

**Section: Cost and Management Accounting**

1. Megredy Company prepared the following absorption-costing income statement for the year ended May 31, 20X5.

Sales (16,000 units)	\$320,000
Cost of goods sold (including \$6,250 production-volume variance)	<u>222,250</u>
Gross margin	\$ 97,750
Selling and administrative expenses	<u>46,000</u>
Operating income	<u>\$ 51,750</u>

Additional information follows:

Selling and administrative expenses include \$1.50 of variable cost per unit sold. There was no beginning inventory, and 17,500 units were produced. Variable manufacturing costs were \$11 per unit. Actual fixed costs were equal to budgeted fixed costs.

**Required:**

- (1) Calculate the budgeted production units. (5%)
  - (2) Calculate the break-even units. (5%)
  - (3) Calculate the operating income under variable costing. (5%)
2. The Chair Company manufactures two modular types of chairs: one for the residential market, and the other for the office market. Budgeted and actual operating data for the year 20X5 are:

<u>Static Budget</u>	<u>Residential</u>	<u>Office</u>	<u>Total</u>
Number of chairs sold	260,000	140,000	400,000
Contribution margin	\$26,000,000	\$11,200,000	\$37,200,000

<u>Actual Results</u>	<u>Residential</u>	<u>Office</u>	<u>Total</u>
Number of chairs sold	248,400	165,600	414,000
Contribution margin	\$22,356,000	\$13,248,000	\$35,604,000

Prior to the beginning of the year, an office products research firm estimated the industry volume for residential and office chairs of the type sold by the Chair Company to be 2,500,000. Actual industry volume for the year 20X5 was only 2,070,000 chairs.

**Required:**

Compute the following variances in terms of contribution margin:

- (1) Total flexible-budget variance. (5%)
- (2) Total sales-mix variance. (5%)
- (3) Market-share variance. (5%)

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3. Penny Group, a manufacturer of fine casual outdoor furniture, has two service departments, human resources and facilities, and two production departments, cutting and welding. The costs of human resources department are allocated based on number of employees; facilities department costs are allocated based on the amount of square footage occupied. The overhead costs of the production departments are allocated based on direct labor hours. Data for the four departments for October are as follows:

	Human Resources	Facilities	Cutting	Welding
Department overhead costs	\$40,000	\$120,000	\$800,000	\$300,000
Number of employees	5	20	20	60
Amount of square footage	30,000	3,000	10,000	40,000
Number of direct labor hours	-	-	8,000	10,000

Assume that two jobs, A1 and A2, were completed during October and that each job had direct materials costs of \$1,200. Job A1 used 80 direct labor hours in the cutting department and 20 direct labor hours in the welding department. Job A2 used 20 direct labor hours in the cutting department and 80 direct labor hours in the welding department. The direct labor rate is \$50 in both departments.

**Required:**

- (1) Use the direct method to allocate service department costs, find the cost of each job using a plantwide rate based on direct labor hours. (10%)
  - (2) Use the reciprocal method to allocate service department costs, find the cost of each job using department rate (rounded to two decimals) based on direct labor hours. (10%)
4. SteelTech Corporation, a massive retailer of electronic products, is organized in three separate divisions. The three divisional managers are evaluated at year-end, and bonuses are awarded based on return on investment (ROI). Management and consultants are currently working to fine-tune the company's operation, which hopefully will generate a 12 percent return (profit) on the firm's \$45,700 asset investment. During the past week, management of the company's Taipei Division was approached about the possibility of buying a competitor that had decided to redirect its retail activities. If the competitor is acquired, it will be acquired at its book value. Taipei Division always applies cost-plus pricing based on variable cost. If this acquirement is made, Taipei Division is expected to attain the sales level of 25,000 units. The data that follow relate to recent performance of the Taipei Division and the competitor.

	Taipei Division	Competitor
Variable costs	70% of sales	\$55,700
Fixed costs	25% of total cost	30% of sales
Desired rate of return	11%	13%
Residual income	\$14,500	3% of contribution margin
Asset Turnover	5	10

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Management has determined that, in order to upgrade the competitor to SteelTech's standards, an additional \$3,575 of invested capital would be needed.

**Required:**

- (1) Compute the ROI of the Taipei Division if the competitor is acquired. (10%)
  - (2) If the competitor is acquired, calculate the markup that Taipei Division must set in pricing decision, in order to achieve a 12 % return on investment. (10%)
5. Caltex Corporation manufactures two models of radios: model X and model Y. Caltex applies the first-in first-out process costing method for its products. Several weeks ago, the firm received a special-order inquiry from Fresno, Inc. Fresno desires to market a radio similar to model X and has offered to purchase 11,000 units. Caltex's production of X is currently running at full capacity and will have to transfer some capacity to Fresno's order if this order is accepted. The cost data for each unit of Caltex's model X skateboard follow.

Direct material		\$8.20
Direct labor: .25 hour at \$9.00		2.25
Total manufacturing overhead: .5 hour at \$20		<u>10.00</u>
Total		<u>\$20.45</u>

The normal selling price of model X is \$26.50; however, Fresno has offered Caltex only \$15.75 because of the large quantity it is willing to purchase. Fresno requires a modification of the design that will allow a 0.05 reduction in direct-labor hour per unit. Caltex's production supervisor notes that the company will incur \$2,400 in additional setup costs and will have to purchase a \$3,700 special device to manufacture these units. The special device will be discarded once Fresno's special order is completed. Total manufacturing overhead costs are applied to production at the rate of \$20 per machine hour. This figure is based, in part, on budgeted yearly fixed overhead of \$750,000 and planned production activity of 60,000 machine hours (5,000 per month). Caltex will allocate \$1,800 of existing fixed administrative costs to this order as "... part of the cost of doing business."

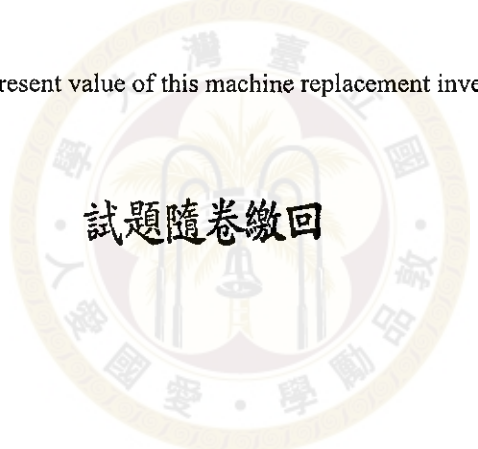
Model Y is the result of assembling three parts: parts A, B, and C. The following information relates to production of model Y in April: Beginning work-in-process inventory of model Y totals 4,000 units (75 % of completion; direct materials \$220,000 and direct labor \$20,800). Production started in April amounts to 25,000 units. Production completed during April totals 24,000 units. Ending work-in-process inventory of model Y totals 5,000 units, with 40 % of completion. Direct materials used during April: part A, \$267,000 (added at 10% stage of completion); part B, \$689,000 (added at 50% stage of completion); part C, \$448,000 (added at 80% stage of completion). Hourly wage of direct labor is \$20 and total direct-labor payroll amounts to \$126,500. Overhead application rate is \$60 per direct-labor hour. Direct labor cost incurs uniformly throughout the production process, while overhead cost incurs uniformly from 0% through 80% stage of completion.

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**Required:**

- (1) Determine the lowest acceptable unit price for the order from Fresno. (10%)
  - (2) For model Y, determine the cost of goods completed during April. (10%)
6. The management of Yale Cab, Inc. is considering the replacement of an old machine used in its vehicle repair facility. It is fully depreciated but can be used by the corporation through 20X5. If management decides to replace the old machine, Atlantic Company has offered to purchase it for \$60,000 on the replacement date. The old machine would have no salvage value in 20X5. If the replacement occurs, a new machine would be acquired from Hilton Industries on December 31, 20X1. The purchase price of \$1,000,000 for the new machine, estimated annual cash savings of \$300,000 would be generated through 20X5, the end of its expected useful life. The new machine would be depreciated with double-decline method. The new machine is not expected to have any salvage value at the end of 20X5. Yale's management requires all investment to earn a 12 percent after-tax return. The company's tax rate is 40 percent.

**Required:** Compute the net present value of this machine replacement investment. (10%)



試題隨卷繳回