

## MID TERM EXAMINATION

Winter 2008

**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 (6) Questions printed on (11) 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 *professors 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

MULTIPLE CHOICES: Choose the best answer.

1. Indirect labour is considered a part of which of the following costs?
  - a) Product cost
  - b) Prime cost
  - c) Period cost
  - d) Nonmanufacturing cost
  - e) All of the above.
  
2. Which beginning and ending inventories appear on a cost of goods manufactured schedule?
  - a) Raw materials only
  - b) Raw materials and work in process
  - c) Raw materials, work in process, and finished goods
  - d) Work in process only
  - e) Work in process, and finished goods.
  
3. At the end of the year, Manufacturing Overhead has been over-applied. What occurred to create this situation?
  - a) The company incurred more manufacturing overhead costs than the manufacturing overhead assigned to jobs.
  - b) Estimated manufacturing overhead was less than actual manufacturing overhead costs.
  - c) The company incurred more total job costs than the amount budgeted for the job.
  - d) The actual manufacturing overhead costs were less than the manufacturing overhead assigned to jobs.
  - e) The actual manufacturing overhead costs were more than the manufacturing overhead assigned to jobs.
  
4. Which one of the following contains sources of costs that will be added to job cost sheets?
  - a) Invoices, time tickets, and the predetermined overhead rate
  - b) Materials requisition slips, time tickets, and the actual overhead costs
  - c) Materials requisition slips, payroll register, and the predetermined overhead rate
  - d) Materials requisition slips, time tickets, and the predetermined overhead rate
  - e) Materials requisition slips, time tickets, and the actual overhead rate

5. Halitosis Company completed job 45 at a cost of \$8,900 and later sold it for \$13,000 cash. Which one of the following is one effect of selling the job?
- a) Debit Accounts Receivable \$8,900
  - b) Credit Finished Goods Inventory \$8,900
  - c) Debit Finished Goods Inventory \$13,000
  - d) Debit Finished Goods Inventory \$8,900
  - e) Credit Work in Process Inventory \$8,900
6. What is unique about the flow of costs in a job order cost system?
- a) Each job is costed separately in a Work in Process subsidiary ledger.
  - b) It involves accumulating material, labour, and manufacturing overhead costs as they are incurred in order to determine the job cost.
  - c) There are no costs remaining in Work in Process at year end.
  - d) Job costs cannot be measured until all overhead costs are determined.
  - e) Job costs cannot be measured until all actual costs are determined.
7. The Wrapping Department's output during the period consists of 10,000 units completed and transferred out, and 600 units in ending work in process that were 60% complete as to materials and conversion costs. Beginning inventory was 800 units that were 40% complete as to materials and conversion costs. Under the FIFO method, what are the equivalent units of production for conversion costs?
- a) 10,210
  - b) 10,040
  - c) 11,010
  - d) 10,450
  - e) None of the above.
8. Chicotti Company has 3,000 units in beginning work in process, 20% complete as to conversion costs, 25,000 units transferred out to finished goods, and 1,000 units in ending work in process 80% complete as to conversion costs. How much are equivalent units for conversion costs if the FIFO method is used?
- a) 27,300
  - b) 25,200
  - c) 23,000
  - d) 24,300
  - e) None of the above.

9. Halston Company has no beginning work in process; 5,000 units are transferred out and 1,000 units in ending work in process are 75% finished as to conversion costs and fully complete as to materials cost. If materials added at the beginning of work in process and materials cost totals \$18,000, how much is the materials cost per unit?
- a) \$3.43
  - b) \$3.13
  - c) \$3.60
  - d) \$3.25
  - e) None of the above.
10. Which of the following items is **not** a characteristic of a process cost system?
- a) The focus is on continually producing similar products.
  - b) The products produced are heterogeneous in nature.
  - c) When the finished product emerges, all units have exactly the same amount of materials, labour, and overhead.
  - d) Once production begins, it continues until the finished product emerges.
  - e) None of the above.
11. Each of the following is a limitation of activity-based costing except that
- a) It can be expensive to use.
  - b) It is more complex than traditional costing.
  - c) More cost pools are used.
  - d) Some arbitrary allocations continue.
  - e) All of the above.
12. Which of the following is a value-added activity?
- a) Engineering design
  - b) Machinery repair
  - c) Inspections
  - d) Inventory storage
  - e) All of the above.
13. Which of the following is **not** a unit-level activity?
- a) Painting
  - b) Sewing
  - c) Assembling
  - d) Purchase ordering
  - e) Cutting

14. Which statement below describes a variable cost?

- a) It varies in total with changes in the level of activity.
- b) It varies inversely in total with changes in the level of activity.
- c) It remains constant in total over different levels of activity.
- d) It varies proportionately per unit with changes in the level of activity.
- e) All of the above

15. Which one of the following is a cost which remains constant in total at various levels of activity within the relevant range?

- a) A mixed cost
- b) A contribution margin
- c) A fixed cost
- d) A variable cost
- e) A step cost

**I PT for each question.**

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

## QUESTION II. 10 POINTS

Given for X firm (in millions of dollars).

Beginning and ending inventories	0
Sales	\$900
Direct materials used	80
Direct labour cost	300
Factory overhead	?
Selling and administrative expenses	?
Gross profit	120
Net income (no income taxes)	32

### Instructions

Calculate the following amounts (**in millions of dollars**) of: **2 Points for each question.**

- a. Cost of goods sold:
- b. Total factory overhead cost:
- c. Total period costs:
- d. Conversion cost:
- e. Cost of goods manufactured:

A. =	SALES	\$900	
	LESS CG SOLD	780	<b>1 PT</b>
	GROSS PROFIT	\$120	
	LESS Sell & Ad exp	88	<b>1 PT</b>
	Net income	\$ 32	

B. CG sold – prime costs=

**.5 PT + .5 Pt + 1 PT**

$$\$780 - (\$80 + \$300) = \$400$$

C. = Selling & Ad exp = \$88 **2 PTS**

**1 PT + 1 PT**

D. CC = DL + FOH = \$300 + \$400 = \$ 700

E. CG Manu = CG sold = \$780 **2 PTS**

### QUESTION III. 20 POINTS

Price-Gordon Architectural Consultants Ltd. uses a modified job-order costing system to keep track of project costs. During January 2008, the firm worked on four projects. The following table provides a summary of the cost of materials used and the number of consulting hours worked on each of the four projects in January:

<u>Project Number</u>	<u>Cost of Materials</u>	<u>Consulting Hours Worked</u>
80	\$1200	1240
84	1000	1360
85	2000	1480
86	1500	1750

The records for December showed that 60 hours had been worked and \$300 worth of materials had been used on Project 80.

Projects 80 and 86 were completed in January, and bills were sent to the clients.

Consultants at Price-Gordon billed clients at \$120 per consulting hour. The actual labour cost to the firm (based on salary cost) was \$40 per hour. Overhead is charged to projects based on the consultants' time spent on the project. Total overhead for the current fiscal year, based on expected activity of 10,000 consulting hours, was estimated to be \$300,000. This total overhead cost included a fixed portion of \$84,000, which covered rent, amortization, and so on. Actual overhead for January was \$180,000. Price-Gordon closes over-applied and under-applied overhead to Cost of Goods Sold at month end.

#### Instructions

- (a) Calculate the product costs for Project 80.
- (b) Calculate the balance in Work in Process as at January 31.
- (c) Prepare the income statement for January 2008, including the appropriate amount of over-applied or under-applied overhead. Other expenses for January were \$32,400.

- (a) The product costs for Project 80. **5 PTS**

DM \$1200 .5 PT+ \$300 .5 PT	\$ 1,500
DL (1240 hrs 5 PT + 60 hrs 5 PT) @ \$40 1 PT	\$52,000
FOH 1300 DLHRS(1240 hrs 5 PT + 60 hrs 5 PT) @ 1 PT \$30	<u>\$39,000</u>
Total	\$92,500

(b) The balance in Work in Process as at January 31. **4 PTS**

Job 84 + Job 85 =

DM	\$1,000 <b>.5 PT</b> + \$2,000 <b>.5 PT</b>	\$ 3,000
DL	(1,360 <b>.5 PT</b> + 1,480 <b>.5 PT</b> ) @ \$40 <b>5 PT</b>	\$113,600
FOH	(1,360 <b>.5 PT</b> + 1,480 <b>.5 PT</b> ) @ \$30 <b>5 PT</b>	<u>\$ 85,200</u>
		\$201,800

(c) Prepare the income statement for January 2008, including the appropriate amount of over-applied or under-applied overhead. Other expenses for January were \$32,400. **11 PTS**

Sales Job 80 + Job 86 (1,300 **.5 PT** + 1,750 **.5 PT**) @ \$120 **1 PT** = \$366,000

Less Cost of service sold (Job 80 + Job 86)

Job 80	\$ 92,500 <b>1 PT</b>	
Job 86		
DM	\$ 1,500 <b>1 PT</b>	
DL 1750 @ \$40 +	\$70,000 <b>1 PT</b>	
FOH 1750 @ 30	<u>\$52,500</u> <b>1 PT</b>	
	\$124,000) =	\$216,500

Plus under-applied FOH

(180,000 <b>1 PT</b> - 5,830 DL hr <b>2 PTS</b> @ \$30 <b>1 PT</b> )	<u>\$ 5,100</u>	<u>\$221,600</u>
Gross Profit		\$144,400
Less other expenses	<b>1 PT</b>	<u>\$ 32,400</u>
Net Income before tax		\$ 112,000



### QUESTION IV. 18 POINTS

The following information is for production activities in the refining department of Petro Pure Corporation. All units in work in process (WIP) were costed using the FIFO cost system.

Refining Department	Units	Percentage of Completion	Conversion Costs
WIP, February 1	23,000	70%	\$ 80,500
Units started and cost incurred during February	132,000		773,400
Units completed and transferred to the mixing department	130,000		
WIP, February 28	?	60%	?

#### Instructions

- (a) What was the conversion cost per equivalent unit of production last period?
- (b) What was the conversion cost per equivalent unit of production this period?
- (c) What was the conversion cost in the work in process inventory account at February 28?
- (d) What was the conversion cost per-unit of the units started last period and completed this period?
- (e) What was the conversion cost in the Units completed and transferred to the mixing department?

- (a) The conversion cost per equivalent unit of production last period **4 PTS**

Conversion costs last month **1 PT** \$80,500 /

Equival. unit of production last period 23,000 **1 PT** X 70% **1 PT** = 16,100 EQ

The CC per equivalent unit of production last period = **1 PT** \$5.00

- (b) The conversion cost per equivalent unit of production this period **5 PTS**

Total Costs \$773,400 **1 PT** /

Total equivalent units

(BI 23,000 X 30% = **1 PT** 6,900

+ S & TS = **1 PT** 107,000

+ EQ EI 25,000 X 60% ) = **1 PT** 15,000  
128,900

The conversion cost per equivalent unit of production this period =

Total Costs \$773,400 / 128,900 Total equivalent units = \$6.00 **1 PT**

- (c) The conversion cost in the work in process inventory account  
at February 28 **2 PTS**

EQ EI 25,000 X 60% ) = **1 PT** 15,000 @ **1 PT** \$6 = \$90,000

- (d) The conversion cost per-unit of the units started last period and completed this  
period **3 PTS**

(70% **.75** @ \$5.00 **.75** + 30% **.75** @ \$6.00 **.75**) = \$5.30

- (e) The conversion cost in the Units completed and transferred to the mixing  
department **4 PTS**

BI	<b>1 PT</b>	\$ 80,500
To complete BI	<b>.75 PT</b> 6,900 X \$6.00 <b>.75 PT</b>	\$ 41,400
S & TS	<b>.75 PT</b> 107,000 X \$6.00 <b>.75 PT</b>	<u>\$642,000</u>
Total		\$763,900



### QUESTION V. 17 POINTS

Stellar Stairs Co. designs and builds factory-made premium wooden staircases for homes. The manufactured staircase components (spindles, risers, hangers, handrails) permit installations of staircases of varying lengths and widths. All are of white oak. The company's budgeted manufacturing overhead costs for the year 2003 were as follows.

<b><u>Overhead Cost Pools</u></b>	<b><u>Amount</u></b>
Purchasing	\$ 57,000
Handling materials	82,000
Production (cutting, milling, finishing)	210,000
Setting up machines	85,000
Inspecting	90,000
Inventory control (raw materials and finished goods)	126,000
Utilities	200,000
Total budgeted overhead costs	<u><u>\$850,000</u></u>

For the last 4 years, Stellar Stairs Co. has been charging overhead to products on the basis of machine hours. For the year 2006, 100,000 machine hours are budgeted. Heather Fajar, owner-manager of Stellar Stairs Co., recently directed her accountant, Lindsay Baker, to implement the activity-based costing system that she has repeatedly proposed. At Heather Fajar's request, Lindsay and the production foreman identify the following cost drivers and their usage for the previously budgeted overhead cost pools.

<b><u>Overhead Cost Pools</u></b>	<b><u>Activity Cost Drivers</u></b>	<b><u>Expected Use of Cost Drivers</u></b>
Purchasing	Number of orders	600
Handling materials	Number of moves	8,000
Production (cutting, milling, finishing)	Direct labour hours	100,000
Setting up machines	Number of setups	1,250
Inspecting	Number of inspections	6,000
Inventory control (raw materials and finished goods)	Number of components	168,000
Utilities	Square feet occupied	100,000

Jason Dion, sales manager, has received an order for 280 staircases from Community Builders, Inc., a large housing development contractor. At Jason's request, Lindsay prepares cost estimates for producing components for 280 staircases so Jason can submit a contract price per staircase to Community Builders. She accumulates the following data for the production of the staircases.

Direct materials	\$128,750
Direct labour	\$112,000
Machine hours	14,500
Direct labour hours	5,000
Number of purchase orders	60
Number of material moves	800
Number of machine setups	100
Number of inspections	450
Number of components	16,000
Number of square feet occupied	8,000

Required:

1. Calculate the predetermined overhead rate using traditional costing with machine hours as the basis.
2. What is the manufacturing cost per stairway under traditional costing?
3. What is the manufacturing cost per stairway under the proposed activity-based costing?

(a) Predetermined overhead rate using machine hours: **2 PTS**

\$850,000 / 100,000 hrs. = **\$8.50** per machine hour **2 PTS**

(b) Manufacturing cost per stair under traditional costing: **4 PTS**

Direct materials	<b>.5 PT</b>	\$128,750
Direct labour	<b>.5 PT</b>	112,000
Overhead (14,500 X \$8.50)	<b>2 PTS</b>	123,250
Total cost of 280 stairs		<u>\$364,000</u>
Cost per stair (\$364,000 / 280)	<b>1 PT</b>	<u>\$1,300</u>

(c) (c) Manufacturing cost per stair under activity-based costing: **11 PTS**

Calculation of Activity-Based Overhead Rate			
<u>Activity Cost Pools</u>	<u>Estimated Overhead</u>	<u>Expected Use of Cost Drivers per Activity</u>	<u>= Activity-Based Overhead Rate</u>
Purchasing	\$ 57,000	600 Orders	<b>.5 PT</b> \$95 per order
Handling materials	82,000	8,000 Moves	<b>.5 PT</b> \$10.25 per move
Production	210,000	100,000 D/L Hours	<b>.5 PT</b> \$2.10 per D/L hour
Setting up machines	85,000	1,250 Setups	<b>.5 PT</b> \$68 per setup
Inspecting	90,000	6,000 Inspections	<b>.5 PT</b> \$15 per inspection
Inventory control	126,000	168,000 Components	<b>.5 PT</b> \$0.75 per component
Utilities	200,000	100,000 Sq. ft.	<b>.5 PT</b> \$2.00 per sq. ft
	<u>\$850,000</u>		

Assignment of Overhead to Order of 280 Stairs				
<u>Activity Cost Pools</u>	<u>Expected Use of Cost Drivers</u>	<u>X</u>	<u>Activity-Based Overhead Rate</u>	<u>Cost Assigned</u>
Purchasing	60 Orders		\$95.00	<b>.5 PT</b> \$5,700
Handling materials	800 Moves		\$10.25	<b>.5 PT</b> 8,200
Production	5,000 D/L Hours		\$2.10	<b>.5 PT</b> 10,500
Setting up machines	100 Setups		\$68.00	<b>.5 PT</b> 6,800
Inspecting	4500 Inspections		\$15.00	<b>.5 PT</b> 6,750
Inventory control	16,000 Components		\$0.75	<b>.5 PT</b> 12,000
Utilities	80,000 Sq. ft.		\$2.00	<b>.5 PT</b> 16,000
Total overhead assigned				<u>\$65,950</u>

Total manufacturing cost per stair under ABC:

Direct materials	.5 PT \$ 128,750
Direct labour	.5 PT 112,000
Overhead	1 PT 65,950
Total cost of 280 stairs	<u>\$ 306,700</u>
 Total cost per stair (\$306,700 / 280)	 <u>2 PTS \$1,095.36</u>

### QUESTION VI-A. 5 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	60%	\$20
Chainsaws	10%	\$40

Grass King has fixed costs of \$400,000.

#### Instructions

Calculate the number of units of each product that Grass King must sell in order to break even under this product mix. **5 PTS**

$$\text{TCM} = \text{Lawn M } .3 \times \$30 + \text{Weed-T } .6 \times \$20 + \text{Chainsaws } .1 \times \$40 = \$25 \text{ **2 PTS**}$$

$$\text{BE } \$FC \ 400,000 / \$25 = 16,000 \text{ units **1.5 PT**}$$

$$\text{Lawn Mowers } 16,000 \times 30\% = 4,800 \text{ units **.5 PT**}$$

$$\text{Weed-Trimmers } 16,000 \times 60\% = 9,600 \text{ units **.5 PT**}$$

$$\text{Chainsaws } 16,000 \times 10\% = 1,600 \text{ units **.5 PT**}$$



### QUESTION VI-B. 15 POINTS

Boisclair Company bottles and distributes LO-KAL, a fruit drink. The beverage is sold for \$1.00 per 500-ml bottle to retailers, who charge customers \$1.29 per bottle. Management estimates the following revenues and costs:

Net sales	\$2,500,000	Selling expenses—variable	\$ 90,000
Direct materials	360,000	Selling expenses—fixed	200,000
Direct labour	650,000	Administrative expenses—variable	30,000
Manufacturing overhead—variable	370,000	Administrative expenses—fixed	140,000
Manufacturing overhead— fixed	260,000		

#### *Instructions*

- (a) Prepare a CVP income statement for 2007 based on management's estimates.
- (b) Calculate the break-even point in (1) units and (2) dollars.
- (c) Calculate the contribution margin ratio and the margin of safety ratio.
- (d) Determine the sales required to earn a net income of \$240,000 before tax assuming the tax rate is 40%.

(a) 5 PTS

Net sales .....			.5 PT	\$2,500,000
Less: Variable costs				
Cost of goods sold	1.5 PTS	\$1,380,000*		
Selling expenses	.5 PT	90,000		
Administrative expenses	.5 PT	30,000		
Total variable expenses .....				<u>1,500,000</u>
Contribution margin .....				\$1,000,000
Less: Fixed costs				
Cost of goods sold .....	.5 PT	\$260,000		
Selling expenses .....	.5 PT	200,000		
Administrative expenses .....	.5 PT	140,000		<u>600,000</u>
Net Income			.5 PT	\$400,000

*Direct materials	\$360,000
+ direct labour	\$650,000
+ Variable manufacturing overhead	\$370,000. \$1,380,000

b) 5 PTS

**2 PTS** Variable costs = 60% of sales ( $\$1,500,000 \div \$2,500,000$ ) or \$0.60 per bottle ( $\$1.00 \times 60\%$ ). Total fixed costs = \$600,000.

(1)  $\$1.00Q = \$0.60Q + \$600,000$   
 $\$0.40Q = \$600,000$   
 $Q = 1,500,000$  units (break-even) **2 PTS**

(2)  $1,500,000 \times \$1.00 = \$1,500,000$  **1 PT**

(c) 2 PTS

$$\text{Contribution margin ratio} = (\$1.00 - \$0.60) \div \$1.00 = 40\% \text{ 1 PT}$$

Margin of safety ratio =  $(\$2,500,000 - \$1,500,000) \div \$2,500,000$   
= 40% **1 PT**

(d) **3 PTS**

$$\begin{array}{ccccc} \text{Required sales} & & \text{Fixed Costs +} & & \text{Contribution} \\ \text{in dollars} & = & \text{Target Net Income} & \div & \text{Margin Ratio} \end{array}$$

$$\$2,100,000 = (\$600,000 \text{ **1 PT**} + \$240,000 \text{ **1 PT**}) / .40 \text{ **1 PT**}$$