

MID TERM EXAMINATION

Summer 2009

PLEASE READ THIS PAGE – IT CONTAINS IMPORTANT INFORMATION BEFORE STARTING TO WRITE BE SURE YOU ARE WRITING IN THE CORRECT EXAM ROOM RELATED TO YOUR SECTION.

1. This examination will last Three (3) hours and consists of **Five (5) Questions printed on (8) pages** including this page. Make sure your copy of the exam is complete before starting.
2. Write all your answers (including answers to multiple-choice statements) in the lined examination answer booklet that has been provided to you separately. You may answer the Questions in any order. Indicate clearly your *professor's name* in the front of the booklet.
3. Your answers may be written in pencil or ink.
4. Read the Questions carefully and budget your time carefully. Show details of all work in order to benefit from part marks, except for Multiple-choice questions. Attempt all Questions.
5. This is a closed book examination; no reference to notes, etc. is allowed. However, a silent hand-held four-function calculator and one standard (not electronic) dictionary are permitted.
6. Invigilators will not answer questions, unless you think there is an error in the examination questionnaire.

QUESTION I 15 POINTS

Select the best answer. 1 mark each

1. Managerial accounting
 - a. is concerned with costing products.
 - b. is governed by generally accepted accounting principles.
 - c. pertains to the entity as a whole and is highly aggregated.
 - d. places emphasis on special-purpose information.
2. In which of the following categories do indirect materials belong?

	Product Cost	Manufacturing Overhead	Period Cost
a.	No	No	Yes
b.	Yes	No	No
c.	Yes	Yes	No
d.	Yes	Yes	Yes

3. Which beginning and ending inventories appear on a cost of goods manufactured schedule?
 - a. Raw materials only
 - b. Raw materials and work in process only
 - c. Raw materials, work in process, and finished goods
 - d. Work in process only
4. Luca Company overapplied manufacturing overhead during 2008. Which one of the following is part of the year end entry to dispose of the overapplied amount assuming the amount is material?
 - a. An increase to Finished Goods
 - b. A decrease to Applied Overhead
 - c. A decrease to Work in Process Inventory
 - d. An increase to Cost of Goods Sold

5. What is the best way to handle manufacturing overhead costs in order to get the most timely job cost information?
 - a. The company should account for only the direct production costs.
 - b. The company should apply overhead using an estimated rate throughout the year.
 - c. The company should add actual manufacturing overhead costs to jobs as soon as the overhead costs are incurred.
 - d. The company should determine an allocation rate as soon as the actual costs are known, and then apply manufacturing overhead to jobs.
6. At the end of the year, Manufacturing Overhead has been overapplied. What occurred to create this situation?
 - a. The company incurred more total job costs than the amount budgeted for the job.
 - b. The actual manufacturing overhead costs were less than the manufacturing overhead assigned to jobs.
 - c. The company incurred more manufacturing overhead costs than the manufacturing overhead assigned to jobs.
 - d. Estimated manufacturing overhead was less than actual manufacturing overhead costs.
7. Which one of the following is a similarity of both a job order and a process cost system?
 - a. They both track direct materials and direct labour, but not manufacturing overhead.
 - b. They both track conversion costs, but not materials.
 - c. They both track the same three manufacturing cost elements – direct materials, direct labour, and manufacturing overhead.
 - d. They both are used for the same type of inventory production items.
8. How are costs assigned in a process cost system?
 - a. To only one work in process account
 - b. To work in process and finished goods inventory
 - c. To work in process, finished goods, and cost of goods sold
 - d. To multiple work in process accounts
9. What is a production cost report used for?
 - a. It is an external report provided to shareholders.
 - b. It shows costs charged to a department and costs accounted for.
 - c. It shows equivalent units of production but not physical units.
 - d. It shows the basis on which overhead is allocated.

10. Which of the following is **not** a benefit of activity-based costing?
- a. More accurate product costing
 - b. Enhanced control over overhead costs
 - c. Better management decisions
 - d. Less costly to use
11. Which of the following is a limitation of activity-based costing?
- a. More cost pools
 - b. Less control over overhead costs
 - c. Poorer management decisions
 - d. Some arbitrary allocations continue
12. Which of the following factors would suggest a switch to activity-based costing?
- a. Product lines similar in volume and manufacturing complexity.
 - b. Overhead costs constitute a significant portion of total costs.
 - c. The manufacturing process has been stable.
 - d. Production managers use data provided by the existing system.
13. What happens to manufacturing costs when a company's activity level decreases?
- a. Costs per unit should remain the same if the company is still in the relevant range.
 - b. Most unit costs will rise.
 - c. All unit costs will remain the same.
 - d. Some costs decrease and others will remain the same.
14. Croc Catchers calculates its contribution margin to be less than zero. Which statement is true?
- a. Its fixed costs are less than the variable cost per unit.
 - b. Its profits are greater than its total costs.
 - c. The company should sell more units.
 - d. Its selling price is less than its variable costs.
15. Which of the following statements is **not** true?
- a. Operating leverage refers to the extent to which a company's net income reacts to a given change in sales.
 - b. Companies that have higher fixed costs relative to variable costs have higher operating leverage.
 - c. When a company's sales revenue is increasing, high operating leverage is a good thing because it means that profits will increase rapidly.
 - d. When a company's sales revenue is decreasing, high operating leverage is a good thing because it means that profits will decrease at a slower pace than revenues decrease.

QUESTION II 20 POINTS

Vargas Corporation's fiscal year ends on November 30. The following accounts are found in its job-order cost accounting system for the first month of the new fiscal year:

Raw Materials Inventory			
Dec. 1	Beginning balance	(a)	
31	Purchases	19,225	
Dec. 31	Ending balance	7,975	
Work in Process Inventory			
Dec. 1	Beginning balance	(b)	
31	Direct materials	(c)	
31	Direct labour	8,800	
31	Overhead	(d)	
Dec. 31	Ending balance	(f)	
Finished Goods Inventory			
Dec. 1	Beginning balance	(g)	
31	Completed jobs	(h)	
Dec. 31	Ending balance	(j)	
Factory Labour			
Dec. 31	Factory wages	12,025	
Dec. 31	Wages assigned	(k)	
Manufacturing Overhead			
Dec. 31	Indirect materials	1,900	
31	Indirect labour	(l)	
31	Other overhead	1,245	
Dec. 31	Overhead applied	(m)	

Other data:

- On December 1, two jobs were in process: Job No. 154 and Job No. 155. These jobs had combined direct materials costs of \$9,750 and direct labour costs of \$15,000. Overhead was applied at a rate that was 75% of the direct labour cost.
- During December, Job Nos. 156, 157, and 158 were started. On December 31, Job No. 158 was unfinished. This job had charges for direct materials of \$3,800 and direct labour of \$4,800, plus manufacturing overhead. All jobs except Job No. 158 were completed in December.
- On December 1, Job No. 153 was in the finished goods warehouse. It had a total cost of \$5,000. On December 31, Job No. 157 was the only job finished that was not sold. It had a cost of \$4,000.
- Manufacturing overhead was \$230 overapplied in December.

Instructions

List the letters (a) through (m) and indicate the amount for each letter. Show all calculations.

QUESTION III 20 POINTS

The Allbright BrickWorks, in Winnipeg, Manitoba, manufactures high-quality bricks used in residential and commercial construction. The firm is small but highly automated and typically produces about 300,000 bricks per month. A brick is created in a continuous production operation. In the initial step, the raw material, a mixture of soils and water, is forced into a brick mould moving along a conveyer belt. No other materials are actually required in the manufacture of a brick. Each brick takes about three days to complete. Approximately the last 36 hours on the conveyer belt are spent in an oven that removes moisture from the product. The conveyer belt speed is monitored and controlled by computer. The firm uses a process costing system based on actual costs in three cost pools—direct materials, direct labour, and factory overhead—to assign production costs to output. Cost and production data for October 2005 follow:

Production Data			
Beginning work in process inventory (100% complete as to direct materials; 60% complete as to direct labour; 36% complete as to factory overhead)	2,500 bricks		
Started this period	30,500 bricks		
Ending work in process inventory (100% complete as to direct materials; 50% complete as to direct labour; 40% complete as to factory overhead)	3,000 bricks		
Cost Data			
	Materials	Direct Labour	Overhead
Beginning inventory	\$ 13,300	\$ 4,350	\$ 8,520
Cost in October	122,000	150,000	181,800

Instructions

Prepare a production cost report to determine the cost of bricks transferred to finished goods inventory and the cost of bricks in ending work in process inventory for October 2005. Assume the company uses the FIFO method.

QUESTION IV 20 POINTS

FireOut, Inc. manufactures steel cylinders and nozzles for two models of fire extinguishers: (1) a home fire extinguisher, and (2) a commercial fire extinguisher. The home model is a high-volume (54,000 units), two-litre cylinder that holds 1 kilogram of multi-purpose dry chemical at 480 PSI. The commercial model is a low-volume (10,200 units), four-litre cylinder that holds five kilograms of multi-purpose dry chemical at 390 PSI. Both products require 1.5 hours of direct labour for completion. Therefore, total annual direct labour hours are 96,300 or $[1.5 \text{ hrs} \times (54,000 + 10,200)]$. Expected annual manufacturing overhead is \$1,502,280. Thus, the predetermined overhead rate is \$15.60 $(\$1,502,280 \div 96,300)$ per direct labour hour. The direct materials cost per unit is \$18.50 for the home model and \$26.50 for the commercial model. The direct labour cost is \$19 per unit for both the home and the commercial models.

The company's managers identified six activity cost pools and related cost drivers, and accumulated overhead by cost pool as follows.

Activity Cost Pools	Cost Drivers	Estimated Overhead	Expected Use of Cost Drivers	Expected Use of Drivers by Product	
				Home	Commercial
Receiving	Kilograms	\$ 70,350	335,000	215,000	120,000
Forming	Machine hours	150,500	35,000	27,000	8,000
Assembling	Number of parts	390,600	217,000	165,000	52,000
Testing	Number of tests	51,000	25,500	15,500	10,000
Painting	Litres	52,580	5,258	3,680	1,578
Packing and shipping	Kilograms	787,250	335,000	215,000	120,000
		\$1,502,280			

Instructions

- (a) Under traditional product costing, calculate the total unit cost of both products. Prepare a simple schedule that compares the individual costs by product. **5 Marks**
- (b) Calculate the total cost per unit for each product under ABC. **12 Marks**
- (c) Classify each of the activities as a value-added activity or a non-value-added activity. **3 Marks**

QUESTION V-A 18 POINTS

Dias Manufacturing had a bad year in 2005. For the first time in its history, it operated at a loss. The company's income statement showed the following results from selling 80,000 units of product: net sales \$1.6 million; total costs and expenses \$1.74 million; and net loss \$140,000. Costs and expenses consisted of the following:

	Total	Variable	Fixed
Cost of goods sold	\$1,200,000	\$780,000	\$420,000
Selling expenses	420,000	75,000	345,000
Administrative expenses	120,000	45,000	75,000
	<u>\$1,740,000</u>	<u>\$900,000</u>	<u>\$840,000</u>

Management is considering the following independent alternatives for 2006:

1. Increase the unit selling price by 25% with no change in costs and expenses.
2. Change the compensation of salespersons from fixed annual salaries totalling \$200,000 to total salaries of \$40,000 plus a 5% commission on net sales.
3. Purchase new high-tech factory machinery that will change the proportion between variable and fixed costs of goods sold to 50:50.

Instructions

- (a) Calculate the break-even point in dollars for 2005. **3 Marks**
- (b) Calculate the break-even point in dollars under each of the alternative courses of action. **12 Marks (4 marks for each alternative)**
- (c) Which course of action do you recommend? Explain. **3 Marks**

QUESTION V-B 7 POINTS

Grass King manufactures lawn mowers, weed-trimmers, and chainsaws. Its sales mix and contribution margin per unit are as follows:

	Sales Mix	Contribution Margin per Unit
Lawn mowers	30%	\$30
Weed-trimmers	50%	\$20
Chainsaws	20%	\$40

Grass King has fixed costs of \$4.86 million.

Instructions

Calculate the number of units of each product that Grass King must sell in order to earn \$540,000 before tax under this product mix. Grass King's tax rate is 40%.

QUESTION I 15 POINTS

1. D
2. C
3. B
4. C
5. B
6. B
7. C
8. D
9. B
10. D
11. D
12. B
13. D
14. D
15. D

QUESTION II 20 POINTS

- (a) \$5,600 $(\$16,850 + \$7,975 - \$19,225)$. **2 PTS**
- (b) \$36,000 $[\$9,750 + \$15,000 + (75\% \times \$15,000)]$. **2 PTS**
- (c) \$14,950 $(\$16,850 - \$1,900)$. **2 PTS**
- (d) \$6,600 $(\$8,800 \times 75\%)$. **1 PT**
- (e) \$54,150 $(\$36,000 + \$14,950 + \$8,800 + \$6,600 - \$12,200)$. **2 PTS**
- (f) \$12,200 [Given in other data-(2)— $\$3,800 + \$4,800 + (75\% \times \$4,800)$]. **1 PT**
- (g) \$5,000 (Given in other data-(3).) **1 PT**
- (h) \$54,150 (See (e) above). **1 PT**
- (i) \$55,150 $(\$5,000 + \$54,150 - \$4,000)$. **2 PTS**
- (j) \$4,000 (Given in other data-(3).) **1 PT**
- (k) \$12,025 (Equal to factory labour incurred). **2 PTS**
- (l) \$3,225 $(\$12,025 - \$8,800)$. **2 PTS**
- (m) \$6,600 (Same as (d)) or $(\$1,900 + \$3,225 + \$1,245 + \$230)$ **1 PT**

PROBLEM III 20 POINTS

Quantities	Physical Units	Equivalent Units		
		Materials	Labour Costs	Over-head
<u>Units to be accounted for</u>				
Work in process, beginning	2,500			
Started this period	<u>30,500</u>			
Total units	<u>33,000</u>			
<u>Units accounted for</u>				
Work in process, beginning	2,500			
Materials (0%)		0		
Labour (40%)			1,000	
Overhead (64%)				1,600
Started and completed	27,500	27,500	27,500	27,500
Work In process, ending	<u>3,000</u>			
Materials (100%)		<u>3,000</u>		
Labour (50%)			<u>1,500</u>	
Overhead (40%)				<u>1,200</u>
Total units	<u>33,000</u>	<u>30,500</u>	<u>30,000</u>	<u>30,300</u>
	2 PTS	2 PTS	2 PTS	2 PTS
Current period costs	<u>\$453,800</u>	<u>\$122,000</u>	<u>\$150,000</u>	<u>\$181,800</u>
Per unit cost	1 PT	1 PT	1 PT	1 PT
	<u>\$15</u>	<u>\$4</u>	<u>\$5</u>	<u>\$6</u>

	Total	Materials	Labour Costs	Over- head
<hr/>				
<u>Costs accounted for</u>				
Work in process, beginning 1 PT	\$ 26,170			
Cost to complete beginning WIP 2 PTS	14,600			
Materials (0 x \$4)		\$ --		
Labour (1,000 x \$5)			\$5,000	
Overhead (1,600 x \$6)				\$9,600
Started and completed				
(27,500 x \$15) 2 PTS	412,500			
Work In process, ending	26,700			
Materials (3,000 x \$4) 1 PT		12,000		
Labour (1,500 x \$5) 1 PT			7,500	
Overhead (1,200 x \$6) 1 PT				7,200
	<u>\$479,970</u>			

PROBLEM IV 20 POINTS

(a) Computation of unit costs—traditional costing.

Manufacturing Costs	Products	
	Home Model	Commercial Model
Direct materials	\$18.50	\$26.50
Direct labour	19.00	19.00
Overhead	<u>23.40*</u>	<u>23.40*</u>
Total unit cost	<u>\$60.90</u>	<u>\$68.90</u>
	2.5 PTS	2.5 PTS

*\$15.60 X 1.5 = \$23.40

(b)

Activity Cost Pool	Estimated Overhead	÷	Expected Use of Cost Drivers	=	Activity-Based Overhead Rate
Receiving	\$ 70,350		335,000 Pounds		\$ 0.21 per pound .5 PT
Forming	150,500		35,000 Machine hours		\$ 4.30 per machine hour .5 PT
Assembling	390,600		217,000 Parts		\$ 1.80 per part .5 PT
Testing	51,000		25,500 Tests		\$ 2.00 per test .5 PT
Painting	52,580		5,258 Litres		\$10.00 per litre .5 PT
Packing and shipping	<u>787,250</u>		335,000 Kilograms		\$ 2.35 per kilogram .5 PT
	<u>\$1,502,280</u>				

Activity Cost Pool	Home Model			Commercial Model		
	Expected Use of Drivers	X	Activity-Based Overhead Rates	Expected Use of Drivers	X	Activity-Based Overhead Rates
Receiving	215,000	\$.21	\$ 45,150	120,000	\$.21	\$ 25,200
Forming	27,000	\$ 4.30	116,100	8,000	\$ 4.30	34,400
Assembling	165,000	\$ 1.80	297,000	52,000	\$ 1.80	93,600
Testing	15,500	\$ 2.00	31,000	10,000	\$ 2.00	20,000
Painting	3,680	\$10.00	36,800	1,578	\$10.00	15,780
Packing and shipping	215,000	\$ 2.35	505,250	120,000	\$ 2.35	282,000
Total costs assigned (a)			<u>\$1,031,300</u>			<u>\$470,980</u>
Units produced (b)			<u>54,000</u>			<u>10,200</u>
Overhead cost per unit [(a) ÷ (b)]			<u>\$19.10</u>			<u>\$46.17</u>

.5 PT FOR EACH COST DRIVER = 3 PTS HM + 3 PTS CM

<u>ABC Manufacturing Costs</u>	<u>Home Model</u>	<u>Commercial Model</u>
Direct materials	\$18.50	\$26.50
Direct labour	19.00	19.00
Overhead	19.10	46.17
Total cost per unit	<u>\$56.60</u>	<u>\$91.67</u>
	<u>1.5 PTS</u>	<u>1.5 PTS</u>

(c) <u>Activity</u>	<u>Value- vs. Non-value-Added</u>
Receiving .5 PT	Non-value-added
Forming .5 PT	Value added
Assembling .5 PT	Value-added
Testing .5 PT	Non-value-added
Painting .5 PT	Value-added
Packing & shippg.5 PT	Value-added

PROBLEM V-A 18 POINTS

(a) Sales were \$1,600,000
variable expenses were \$ 900,000,
contribution margin was \$ 700,000
CM ratio = \$ 700,000 / \$1,600,000 = 43.75%. **2PTS**

Fixed expenses were \$840,000.

The break-even point in dollars is: **1PT**

$$\frac{\$840,000}{.4375} = \$1,920,000$$

(b) 1. The effect of this alternative is to increase

The selling price per unit to \$25 (\$20 X 125%). **1PT**

Total sales = \$2,000,000 (80,000 X \$25). **1PT**

contribution margin changes to 55% [(\$2,000,000 – \$900,000) ÷ \$2,000,000]. The new break-even point is: **2PTS**

$$\frac{\$840,000}{.55} = \$1,527,273 \text{ (rounded)}$$

2. The effects of this alternative are:

(1) fixed costs decrease by \$160,000,

(2) variable costs increase by \$80,000 (\$1,600,000 X 5%), **1PT**

(3) total fixed costs become \$680,000 (\$840,000 – \$160,000), **1PT**

contribution margin becomes 38.75% [(\$1,600,000 – \$900,000 – \$80,000) ÷ \$1,600,000]. **2PTS**

The new break-even point is:

$$\frac{\$680,000}{.3875} = \$1,754,839 \text{ (rounded)}$$

3. The effects of this alternative are:

(1) variable and fixed cost of goods sold become \$600,000 each,

(2) total variable costs become \$720,000 (\$600,000 + \$75,000 + \$45,000), **1PT**

(3) total FC are \$1,020,000 (\$600,000 + \$345,000 + \$75,000) **1PT**

contribution margin ratio becomes 55% [(\$1,600,000 – \$720,000) ÷ \$1,600,000]. **2PTS**

The new break-even point is:

$$\frac{\$1,020,000}{.55} = \$1,854,545 \text{ (rounded)}$$

(c) Alternative 1 is the recommended course of action using break-even analysis because it has the lowest break-even point. **3PTS**

PROBLEM V-B 7 POINTS

Weighted-average contribution margin per unit =
 $(30\% \times \$30) + (50\% \times \$20) + (20\% \times \$40) = \27 **3 PTS**

Total sales in units = **1PT** $(\$4,860,000 + \$540,000) \div \$27 = 200,000$ units

Lawn mowers: $200,000 \times 30\% = 60,000$ units **1PT**

Weed-trimmers: $200,000 \times 50\% = 100,000$ units **1PT**

Chain saws: $200,000 \times 20\% = 40,000$ units **1PT**