本及管理會計 (共 5 頁，第 2 頁)

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	Variable Costs	Fixed Costs	Total Costs by Department
Information technology (IT)	\$ 500	\$ 1,500	\$ 2,000
Human resources (HR)	\$ 100	\$ 900	\$ 1,000
Clothing	\$3,000	\$ 7,000	\$10,000
Shoes	\$2,500	\$5,500	\$8,000
Total costs	\$6,100	\$16,900	\$21,000

The total costs of the support departments (IT and HR) are allocated to the production departments (clothing and shoes) using a single rate based on the following:

Information technology: Number of IT labor hours worked by department

Human resources: Number of employees supported by department

Data on the bases, by department, are given as follows:

<u>Department</u>	<u>IT Hours Used</u>	<u>Number of Employees</u>
Clothing	5,000	120
Shoes	3,000	40
Information technology	-	40
Human resources	2,000	-

Required: (20%)

Calculate the total costs of the production departments (clothing and shoes) after the support department costs of information technology and human resources have been allocated using

1. The direct method (6%)
2. The step-down method (allocate information technology first) (6%)
3. The reciprocal method (8%)

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科目：成本及管理會計 (共 5 頁，第 3 頁)

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三、 LC Company is a decentralized organization with several autonomous divisions. The division managers are evaluated, in part, on the basis of the change in their return on invested assets. Operating results for the Packer Division for 2018 are budgeted as follows:

Sales	\$5,000,000
Less variable costs	<u>2,500,000</u>
Contribution margin	\$2,500,000
Less fixed expenses	<u>1,800,000</u>
Net operating income	<u>\$ 700,000</u>

Operating assets for the division are currently \$3,600,000. For 2018, the division can add a new product line for an investment of \$600,000. The new product line will generate sales of \$1,600,000 and will incur fixed expenses of \$600,000 annually. Variable costs of the new product will average 60% of the selling price.

Required: (16%)

1. What is the effect on ROI of accepting the new product line? (8%)
2. If the company's required rate of return is 6% and residual income is used to evaluate managers, would this encourage the division to accept the new product line? Explain and show computations. (8%)

四、 WA Company manufactures two models of tables, Basic and Deluxe, using a combination of machining and hand finishing. Machine setup costs are driven by the number of setups. Indirect manufacturing labor costs increase with direct manufacturing labor costs. Equipment and maintenance costs increase with the number of machine-hours, and facility rent is paid per square foot. Capacity of the facility is 6,250 square feet, and WA is using only 80% of this capacity. WA records the cost of unused capacity as a separate line item and not as a product cost. For the current year, WA has budgeted the following:

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科目：成本及管理會計 (共 5 頁，第 4 頁)

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WA Company Budgeted Costs and Activities for the Year Ended December 31, 2017

Direct materials—Basic tables	\$325,000
Direct materials—Deluxe tables	240,000
Direct manufacturing labor—Basic tables	110,000
Direct manufacturing labor—Deluxe tables	130,000
Indirect manufacturing labor costs	72,000
Machine setup costs	47,000
Equipment and maintenance costs	220,000
Facility rent	<u>200,000</u>
Total	<u>\$1,344,000</u>

Other budget information follows:

	Basic	Deluxe
Number of tables	5,000	3,000
Machine-hours	10,000	12,000
Number of setups	300	200
Square footage of production space used	2,860	2,140

Required : (24%)

1. What is the budgeted cost of unused capacity? (4%)
2. Calculate the budgeted total cost and the cost per unit for each model. (10%)
3. If WA uses the simple costing system, where indirect costs are allocated based on Machine-hours. What are the budgeted total cost and the cost per unit of resources used to produce (a) basic model and (b) deluxe model? (10%)

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五、PE Co. makes cutting tools for metalworking operations. It makes two types of tools: R3, a regular cutting tool, and H5, a high-precision cutting tool. R3 is manufactured on a regular machine, but H5 must be manufactured on both the regular machine and a high-precision machine. The following information is available.

	R3	H5
Selling price	\$ 200	\$ 300
Variable manufacturing cost per unit	\$ 120	\$ 200
Variable marketing cost per unit	\$ 30	\$ 70
Budgeted total fixed overhead costs	\$ 500,000	\$900,000
Hours required to produce one unit on the regular machine	1.0	0.5

Additional information includes the following:

- PE faces a capacity constraint on the regular machine of 60,000 hours per year.
- The capacity of the high-precision machine is not a constraint.
- Of the \$900,000 budgeted fixed overhead costs of H5, \$700,000 are lease payments for the high-precision machine. This cost is charged entirely to H5 because PE uses the machine exclusively to produce H5. The lease agreement for the high-precision machine can be canceled at any time without penalties.
- All other overhead costs are fixed and cannot be changed.

Required: (24%)

- How many units of R3 and H5 will maximize PE's operating income? (8%)
- Suppose PE can increase the annual capacity of its regular machines by 20,000 machine-hours at a cost of \$300,000. Should PE increase the capacity of the regular machines by 20,000 machine-hours? By how much will PE's operating income increase? (8%)
- Suppose that the capacity of the regular machines has been increased to 80,000 hours. PE has been approached by CA Corporation to supply 40,000 units of another cutting tool, S3, for \$240 per unit. PE must either accept the order for all 40,000 units or reject it totally. S3 is exactly like R3 except that its variable manufacturing cost is \$140 per unit. (It takes one hour to produce one unit of S3 on the regular machine, and variable marketing cost equals \$30 per unit.) What product mix should PE choose to maximize operating income? (8%)