

國立成功大學

111學年度碩士班招生考試試題

編 號： 226

系 所： 會計學系

科 目： 成本與管理會計學

日 期： 0220

節 次： 第 3 節

備 註： 可使用計算機

※ 考生請注意：本試題可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

一、(15%) In order to improve production efficiency, NCKU Company is considering two mutually exclusive investment projects.

	Project 1	Project 2
Required investment outlay	\$250,000	\$100,000
After-tax cash inflows/year	\$65,000	\$35,000
Estimated project life (in years)	5	5
Estimated salvage value (end of life)	\$70,000	\$0

NCKU uses weighted-average cost of capital (WACC) as the discount rate for capital budgeting purposes. The WACC is 10%. Total Assets of NCKU is \$37,500,000. Current Assets is \$2,500,000. Current Liabilities is \$1,700,000 while the Non-Current Liabilities is \$20,800,000.

**Required:**

1. Compute the estimated net present value (NPV) of each project (rounded to nearest whole number). (2%)
2. Compute the internal rate of return (IRR) of each project. (2%)
3. Compute the profitability index (PI) for each project. (2%)
4. Are there any other tools or measures you might consider to compare the two alternatives? Explain. (4%)
5. Which project would you recommend? Why? (5%)

二、(10%) Phone Protection Store has an annual demand for iPhone cases of 25,000 units. The cost of placing an order is \$65 and the cost of carrying one unit of iPhone case for one year is \$35.

**Required:**

1. Calculate the economic-order-quantity (EOQ) of the iPhone cases. (2%)
2. If the lead time is 10 days and a year has 250 work days, what is the reorder point? (2%)
3. Determine the safety stock required to prevent stockouts assuming the maximum lead time is 30 days and the maximum daily demand is 125 units. (2%)
4. If the store is considering to adopt JIT purchase system in order to reduce its inventory carrying costs, what should the store's manager take into consideration when making the decision? (4%)

三、(10%) A specific component, AX01, is sold at a competitive price of \$20 in the market. GOGO Motor's Automotive Division now purchases 350,000 of AX01 per year from an external supplier at a price of \$18 per component. The discount from the competitive \$20 price is a result of large quantity purchased. Recently, GOGO Motor has acquired a new AX Division, which produces AX01 and sells to retail outlets at \$20. The retail outlets purchase about 850,000 units of AX01 from AX Division a year. GOGO Motor's top management now is considering not to purchase AX01 from the external suppliers but to purchase from the new division they just acquired.

The AX Division's cost per component is shown below:

Direct materials	\$ 7
Direct labor	4
Variable overhead	2
Fixed overhead	3
Total cost	<u>\$ 16</u>

Fixed costs are based on the annual capacity of 1,000,000 units of AX01.

Both divisions are to be treated as investment centers, and their performance is to be evaluated by the ROI formula.

**Required:**

1. What transfer price would you recommend if AX Division produces at capacity and still sells 850,000 units of AX01 to the retail outlets at \$20, and transfer the remaining 150,000 units to Producing Department? Why? (2%)
2. If GOGO Motor's top management finally made the decision that AX Division sell 350,000 units of AX01 to Producing Division and sell the remaining 650,000 units to the market at \$20, what transfer price would you recommend? Why? (3%)
3. If the AX Division is now selling 1,000,000 units of AX01 to retail outlets a year, would you recommend AX Division to sell 350,000 units of AX01 to Producing Division and to sell the remaining 650,000 units to retail outlets? If yes, what transfer price would you recommend? Explain. (2%)
4. Suppose the manager of the AX Division can increase its capacity to 1,400,000 units for \$2,100,000. She then has the two options:
 

**Option 1:** cutting the retail price to \$18 with the certainty that sales will increase to 1,400,000 units of AX01, or

**Option 2:** cutting the outside price to \$19 with the certainty that sales will increase to 1,000,000 units of AX01 and transferring the 350,000 units of AX01 to the Automotive Division at some price that would produce the same income for the AX Division as Option 1. What is the minimum transfer price you would recommend in the Option 2? (3%)

四、(15%) NCKU Company uses a flexible budget for its indirect manufacturing costs. At the end of 2021, NCKU anticipated that it would produce 30,000 units with 5,600 machine-hours and 8,750 employee days for 2022. The indirect costs and cost drivers are shown in the following:

	<u>Fixed</u>	<u>Variable</u>	<u>Cost driver</u>
Product packaging	\$15,000	\$0.50	per unit
Product custody	55,000	0.25	per unit
Product shifting	45,000	75.00	per 100 unit batch
Inspection	12,000	12.00	per 100 unit batch
Maintenance	1,250	0.25	per machine-hour
Supplies		5.00	per employee day

During 2022, the company produced and sold 29,000 units with 5,250 machine-hours and 8,500 employee days. The actual costs for 2022 were shown as follows:

Product packaging	\$40,000	Product shifting	\$67,500	Maintenance	\$2,470
Product custody	\$60,000	Inspection	\$16,000	Supplies	\$51,000

**Required:**

Prepare the static budget and the flexible budget using the overhead items above and compute the static-budget variances, flexible-budget variances and sales-volume variances.

五、(10%) The 2021 United Nations Climate Change Conference (COP 26) held in Glasgow in November, 2021, aims to reduce the carbon emissions to slowdown the climate change. Not only the climate change but also a lot of other environmental issues (*e.g.*, marine conservation) have become the focus of attention of the governments, investors, and corporations. In fact, a lot of companies have had incur significant costs to clean up the environmental damage that was caused by their previous actions. To be more environmentally friendly, some companies have started to re-design their manufacturing process, to improve their product, or to use more renewable energy. Therefore, the environmental cost has become important and cannot be ignored when making decisions. Based on your knowledge of cost classification and cost assignment, please explain how to deal with such environmental costs when making decisions like product manufacturing, pricing, sales mix or other decisions that might incur environmental costs. (Explain your answer as detailed as possible and answer in English)

六、(15%) Some companies are considering to get rid of their Information Technology (IT) Department. If doing so, there won't be an independent IT Department to support all other departments' IT-related tasks in the company. As a substitution, some of them are considering to outsource their IT-related tasks to an external IT company. Some of them are considering to authorize individual department to hire IT employees if necessary. In your opinion, is it a good idea to get rid of IT Department? What would be the relevant information when considering to close IT Department? What should be considered when looking for an optimal alternative to the original functions provided by the IT Department? (Explain your answer as detailed as possible and answer in English)

七、(25%) NCKU Manufacturing Co. produces similar products and has three departments that process all products. The first department is Producing Department, which produces the component parts of their products. The completed component parts will then transfer to the Assembly Department to assemble products from component parts. After assembling, the products will transfer to the final department, Finishing Department. NCKU has always adopted process costing to measure the costs of products. During February, the beginning work in process in the Producing Department was 40% complete as to conversion and 100% complete as to direct materials. The beginning inventory included \$13,000 for materials and \$7,080 for conversion costs. Overhead is applied at the rate of 50% of direct manufacturing labor costs. Ending work-in-process inventory in the Producing Department was 60% complete. All spoilage is considered normal and is detected at the end of the process. The following shows the information related to Producing Department and Assembly Department:

	<u>Producing</u>	<u>Assembly</u>
Beginning work-in-process units	25,000	24,000
Units started this period	40,000	53,000
Units completed and transferred this period	53,000	54,000
Ending work-in-process units	8,000	23,000
Material costs added	\$48,750	\$38,000
Direct manufacturing labor	\$20,000	\$45,000

**Required:**

1. Prepare a production cost worksheet using *weighted-average method* for the Producing Department. (10%)
2. NCKU decides to manufacture some new products that are very different with their original products. Although these new products are still processed from Producing Department to Assembly department, and then to the Finishing Department, the overall production process of these new product types will be very different with original process. These new products will incur more types of indirect cost for their manufacturing process than before. Additionally, NCKU also decides to provide customized products to their clients in order to obtain more orders. Does NCKU's current costing system? If yes, how will you suggest NCKU to adjust and why? (Explain your answer as detailed as possible and answer in English) (15%)