



## CONCORDIA UNIVERSITY

**Course:** Managerial Accounting,  
**No.:** Comm. 305 & Acco. 240 Sections All  
**Examination:** Final  
**Date:** April 18, 2008  
**No. of Pages:** 9 including the cover page  
**Material Allowed:** Non-programmable calculators and dictionaries  
**Special Instructions:** Return the exam questions with your answers.

**Student Name:** \_\_\_\_\_

**Student Id. No.:** \_\_\_\_\_

**Section:** \_\_\_\_\_

**Instructor:** \_\_\_\_\_

## QUESTION-1 16 POINTS

The condensed income statement for Montreal Inc for 2007 is as follows:

**Montreal Inc**  
**Income Statement**  
**Year Ended December 31, 2007**

Sales (200,000 units)		\$1,200,000
Cost of goods sold		<u>800,000</u>
Gross profit		400,000
Operating expenses		
Selling	\$320,000	
Administrative	<u>160,000</u>	<u>480,000</u>
Net loss		(\$480,000)

A cost behaviour analysis indicates that 75% of the cost of goods sold is variable, 50% of the selling expenses are variable, and 25% of the administrative expenses are variable.

**Instructions** (Round to nearest unit, dollar, and percentage, where necessary. Use the CVP income statement format in calculating profits.)

- (a) Calculate the break-even point in total sales dollars and in units for 2007.
- (b) The CFO has proposed a plan to get the company “out of the red” and improve its profitability. She feels that the quality of the product could be substantially improved by spending \$0.55 more per unit on better raw materials. The CFO estimates that sales volume will increase by 30% but the selling price per unit could be increased to only \$6.50 because of competitive pressures. What effect would the CFO's plan have on the profits and the break-even point in dollars of the Montreal Inc?
- (c) Following its review of a recent marketing research report the CEO believes that sales volume can be increased by 50% if extensive advertising and promotional campaigns are undertaken. He therefore proposed the following plan as an alternative to CFO's: (1) increase variable selling expenses to \$0.85 per unit, (2) lower the selling price per unit by \$0.20, and (3) increase fixed selling expenses by \$20,000. If these changes were made, what effect would the CEO's plan have on the profits and the break-even point in dollars of the Montreal Inc?
- (d) Which plan should be accepted? Explain your answer.

## SOLUTION QUESTION-1 16 POINTS

(a) **5 PTS**

Selling price per unit ( $\$1,200,000 \div 200,000$ )  $\$6.00$  **.5 PT**

Costs	Variable Portion	Fixed Portion	Total
Cost of goods sold	\$600,000	\$200,000	\$ 800,000
Selling	160,000	160,000	320,000
Administrative	<u>40,000</u>	<u>120,000</u>	<u>160,000</u>
Total	<b>.75 PT</b> <u>\$800,000</u>	<b>.75 PT</b> <u>\$480,000</u>	<u>\$1,280,000</u>

Variable costs per unit are:

Cost of goods sold	( $\$600,000 \div 200,000$ ) <b>.5 PT</b>	\$3.00
Selling	( $\$160,000 \div 200,000$ ) <b>.5 PT</b>	.80
Administrative expenses	( $\$ 40,000 \div 200,000$ ) <b>.5 PT</b>	<u>.20</u>
Total		<u>\$4.00</u>

Break-even point in units = Fixed costs  $\div$  CM per unit

$$240,000 = \$480,000 \div \$2 \text{ **.5 PT**}$$

Break-even point in dollars =  $240,000 \times \$6 = \$1,440,000$  **.5 PT**

(b) **5 PTS**

Variable unit cost of goods sold = \$3.55 = (\$3.00 + \$0.55) **.5 PT**

Sales volume = 260,000 units (200,000 X 130%) **.5 PT**

Net income computation:

Sales

Total sales = 260,000 X \$6.50 = \$1,690,000 **.25 PT** \$1,690,000

Variable costs

Cost of goods sold..... \$923,000

(260,000 X \$3.55) **.25 PT**

Selling expenses..... 208,000

(260,000 X \$0.80) **.25 PT**

Administrative expenses

(260,000 X \$0.20) **.25 PT** ..... 52,000

Total variable costs ..... 1,183,000

Contribution margin..... **.25 PT** 507,000

Fixed costs

Cost of goods sold..... \$200,000

Selling expenses..... 160,000

Administrative expenses ..... 120,000

Total fixed costs ..... **.75 PT** 480,000

Net income ..... **.25 PT** \$ 27,000

Break-even point in units is:

$$\$6.50Q = \$4.55Q + \$480,000$$

$$\$1.95Q = \$480,000$$

$$Q = 246,154 \text{ units (rounded)}$$

Break-even sales dollars are:

$$246,154 \times \$6.50 = \$1,600,000 \text{ **.75 PT**}$$

CFO's plan would increase the break-even sales

$$\text{by } \$160,000 = (\$1,600,000 - \$1,440,000) \text{ **1 PT**}$$

(c) **5 PTS**

Sales [300,000* X (\$6.00 – \$0.20)] <b>1 PT</b> .....		\$1,740,000
*New sales volume = 300,000 (200,000 x 150%)		
Variable costs		
Cost of goods sold <b>.25 PT</b> .....	\$900,000	
(300,000 X \$3.00)		
Selling expenses (300,000 X \$0.85) <b>.5 PT</b> .....	255,000	
Administrative expenses		
(300,000 X \$0.20) <b>.25 PT</b> .....	<u>60,000</u>	
Total variable costs .....		<u>1,215,000</u>
Contribution margin <b>.25 PT</b> .....		525,000
Fixed costs		
Cost of goods sold <b>.25 PT</b> .....	\$200,000	
Selling expenses <b>.5 PT</b> .....	180,000	
(\$160,000 + \$20,000)		
Administrative expenses <b>.25 PT</b> .....	<u>120,000</u>	
Total fixed costs .....		<u>500,000</u>
Net income .....	<b>.25 PT</b>	<u>\$ 25,000</u>

Break-even point in units is:

$$\$5.80Q = \$4.05Q + \$500,000$$

$$\$1.75Q = \$500,000$$

$$Q = 285,714 \text{ units (rounded)}$$

Break-even sales dollars are:

$$285,714 \times \$5.80 = \$1,657,141 \text{ (rounded)} \quad \mathbf{.75 PT}$$

CEO's plan would increase the break-even sales by \$217,141

$$(\$1,657,141 - \$1,440,000) \quad \mathbf{1 PT}$$

(d) CFO's plan should be accepted. It produces a higher net income and a lower break-even point than CEO's plan. **1 PT**

**TOTAL PTS = 16**

## QUESTION-2-A 10 POINTS

Quebec Company is considering the purchase of a new machine. The purchase price of the new machine is \$125,000, freight charges are estimated to be \$4,000, and installation costs are expected to be \$6,000. The salvage value of the new equipment is expected to be zero after a useful life of four years. The current equipment could be kept and used for an additional four years even if the new machine is not purchased. At that time, the salvage value of the current equipment would be zero. If the new machine is purchased now, the current machine would have to be scrapped. Quebec's accountant, Shaida Fang, has accumulated the following data for the current and new machine:

1. With the current machine, Quebec Company can sell 12,000 units of product annually at a per unit selling price of \$100. If the new machine is purchased, the number of units produced and sold would increase by 20%, and the selling price per unit would remain the same.
2. The new machine would operate faster than the old machine, and would be more efficient in its usage of materials. The current machine has a gross profit rate is 25% of sales, whereas the gross profit rate would be 30% of sales with the new machine.
3. Annual selling expenses are \$180,000 with the current machine. Because the new machine would produce a greater number of units to be sold, annual selling expenses are expected to increase by 10% if the new machine is purchased.
4. Annual administrative expenses are \$100,000 with the current machine, and \$113,000 with the new machine.
5. The current book value of the current machine is \$36,000. Quebec Company uses straight-line amortization.

### Instructions

Prepare an incremental analysis for the four years that shows whether Quebec Company should keep the current machine or buy the new one. (Ignore income tax effects.)

## SOLUTION QUESTION-2-A 10 POINTS

	Retain Old Machine		Purchase New Machine		Net Income Increase (Decrease)
Sales	<u>\$4,800,000</u>	(1)	<u>\$5,760,000</u>	(2)	<u>\$960,000</u>
Costs and expenses					
Cost of goods sold	3,600,000	(3)	4,032,000	(4)	(432,000)
Selling expenses <b>.5 PT EACH</b>	720,000		792,000		(72,000)
Administrative expe. <b>.5 PT EACH</b>	400,000		452,000		(52,000)
Purchase price	<u>—</u>		<u>135,000</u>	(5)	<u>(135,000)</u>
Total costs and expenses	<u>4,720,000</u>		<u>5,411,000</u>		<u>(691,000)</u>
Net income	<u>\$ 80,000</u>		<u>\$ 349,000</u>		<u>\$269,000</u>

- (1)  $12,000 \times \$100 \times 4 \text{ years} = \$4,800,000$ . **1 PT**  
 (2)  $\$4,800,000 \times 120\% = \$5,760,000$ . **1 PT**  
 (3)  $\$4,800,000 \times (100\% - 25\%) = \$3,600,000$ . **2 PTS**  
 (4)  $\$5,760,000 \times (100\% - 30\%) = \$4,032,000$ . **2 PTS**  
 (5)  $\$125,000 + \$4,000 + \$6,000 = \$135,000$ . **1 PT**

The new machine should be purchased. The incremental analysis shows that total net income will increase from \$80,000 to \$349,000 over the four years with the new machine. **1 PT**

## QUESTION-2-B 10 POINTS

Canada Company operates a small factory in which it manufactures two products: A and B. Production and sales results for last year were as follows:

Products	<u>A</u>	<u>B</u>
Units sold	8,000	20,000
Selling price per unit	\$95	\$78
Variable costs per unit	50	45
Fixed costs per unit	22	22

For purposes of simplicity, the firm averages total fixed costs over the total number of units of A and B produced and sold.

The research department has developed a new product (C) as a potential replacement for product B. Market studies show that Canada Company could sell 11,000 units of C next year at a price of \$120; the variable costs per unit of C are \$42. The introduction of product C will lead to a 10% increase in demand for product A and the discontinuation of product B. If the company does not introduce the new product, it expects next year's results to be same as last year's.

### Instructions

Should Canada Company introduce product C next year? Explain why or why not. Show calculations to support your decision.



## SOLUTION QUESTION-2-B 10 POINTS

Fixed costs =  $\$22 \times (8,000 + 20,000) = \$616,000$  **2 PTS**

Company profit with Products A and B:

	A	B	Total
Units sold	8,000	20,000	
Sales Revenue <b>1.5 PTS</b>	\$760,000	\$1,560,000	\$ 2,320,000
Less: variable costs <b>1.5 PTS</b>	400,000	900,000	\$ 1,300,000
Contribution margin	\$360,000	\$ 660,000	1,020,000
Less: fixed costs			616,000
Net Profit			\$ 404,000

Company profit with Products A and C:

	A	C	Total
Units sold	8,800*	11,000	
Sales Revenue <b>1.5 PTS</b>	\$836,000	\$1,320,000	\$2,156,000
Less: variable costs <b>1.5 PTS</b>	440,000	462,000	902,000
Contribution margin	\$396,000	\$ 858,000	1,254,000
Less: fixed costs			616,000
Net Profit			\$ 638,000

\*Product A sales increase by 10%,  $(8,000 \times 110\%)$

Assuming fixed costs do not change, **Canada** Company should replace Product B with Product C. The contribution given up by dropping Product B is more than covered by the increased contribution margin from Product A, and the total from Product C  $[(\$396,000 + \$858,000) - (\$360,000 + \$660,000)] = \$234,000$ . **2 PTS**

### QUESTION-3- 16 POINTS

The Sales Vice-President of Kirkland Corporation has received the following income statement for November, which was prepared based on a variable-costing system. The firm has just adopted variable costing for its internal reporting:

Kirkland Corporation Income Statement For the Month of November (in thousands)	
Sales	\$2,400
Less variable cost of goods sold	<u>1,200</u>
Contribution margin	<u>1,200</u>
Less fixed manufacturing costs at budget	<u>600</u>
Gross margin	<u>600</u>
Less fixed selling and administrative costs	<u>400</u>
Net income before taxes	\$200

The controller attached the following notes to the statements:

1. The unit sales price for November averaged \$24.
2. The unit manufacturing costs for the month were as follows:

Variable Costs	\$12
Fixed costs applied	<u>\$ 4</u>
Total costs	\$16

3. The applied fixed manufacturing unit cost is a predetermined rate based on a monthly production of 150,000 units.
4. The variable costs per unit have been stable all year.
5. Production for November was 45,000 units in excess of sales.
6. The inventory at November 30 was 80,000 units.

## Instructions

- (a) The Sales Vice-President is not comfortable with the variable-costing system and wonders what the net income would have been under the absorption-costing system that was used in the past.
  - 1. Present the November income statement based on an absorption-costing system.
  - 2. Reconcile and explain the difference between the variable-costing and absorption-costing net income figures.
- (b) Explain the features of variable-cost income measurement that should be attractive to the Sales Vice-President.

## SOLUTION QUESTION-3- 16 POINTS

### (a) (1) Determination of beginning inventory:

Sales = \$2,400,000 ÷ \$24 per unit =	100,000
Plus ending inventory	<u>80,000</u>
Goods available for sale	180,000
Goods manufactured (100,000 + 45,000)	<u>145,000</u>
Finished goods, beginning inventory <b>2 PTS</b>	<u><u>35,000</u></u>

### Cost of goods sold:\*

Beginning finished goods inventory	
(35,000 x \$16) <b>1 PTS</b>	\$ 560,000
Plus: cost of goods manufactured <b>3 PTS</b>	
Variable Costs	
(145,000 x \$12) 1,740,000	
Fixed Costs	<u>600,000</u>
	<u>\$2,340,000</u>

Cost of goods available for sale <b>1 PT</b>	<u>2,900,000</u>
Less: ending inventory	
(80,000 x \$16) <b>1 PT</b>	<u>1,280,000</u>
Cost of goods sold	<u><u>\$1,620,000</u></u>

### Kirkland Corporation Absorption Costing Income Statement for the month ended November 30, 2005

Sales in units	<u>100,000</u>
Sales (\$24 per unit) <b>1 PT</b>	\$2,400,000
Cost of goods sold * <b>SEE ABOVE</b>	<u>1,620,000</u>
Gross Profit <b>1 PT</b>	780,000
Less: Selling and Administrative <b>1 PT</b>	<u>400,000</u>
Net Income <b>1 PT</b>	\$380,000

(2) Reconciliation of net income: **2 PTS**

Variable costing net income	\$200,000
Plus: FMOH deferred in ending inventory (80,000 x \$4)	320,000
Less: FMOH released in beginning inventory (35,000 x \$4)	<u>(140,000)</u>
Absorption costing net income	<u>\$380,000</u>

- (b) Variable cost statements are consistent with cost-volume-profit analysis, making it easier to compare planned and actual results. In addition, variable cost income becomes a function of sales only; it is not affected by changes in inventory levels. **2 PTS**

## QUESTION-4- 15 POINTS

Ontario Manufacturing (OM) is a division of Worldwide Communications, Inc. OM produces pagers and other personal communication devices. These devices are sold internally to other worldwide divisions, as well as to other communication companies. OM was recently approached by the manager of the Personal Communications division to make a special pager designed to receive signals from anywhere in the world. Personal Communications has requested that OM produce 10,000 units of this special pager. Relevant data pertaining for a standard pager currently manufactured and sold by OM are as follows:

Selling price of standard pager	\$95
Variable cost of standard pager	50
Additional variable costs of special pager	35

### Instructions

For each of the following **independent situations**, calculate the minimum transfer price, and discuss whether the internal transfer should take place or whether Personal Communications division should purchase the pager externally.

- (a) Personal Communications has offered to pay OM \$105 per pager. OM has no available capacity. OM would have to give up sales of 10,000 standard pagers to existing customers in order to meet the request of Personal Communications.
- (b) Personal communications has offered to pay OM \$150 per pager. OM has no available capacity. OM would have to give up sales of 16,000 standard pagers to existing customers in order to meet the request of Personal Communications.
- (c) Personal communications has offered to pay OM \$80 per pager. OM has available capacity.

#### SOLUTION QUESTION-4- 15 POINTS

- (a) Assuming no available capacity, and that the number of new units produced would be equal to the number of standard units forgone, variable cost of the special pager would be \$85 (\$50 + \$35) **1.5 PTS** and the opportunity cost would be \$45 (\$95 – \$50) **1.5 PTS**. Therefore, the minimum transfer price would be \$130 (\$85 + \$45) **1 PT**. Since this is higher than the \$105 transfer price, the Ontario Manufacturing Division should reject the offer.
- (b) Assuming no available capacity and that in order to produce the 10,000 special pagers, 16,000 standard pagers would be forgone, the minimum variable cost would be (\$50 + \$35) or \$85 and the opportunity cost would be:

$$\frac{\text{Total contribution margin on standard pagers}}{\text{Number of special pagers}} = \frac{(\$95 - \$50) \times 16,000}{10,000} = \$72 \text{ **5PTS**}$$

Therefore, the minimum transfer price would be \$157 [(\$50 + \$35) + \$72] **2 PTS**. Since **the \$157** transfer price being offered **is LESS** than the minimum transfer price **of \$150**, the OM Division should **REJECT the offer**.

- (c) Assuming that the OM Division has available capacity, variable cost would be \$85 (\$50 + \$35) **1 PT** and the opportunity cost would be zero. Therefore, the minimum transfer price would be \$85 (\$85 + \$0). **2 PTS** Since the \$80 transfer price being offered less than the \$85 minimum transfer price, the offer should be rejected **1 PT**.

## QUESTION-5- 15 POINTS

Eagle Ltd. is trying to decide whether it is going to need to take a loan in January to buy a new microcomputer system. The microcomputer will cost \$10,800.

The President has collected the following information about her operations as at December 31:

1. Balances of selected general ledger accounts:

Cash	\$2,120
Accounts payable	6,667

2. Sales history and forecast (unit selling price, \$10):

October	(actual)	\$43,000
November	(actual)	35,000
December	(actual)	40,000
January	(forecast)	50,000

3. All sales are on credit. Fifty percent of a month's sales are collected one month after the sale; 45% are collected two months after the sale; and 5% are uncollectible.
4. Cash payments for purchases are as follows: two-thirds in the month of purchase; one-third in the month after the purchases.
5. Inventory is purchased as required. Accounts payable as shown above relate solely to inventory purchases. Inventory costs \$5 per unit.
6. Other expenses are all paid in cash as required, average about 30% of the sales dollar amount. Amortization is part of these expenses and costs \$3,000 per month.
7. Eagle Ltd. Keeps minimum cash balance of \$1,000.

### Instructions

Prepare a cash budget for January, indicating whether Eagle Ltd. will need a loan to finance its computer acquisition.



Solution **QUESTION-5- 15 POINTS**

**Cash Collections:**

From January	\$ -
From December (50% x \$40,000)	20,000
From November (45% x \$35,000)	<u>15,750</u>
Total collections <b>3 PTS</b>	<u>\$35,750</u>

**Cash disbursements for purchases:**

From December (Accounts payable)	\$ 6,667
For January: $(\$50,000 \div \$10) \times \$5 \times 2/3$	<u>16,667</u>
Cash disbursements <b>3 PTS</b>	<u>\$23,334</u>

**Other cash disbursements:**

Total expenses (30% x \$50,000)	\$15,000
Less: non-cash item--Amortization	<u>3,000</u>
Cash disbursements <b>3 PTS</b>	<u>\$12,000</u>

**HOWE LTD.  
Cash Budget  
For the month ended January 31**

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Beginning cash balance <b>2 PTS</b>	\$ 2,120
Plus: cash receipts	<u>35,750</u>
Total cash available <b>1PT</b>	37,870
Less: cash disbursements	
Purchases	\$23,334
Other	<u>12,000</u>
Ending cash balance <b>1PT</b>	<u>35,334</u> <u>\$2,536</u>

Eagle Ltd. must maintain a minimum cash balance of \$1,000. They have \$1,536 (\$2,536 - \$1,000) available for purchasing the computer. It will need to take out a loan of \$9,264 (\$10,800 - \$1,536) in order to make the purchase. **2 PTS**

## QUESTION-6- 18 POINTS

Alberta Manufacturing Company uses a standard cost system in accounting for the cost of its main product. The following standards have been established for the direct manufacturing costs per unit:

Direct materials (1 kg at \$5/kg)	\$5.00 per unit
Direct labour (2 hrs. at \$4/hr.)	\$8.00 per unit

Budgeted overhead for the month of April (based on expected activity of 4,000 direct labour hours) is as follows:

Variable overhead	\$19,000
Fixed overhead	<u>8,000</u>
Total overhead	\$27,000

The company calculates budgeted overhead rates based on expected activity. Results for the month of April are as follows:

Units produced	2,100
Direct materials used (2,500 kg)	\$11,000
Direct labour (4,320 hrs.)	18,144
Variable overhead	21,410
Fixed overhead	<u>8,125</u>
Total costs	\$58,679

There was no beginning or ending work in process inventory.

Instructions: Calculate the following:

- (a) Direct materials price, usage, and total budget variances
- (b) Direct labour price, usage, and total budget variances
- (c) Variable overhead spending, quantity, and total budget variances
- (d) Fixed overhead spending, volume variances, and total budget variances
- (e) Total overhead budget variances

## SOLUTION QUESTION-6- 18 POINTS

**(a)** Direct materials price variance =  $AQ \times (AP - SP)$

$$AP = \$11,000 \div 2,500 = \$4.40 \text{ per kg}$$

$$\text{Price variance} = 2,500 \times (\$4.40 - \$5.00) = \$1,500\text{F} \text{ 1 PT}$$

$$\text{Direct materials usage variance} = SP \times (AQ - SQ)$$

$$SQ = 2,100 \times 1 \text{ kg} = 2,100 \text{ kg}$$

$$\text{Usage variance} = \$5.00 \times (2,500 - 2,100) = \$2,000\text{U} \text{ 1 PT}$$

$$\text{Material Budget variance} = \$1,500\text{F} + \$2,000\text{U} = \$500\text{U} \text{ 1 PT}$$

**(b)** Labour rate variance =  $AH \times (AR - SR)$

$$AR = \$18,144 \div 4,320 = \$4.20 \text{ per hour}$$

$$\text{Rate variance} = 4,320 \times (\$4.20 - \$4.00) = \$864\text{U} \text{ 1 PT}$$

$$\text{Labour efficiency variance} = SR \times (AH - SH)$$

$$SH = 2,100 \times 2 \text{ hours per unit} = 4,200$$

$$\text{Efficiency variance} = \$4.00 \times (4,320 - 4,200) = \$480\text{U} \text{ 1 PT}$$

$$\text{Labour budget variance} = \$864\text{U} + \$480\text{U} = \$1,344\text{U} \text{ 1 PT}$$

**(c)** Variable spending variance = actual overhead –  $(AQ \times SR)$

$$\text{VOH rate} = \$19,000 \div 4,000 = \$4.75 \text{ per hour}$$

$$\text{Spending variance} = \$21,410 - (4,320 \times \$4.75) = \$890\text{U} \text{ 2 PTS}$$

$$\text{Variable efficiency variance} = SR \times (AH - SH)$$

$$= \$4.75 \times (4,320 - 4,200) = \$570\text{U} \text{ 2 PTS}$$

$$\text{Total variable budget variance} = \$890\text{U} + \$570\text{U} = \$1,460\text{U} \text{ 1 PT}$$

**(d)** Fixed overhead spending variance = actual – budget

$$= \$8,125 - \$8,000 = \$125\text{U} \text{ 1 PT}$$

$$\text{Fixed overhead volume variance} = M \text{ Budget} - (SH \times SR)$$

$$SR = \$8,000 \div 4,000 = \$2.00$$

$$= \$8,000 - (4,200 \times \$2.00) = \$400\text{F} \text{ 2 PTS}$$

$$\text{Total Fixed budget variance} = \text{Fixed overhead spending variance} = \$125\text{U} \text{ 1 PTS}$$

**(e)** Total overhead budget variances =  $\$1,460\text{U} + \$125\text{U} = \$1,585 \text{ 3 PTS}$