Université d'Ottawa * University of Ottawa

École de gestion School of Management

Solution **ADM 2341 Final** Examination Winter 2005

Section Professor Check one √

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STUDENT NAME: .....

STUDENT NUMBER: .....

Instructions

1. Answer all questions in this booklet. Booklet not to be removed from the examination room. You may separate the sheets but ensure that you put them back together and staple before handing in.

2. Please limit your answer to the space provided. Please note if you use the back of a page.

3. The use of standard abbreviations (O/H for Overhead and CM% for Contribution Margin Percentage) is quite acceptable.

4. Budget your time wisely**. Please do not ask the Professor or invigilator to interpret questions.**

5. Language dictionaries are allowed.

6. **You must sign page 2 of this exam.**

Questions	Max Grades
Multiple Choice Questions	
1 to 15: 1 marks each	**/15**
16 to 30: 2 marks each	**/30**
Problems	
Problem 1	**/15**
Problem 2	**/10**
Problem 3	**/10**
Problem 4	**/15**
Problem 5	**/5**
Total	**/100**

Statement of Academic Integrity
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Statement to be signed by the student:
I have read the text on academic integrity and I pledge not to have committed or attempted to commit academic fraud in this examination.

Signed:_____

Note: an examination without this signed statement will not be graded and will receive an exam grade of zero.

Multiple Choice

Questions 1 to 15: 1 mark each (15 marks)

Question 1

Which of the following statements are true regarding financial and managerial accounting?

I. Both are mandatory.
II. Both rely on the same underlying financial data.
III. Both emphasize the segments of an organization, rather than just looking at the organization as a whole.
IV. Both are geared to the future, rather than to the past.
V. None of the above.

A) I, II, III, and IV.
B) II, III, IV only.
C) II and III only.
D) II only.
E) V only.

Question 2

Twins Company reported $750,000 in sales and a net income of $25,000. The company's contribution margin at break even is $500,000. Based on this information, which of the following statements is true at sales of $750,000?

A) The company's contribution margin ratio is $66^{2/3}$%.
B) The company's break-even point is $750,000 dollars.
C) The company's contribution margin is $525,000.
D) The company's variable expenses are $33^{1/3}$% of sales.
E) None of the above.

Question 3

Gordon Company produces a single product that sells for $10 per unit. Last year, there were no beginning inventories, 100,000 units were produced, and 80,000 units were sold. The company has the following cost structure:

	Fixed Costs	Variable Costs
Raw Materials	--	$2.00 per unit produced
Direct Labour	--	$1.25 per unit produced
Factory Overhead	$120,000	$0.75 per unit produced
Selling and Administrative	$ 70,000	$1.00 per unit sold

Under absorption costing, what was the carrying value on the balance sheet of the ending finished goods inventory?

A) $ 80,000.
B) $104,000.
C) $110,000.
D) $124,000.
E) 87,000.
F) None of the above.

Question 4

Costs incurred at which of the following activity levels should NOT be allocated to products for decision making purposes?

A. Unit-level activities.
B. Batch-level activities.
C. Product-level activities.
D. Organization-sustaining activities.

Question 5
Why would an activity-based costing system that is designed for internal decision making NOT conform to generally accepted accounting principles?

A. Some manufacturing costs (i.e., the costs of idle capacity and organization-sustaining costs) will not be assigned to products.
B. Some non-manufacturing costs are assigned to products.
C. First-stage allocations may be based on subjective interview data.
D. All of the above.

Question 6
The master budget process usually begins with which of the following?
A) Production budget. B) Operating budget. C) Sales budget. D) Cash budget.

Question 7
Which of the following is **not** a benefit of budgeting?
A) It uncovers potential bottlenecks before they occur.
B) It coordinates the activities of the entire organization by integrating the plans and objectives of the various parts.
C) It ensures that accounting records comply with generally accepted accounting principles.
D) It provides benchmarks for evaluating subsequent performance.

Question 8
If a company follows a practice of isolating variances at the earliest point in time, what would be the appropriate time to isolate and recognize a direct material price variance?
A) When material is issued.
B) When material is used in production.
C) When material is purchased.
D) When production is completed.

Question 9
Which of the following is the most probable reason a company would experience an unfavourable labour rate variance and a favourable labour efficiency variance?

A) The mix of workers assigned to the particular job was heavily weighted towards the use of higher paid, experienced individuals.
B) The mix of workers assigned to the particular job was heavily weighted towards the use of new, relatively low-paid, unskilled workers.
C) Because of the production schedule, workers from other production areas were assigned to assist this particular process.
D) Defective materials caused more labour to be used in order to produce a standard unit.

Question 10
Which of the following combination would be useful in calling attention to possible problems in the control of spending on overhead items?

	Variable overhead spending variance	Fixed overhead **volume** variance
A)	No	No
B)	No	Yes
C)	Yes	No
D)	Yes	Yes

Question 11
Which of the following statements is NOT correct?
A) If the denominator level of activity and the standard hours allowed for the output of the period are the same, then there is no volume variance.
B) If the denominator level of activity is greater than the standard hours allowed for the output of the period, then the volume variance is unfavourable.
C) If the denominator level of activity is greater than the standard hours allowed for the output of the period, then the volume variance is favourable.
D) The volume variance is the most appropriate measure of the utilization of plant facilities.

Question 12
The economic impact of the inability to reach a target denominator level of activity would best be measured by which of the following?
A) The amount of the volume variance.
B) The contribution margin lost by failing to meet the target denominator level of activity.
C) The amount of the fixed overhead budget variance.
D) The amount of the variable overhead efficiency variance.

Question 13
The Northern Division of the Smith Company had average total operating assets of $150,000 last year. Its minimum required rate of return was 12%. The division reported net operating income of $20,000. What was the residual income for the Northern Division last year?
A) $ 2,000.
B) $ 5,000.
C) $18,000.
D) $20,000.

Question 14
All other things being equal, which of the following is a consequence of an increase in a division's traceable fixed expenses?
A) The division's contribution margin ratio will decrease.
B) The division's segment margin ratio will remain the same.
C) The division's segment margin will decrease.
D) The overall company profit will remain the same.

Question 15
Manor Company plans to discontinue a department that has a contribution margin of $25,000 and $50,000 in fixed costs. Of the fixed costs, $21,000 cannot be eliminated. What would be the effect on the profit of Manor Company of discontinuing this department?
A) An increase of $4,000.
B) A decrease of $4,000.
C) An increase of $25,000.
D) A decrease of $25,000.

Questions 16 to 30: 2 marks each (30 marks)

Question 16
Geneva Steel Corporation produces large sheets of heavy gauge steel. The company showed the following amounts relating to its production for the year just completed:

Direct materials used in production	$110,000
Direct labour costs for the year	$ 55,000
Work in process, beginning	$ 22,000
Finished goods, beginning	$ 45,000
Cost of goods manufactured	$243,000
Cost of goods sold	$238,000
Work in process, ending	$ 16,000

What was the manufacturing overhead cost for the year?
A) $84,000.
B) $78,000.
C) $56,000.
D) $72,000.
E) None of the above.

Question 17
Goodman Company has sales of $240,000. Variable costs are 35% of the sales price. If total fixed costs are $66,000, what is the degree of operating leverage?

A) 0.79.
B) 0.93.
C) 2.67.
D) 1.73.
E) 0.52.
F) None of the above.

Question 18
Selected information about Buehler Corporation's operations at high and at low levels of activity follow:

	Level of activity	
	Low	High
Number of units produced	25,000	30,000
Total manufacturing costs	$575,000	$680,000
Direct material cost per unit	$5	$5
Direct labor cost per unit	$6	$6

Using the high-low method, what is the cost formula for manufacturing overhead?

A) $50,000 per period plus $10 per unit.
C) $50,000 per period plus $22 per unit.
B) $50,000 per period plus $21 per unit.
D) $347,000 per period plus $0.10 per unit.

Question 19
Austin Manufacturing had the following operating data for the year just ended:

Selling Price per Unit	$60 per unit
Variable Expense per Unit	$22 per unit
Fixed Expenses	$504,000

Management plans to improve the quality of its only product by replacing a component that costs $3.50 with a higher-grade component that costs $5.50, and renting a packing machine for $18,000 a year. If the desired target profit is $288,000, how many units must the company sell?

A) 19,300 units.
B) 21,316 units.
C) 22,500 units.
D) 20,842 units.
E) None of the above.

Question 20
Paul Company has two products: A and B. The company uses activity-based costing. The estimated total cost and expected activity for each of the company's three activity cost pools are as follows:

Activity	Estimated	Expected Activity		
Cost Pool	Cost	Product A	Product B	Total
Activity 1	$22,000	400	100	500
Activity 2	$16,240	380	200	580
Activity 3	$14,600	500	250	750

The activity rate under the activity-based costing system for Activity 3 is closest to which of the following?
A. $19.47
B. $28.87
C. $58.40
D. $70.45

Question 21
Matt Company uses activity-based costing. The company has two products: A and B. The annual production and sales of Product A is 8,000 units and of Product B is 6,000 units. There are three activity cost pools, with estimated total cost and expected activity as follows:

Activity	Estimated	Expected Activity		
Cost Pool	Cost	Product A	Product B	Total
Activity 1	$20,000	100	400	500
Activity 2	$37,000	800	200	1,000
Activity 3	$91,200	800	3,000	3,800

The cost per unit of Product A under activity-based costing is closest to which of the following?

A) $ 2.40
B) $ 3.90.
C) $ 6.60.
D) $10.59.

Question 22
The PDQ Company makes collections on credit sales according to the following schedule:

25% in month of sale
70% in month following sale
4% in second month following sale
1% uncollectible

The following sales have been budgeted:

Month	Sales
April	$100,000
May	$120,000
June	$110,000

What would be the cash collections in June?
A) $110,000.
B) $111,500.
C) $113,400.
D) $115,500.
E) None of the above.

Question 23
Modesto Company produces and sells Product Alpha. To guard against stockouts, the company requires that 20% of the next month's sales be on hand at the end of each month. Budgeted sales of Product Alpha over the next four months are:

	June	July	August	September
Budgeted Sales in Units	30,000	40,000	60,000	50,000

What would be the budgeted production for August?
A) 50,000 units.
B) 58,000 units.
C) 62,000 units.
D) 70,000 units.
E) None of the above.

Question 24
Cox Company's direct material costs for the month of January were as follows:

Actual quantity purchased.....18,000 kilograms
Actual unit purchase price .....$ 3.60 per kilogram
Materials price variance—
Unfavourable (based on purchases).....$ 3,600
Standard quantity allowed for actual production.....16,000 kilograms
Actual quantity used .....15,000 kilograms

What was the direct materials quantity variance for January?
A) $3,360.
B) $3,375.
C) $3,400.
D) $3,800.
E) None of the above.

Question 25
Information on Kennedy Company's direct material costs follows:

Standard price per kilogram of raw materials	$3.60
Actual quantity of raw materials purchased and used	1,600 kilograms
Standard quantity allowed for actual production	1,450 kilograms
Materials purchase price variance—favourable	$ 240

What was the actual purchase price per unit, rounded to the nearest cent?
A) $3.06.
B) $3.11.
C) $3.45
D) $3.75.
E) None of the above.

Question 26
Web Company uses a standard cost system that applies manufacturing overhead to units of product on the basis of machine hours. During February, the company used a denominator activity of 80,000 machine hours in computing its predetermined overhead rate. However, only 75,000 standard machine hours were allowed for the month's actual production. If the fixed overhead volume variance for February was $6,400 unfavourable, what was the total budgeted fixed overhead cost for the month?
A) $ 96,000.
B) $ 98,600.
C) $100,000.
D) $102,400.
E) None of the above.

Question 27
The predetermined overhead rate (variable and fixed) is $7.50 per machine hour, and the denominator activity level is 135,000 machine hours. If the variable portion of the predetermined overhead rate is $3.00 per machine hour, what is the budgeted fixed factory overhead for the year?
A) $ 30,000.
B) $ 607,500.
C) $ 405,000.
D) $1,012,500.
E) None of the above.

Question 28
During April, Division D of Carney Company had a segment margin ratio of 15%, a variable expense ratio of 60% of sales, and traceable fixed expenses of $15,000. Division D's sales were closest to which of the following?
A) $ 22,500.
B) $ 33,333.
C) $ 60,000.
D) $100,000.

Question 29
Last year, a company had shareholders' equity of $160,000, net operating income of $16,000, and sales of $100,000. The investment turnover was 0.5 times. What was the return on investment (ROI)?
A) 7%.
B) 8%.
C) 9%.
D) 10%.
E) None of the above.

Question 30

Relay Corporation manufactures batons. Relay can manufacture 300,000 batons a year at a variable cost of $750,000 and a fixed cost of $450,000. Based on Relay's predictions for next year, 240,000 batons will be sold at the regular price of $5.00 each. In addition, a special order was placed for 60,000 batons to be sold at a 40% discount off the regular price. Total fixed costs would be unaffected by this order. By what amount would the company's net operating income be increased or decreased as a result of the special order?

A) $30,000 increase.
B) $36,000 increase.
C) $60,000 decrease.
D) $180,000 increase.
E) None of the above.

Problems:

Problem 1 (15 points)

Answer <u>each</u> of the three independent cases.

<u>Case 1</u>: (4 marks)

Fox Company is currently working at full production capacity producing 10,000 units of a unique product called Sweejo. Manufacturing costs to produce one unit of Sweejo are as follows:

Direct materials	$ 2
Direct labour	3
Manufacturing overhead	5
	$ 10

The unit manufacturing overhead cost is based upon a variable cost per unit of $2.00 and fixed costs of $30,000 at full capacity of 10,000 units. The selling costs, all variable, are $4 per unit, and the unit selling price is $20.

A customer, Pendleton Company, has asked Fox to produce 2,000 units of Mojo, a modification of Sweejo. Mojo would require the same manufacturing processes as Sweejo. Pendleton has offered to pay Fox $15 for a unit of Mojo, and half the selling costs per unit.

Required:

Calculate the total opportunity cost to Fox Company of producing 2,000 units of Mojo.

<u>Answer</u>:

Opportunity cost to Fox of producing the 2,000 units of Mojo is the contribution margin lost on the 2,000 units of Sweejo.

So, unit CM for Sweejo is: $20 SP – ($2 DM + $3 DL + $2 VOH + $4 VSA)
= $9

Therefore, total opportunity cost is: $9/unit x 2,000 units of Sweejo =
<u>$18,000</u>

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Case 2: (6 marks)

Outlined below are the unit costs of making and selling a single product called "Brome" at a normal level of 5,000 units per month and a current unit selling price of $90.

Manufacturing costs:	
Direct material	$ 35
Direct labour	12
Variable overhead	8
Fixed overhead (total for the year, $300,000)	5
Selling and administrative expenses:	
Variable	15
Fixed (total for the year, $480,000)	8

Brome is usually sold at the rate of 60,000 units per year. It is predicted that a rise in the price to $98 per unit will decrease volume sales by 10% and that fixed costs will increase by 5%.

Required:

By how much can annual advertising be increased under this plan without having annual operating income fall below the current level?

Answer:

	60,000 units	54,000 units	Difference
Sales at $90 and $98	$5,400,000	$5,292,000	
Variable costs at $70 *	4,200,000	3,780,000	
Contribution margin	$1,200,000	$1,512,000	$312,000
Fixed costs	780,000	819,000 **	(39,000)
Operating ncome	$ 420,000	$ 693,000	$273,000

* $35 + $12 + $8 + $15
** 5% x $780,000 = $39,000 increase in fixed costs

Therefore, advertising can be increased by $273,000 without affecting the current operating income level of $420,000.

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Case 3: (5 marks)

Manzi Enterprises Limited produces three products. Data concerning the selling prices, unit costs, and mixing time for each of the three products appear below:

	Product		
	Linament Plus	**Formula 1**	**Lasix**
Selling price	$ 80	$ 60	$ 90
Variable costs	50	40	55
Fixed costs	25	8	22
Mixing time	10 min	5 min	7 min

Fixed costs are applied to each product on the basis of direct labour hours. Demand from local interests exceeds Manzi's current capacity. The mixing machine is the constraint, with only 400 hours of mixing time available this week.

Required:

Given the mixing machine constraint, which product should be emphasized? Support your answer with appropriate calculations.

Answer:

The product to be emphasized is that one which generates the highest contribution margin per unit of the constraining factor (ie. mixing time).

Therefore:

		Product	
	Linament Plus	Formula 1	Lasix
Selling price	$ 80	$ 60	$ 90
Variable costs	50	40	55
Contribution margin	30	20	35
Mixing machine time	10 min	5 min	7 min
Contribution margin/minute	**$3.00**	**$4.00**	**$5.00**

Therefore, lasix should be emphasized because it has the greatest contribution margin per unit of the scarce resource (mixing time).

Problem 2 (10 marks)

Zeron Company has a present operating income of $17,700 based upon sales of $200,000. The company has established a minimum rate of return of 8%. The amount invested in operating assets was $118,000.

Trevor Ritchie, the manager of the Rexdale Division, is currently considering purchasing a specialized machine which will cost 14,000 and which is expected to generate additional operating income of $1,400.

Required:

(a) What is Ritchie's current ROI (return on investment) and RI (residual income) without investing in the new project? (2 marks)

(b) Show, with supporting calculations, why Ritchie would reject the new project if he were being evaluated based on ROI. (3 marks)

(c) Explain, with supporting dollar value calculations, why Ritchie should accept the project if he were evaluated using RI. (3 marks)

(d) Based upon your results, comment on the use of ROI and RI as an evaluative tool for assessing managerial performance. (2 marks)

Answer:

(a) Current ROI is: $\frac{17,700}{200,000} \times \frac{200,000}{118,000} =$ **15%**

Current RI is: $17,000 - (.08 \times \$118,000) =$ **$7,560**

(b) New ROI would drop: $\frac{17,700 + 1,400}{200,000} \times \frac{200,000}{118,000 + 14,000} =$ **14.47%**

(c) New RI would increase: $19,100 - (.08 \times \$132,000) =$ **$8,540**

(d) Use of ROI can produce contradictory results. The use of RI is a better measure as it more accurately measures the increase in wealth accruing to shareholders.

Problem 3 (10 marks)
Frank's Fresh Fruit Stand purchases and sells fresh fruits and vegetables. Company estimates reveal the following for the first three fiscal months of 1999:

	Purchases	Sales
June	$66,000	$102,000
July	58,000	92,000
August	79,600	116,000

The company usually pays 60 percent of any month's purchases in the month of purchase and takes an average 2 percent discount. The remaining amount is paid in the following month with no discount. Other monthly payments for expenses run $24,000 plus 12 percent of sales. Depreciation is $4,000 per month. The company expects to start August with $28,000 in cash.

Experience indicates the following expected collection pattern for sales: 25 percent in the month of sale, 60 percent in the month after the sale, and 15 percent in the second month after the sale.

Frank, who has given you a job every summer you were in college, now needs your help and has requested that you assist him by providing the following:

1. Calculate the cash collections expected in August. **(4 marks)**
2. Calculate the expected total cash disbursements in August. **(4 marks)**
3. Present a cash budget for August. Assume management wants to maintain a minimum cash balance of $28,000. Indicate whether the company will need to borrow or can invest at the end of August, and by how much. **(2 marks)**

Answer:

Cash Collections in August		
June sales	15%*102,000	$15,300.0
July sales	60%*92,000	55,200.00
August sales	25%*116,000	29,000.00
Total		**$99,500.00**
Cash Disbursements in August		
July purchases	40%*58,000	$23,200.00
August purchases	60%*79,600*98%	46,804.80
Other	24,000+(12%*116,000)	37,920.00
Total		**$107,924.80**

Cash Budget	
BB	$28,000.0
Collections	99,500.00
Available	127,500.00
Disbursements	107,924.80
Excess/Shortage	19,575.20.00
Min Balance	28,000.00
Borrow	8,424.80
EB*	$28,000.00

* Students may round or present the cash schedule differently.....

Problem 3 continued if needed:

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Problem 4 (15 marks)

Patio Solutions manufactures picnic table kits that are sold in various large discount department stores. The standard cost card indicates the following costs are incurred to produce a single picnic table kit:

60 board feet of pine lumber @$.90	$54
2 pipe frame units @$9	18
1 package of fasteners	8
.5 hours of direct labor at $14 per hour	7
Variable factory overhead .2 machine hours at $20 per machine hour	4
Fixed factory overhead at $15 per machine hour*	3
Total	$94

* Based on budgeted Fixed Factory Overhead of $30,000 and expected annual capacity of 2,000 hours.

During 2000, the firm had the following actual data related to the production of 11,000 picnic kits:

Purchase And Usage Of Material

Lumber	690,000 board feet at $.85 per board foot
Frame units	22,250 units at $9.10 per unit
Packages of fasteners	11,120 packages at $6.90 per package

Direct Labour Used

5,600 hours at $14.20 per hour

Factory Overhead Costs

Actual machine hours recorded	2,000
Actual variable factory overhead incurred	$38,000
Actual fixed factory overhead incurred	$32,300

a. Calculate material, labor, and overhead variances. **(10 marks)**
b. Provide a possible explanation for each variance computed. **(5 marks)**

Answer:

	AQ*AP	**AQ*SP**	**SQA*SP**
Lumber	690,000*.85=586,500	690,000*.90=621,000	11,000*60*.90=594,000
	34,500F	27,000U	
	Price lower than standard.	Used 690k, allowed 660k	
Pipe	22,250*$9.10= 202,475	22,250*9=200,250	11,000*2*9= 198,000
	2,225U	2250U	
	Price higher than standard.	Used 22,250, allowed 22,000	
Fasteners	11,120*6.90=76,478	11,120*8=88,960	11,000*8 =88,000
	12,482F	960U	
	Price lower than standard.	Used 11,120, allowed 11,000.	
Labour	5600*14.20=79,520	5600*14=78,400	11,000*.5*14=77,000
	1120U	1400U	
	Rate higher than standard.	Used 5600dlhs, allowed 5500 dlhs	
V.Overhead	38,000	2000*20=40,000	11,000*.2*20=44,000
	2000F	4000F	
	Spent more than allowed for actual MHs.	Used 2000MHs, allowed 2200MHs.	
	Actual	**Budget**	**Applied**
F.Overhead	32,300	30,000	11,000*.2*15=33,000
	2300U	3300F	
	Spent more than master budget.	Applied more than budget.	

Problem 4 continued if needed:

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Problem 5 (5 marks)

Eley Company produces a single product. The cost of producing and selling a single unit of this product at the company's normal activity level of 40,000 units per month is as follows:

Direct Materials	$42.60
Direct Labour	$ 8.10
Variable Manufacturing Overhead	$ 1.10
Fixed Manufacturing Overhead	$17.30
Variable Selling & Administrative Expense	$ 1.80
Fixed Selling & Administrative Expense	$ 8.00

The normal selling price of the product is $86.10 per unit.

An order has been received from an overseas customer for 2,000 units to be delivered this month at a special discounted price. This order would not change the total amount of the company's fixed costs. The variable selling and administrative expense would be $1.20 less per unit on this order than on normal sales.

Required:

Suppose there is not enough idle capacity to produce all of the units for the overseas customer, and accepting the special order would require cutting back on production of 700 units for regular customers. Calculate the minimum acceptable price per unit for the special order? Hint: Consider the contribution margin given up to make the special order.

CM on regular sales:
SP = $86.10
VC = $53.60($2.60+8.10+1.10+1.80)
CM = $32.50

*CM lost on regular sales = 700 *432.50 = $22,750*

VC on Special Order = $53.60 – 1.20 = $52.40

Min Price = $52.40 + Lost CM/Units

$52.40 + 22,750/2000

$62.875

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