

**MID TERM EXAMINATION**

**FALL 2006**

**PLEASE READ THIS PAGE – IT CONTAINS IMPORTANT INFORMATION**

1. This examination will last Three **(3)** hours and consists of Five **(5)** Questions printed on Nine **(9)** 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. In front of the booklet place the number associated to the order in which they are done.
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 and calculations 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.
7. When you have finished submit your exam booklet(s) and this questionnaire. Please enumerate your exam booklets.

| Question | Topic                           | Marks |
|----------|---------------------------------|-------|
| 1        | Multiple-choice                 | 22.5  |
| 2        | Activity costing                | 17.5  |
| 3        | Job cost and manufacturing cost | 20    |
| 4        | Process costing                 | 20    |
| 5        | CVP analysis                    | 20    |
|          | Total                           | 100   |

**QUESTION 1. (22.5, 15 multiple choice questions 1.5 marks each) 40 minutes**

Choose the best answer for each of the following. Write your answer only in the lined booklet that has been provided to you separately.

1. Ed Green Corporation has two divisions; Outdoor Sports and Indoor Sports. The sales mix is 60% for Outdoor Sports and 40% for Indoor Sports. Green incurs \$2,420,000 in fixed costs. The contribution margin ratio for the Outdoor Sports Division is 40%, while for the Indoor Sports Division it is 50%.

The breakeven point in dollars is:

- a. \$985,600.
  - b. \$4,869,565.
  - c. \$4,977,777.
  - d. \$5,500,000.
  - e. None of the above.
2. 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
  - e. None of the above.
3. Phi Kappa is planning to hold a seminar for students at the University Centre. It has two options:
- OPTION 1: Fixed rental cost of \$1,000 and \$12 per person for books  
or  
OPTION 2: Fixed rental cost of \$3,000 and \$8 per person for books
- Tickets will be \$5 per student. Other items will be donated by recruiters wishing to network with students. Which option will cause the biggest loss if very few students attend?
- a. Option 1
  - b. Option 2
  - c. Both options provide the same amount of risk.
  - d. Neither option has risks.
  - e. None of the above.
4. Cohen Manufacturing is trying to determine the equivalent units for conversion costs with 2,000 units of ending work in process at 80% completion and 14,000 units were started and are 100% complete as to materials. There are no beginning units in the department. The conversion costs occur evenly throughout the entire production period. What are the equivalent units for conversion costs for the current period if the weighted average method is used?
- a. 16,000
  - b. 15,600
  - c. 1,600
  - d. 13,600
  - e. None of the above.

Use the following for number 5 and 6.

Poodle Company manufactures two products, Mini A and Maxi B. Poodle's overhead costs consist of setting up machines, \$800,000; machining, \$1,800,000; and inspecting, \$600,000. Information on the two products is:

|                     | <u>Mini A</u> | <u>Maxi B</u> |
|---------------------|---------------|---------------|
| Direct labour hours | 15,000        | 25,000        |
| Machine setups      | 600           | 400           |
| Machine hours       | 24,000        | 26,000        |
| Inspections         | 800           | 700           |

5. Overhead applied to Mini A using traditional costing using direct labour hours is
- \$1,200,000.
  - \$1,536,000.
  - \$1,670,000.
  - \$1,920,000.
  - None of the above.
6. Overhead applied to Mini A using activity-based costing is
- \$1,200,000.
  - \$1,536,000.
  - \$1,664,000.
  - \$1,920,000.
  - None of the above.
7. Halston Company has no beginning work in process; 5,000 units are transferred out and 1,000 units in ending work in process are 25% finished as to conversion costs and fully complete as to materials cost. If materials added and beginning work in process materials cost totals \$18,000, how much is the materials cost per unit if the weighted average method is used?
- \$3.00
  - \$3.43
  - \$3.13
  - There is not enough information provided.
  - None of the above.
8. The following monthly data are available for Wackadoos, Inc. which produces only one product: Selling price per unit, \$42; Unit variable expenses, \$14; Total fixed expenses, \$42,000; Actual sales for the month of June, 4,000 units. How much is the margin of safety for the company for June?
- \$70,000
  - \$105,000
  - \$63,000
  - \$2,500
  - None of the above.

9. What transaction is recorded when direct labour is assigned to jobs?
- A debit to Work in Process Inventory and a credit to Factory Labour
  - A debit to Manufacturing Overhead and a credit to Factory Labour
  - A debit to Factory Labour and a credit to Manufacturing Overhead
  - A debit to Factory Labour and a credit to Work in Process Inventory
  - None of the above.

10. Hooter Manufacturing Company reported the following year-end information:

|                                     |          |
|-------------------------------------|----------|
| Beginning work in process inventory | \$23,000 |
| Beginning raw materials inventory   | 12,000   |
| Ending work in process inventory    | 25,000   |
| Ending raw materials inventory      | 10,000   |
| Raw materials purchased             | 340,000  |
| Direct labour                       | 120,000  |
| Manufacturing overhead              | 50,000   |

How much is Hooter Manufacturing's cost of goods manufactured for the year?

- \$342,000
  - \$512,000
  - \$510,000
  - \$514,000
  - None of the above.
11. Wind Mill Company had the following department data:

|  |        |
|--|--------|
| Work in process, physical units, August 1    | 6,000  |
| Completed and transferred out physical units | 25,000 |
| Work in process, physical units, August 31   | 9,000  |

Materials are added at the beginning of the process. What is the total number of equivalent units for materials in August if the weighted average method is used?

- 27,000
- 30,000
- 34,000
- 42,000
- None of the above.

Use the following information for questions 12–13.

| <u>Month</u> | <u>Miles</u> | <u>Total Cost</u> |
|--------------|--------------|-------------------|
| March        | 60,000       | \$47,500          |
| April        | 70,000       | 51,500            |
| May          | 50,000       | 41,500            |
| June         | 80,000       | 50,500            |

12. In applying the high-low method, how much is the variable cost per unit?
- \$0.30
  - \$0.335
  - \$0.50
  - Cannot be determined from the information given.
  - None of the above.

13.. In applying the high-low method, how much is the total cost for 40,000 miles ?

- a. \$16,500
- b. \$9,000
- c. \$38,500
- d. \$15,000
- e. None of the above.

14. Caltreck Manufacturing Inc.'s accounting records reflect the following inventories:

|                           | <u>Dec. 31, 2005</u> | <u>Dec. 31, 2006</u> |
|---------------------------|----------------------|----------------------|
| Raw materials inventory   | \$100,000            | \$ 80,000            |
| Work in process inventory | 130,000              | 145,000              |
| Finished goods inventory  | 125,000              | 115,000              |

During 2006, Caltreck purchased \$950,000 of raw materials, incurred direct labour costs of \$125,000, and incurred manufacturing overhead totalling \$160,000.

How much is raw materials transferred to production during 2006 for Caltreck Manufacturing?

- a. \$1,240,000
- b. \$970,000
- c. \$950,000
- d. \$930,000
- e. None of the above.

15. Cal, Inc. showed the following amounts in its manufacturing overhead account at the end of 2006:

| <u>Manufacturing Overhead</u> |        |
|-------------------------------|--------|
| 20,000                        | 55,000 |
| 16,000                        |        |
| 22,000                        |        |

Based on this information, which statement is true?

- a. No manufacturing overhead has been applied.
- b. Manufacturing overhead expense will be reported in the operating section of the income statement in the amount of \$3,000.
- c. Manufacturing overhead has been over applied.
- d. Manufacturing overhead has been under applied
- e. None of the above.

**QUESTION 2. (17.5 Marks) (35 minutes)**

Willow Company produces lawn mowers. One of its plants produces two versions of mowers: a basic model and a deluxe model. The deluxe model has a sturdier frame, a higher-horsepower engine, a wider blade, and mulching capability. At the beginning of the year, the following data was prepared for this plant:

|   | <b>Basic Model</b> | <b>Deluxe Model</b> |
|---|--------------------|---------------------|
| Expected quantity                           | 40,000             | 20,000              |
| Selling price                               | 180                | 360                 |
| Prime costs                                 | 80                 | 160                 |
| Machine hours                               | 5,000              | 5,000               |
| Direct labour hours                         | 10,000             | 10,000              |
| Engineering support (hours)                 | 1500               | 4,500               |
| Receiving (orders processed)                | 250                | 500                 |
| Material handling (number of moves)         | 2,000              | 4,000               |
| Purchasing (number of requisitions)         | 100                | 200                 |
| Maintenance (hours used)                    | 1,000              | 3,000               |
| Quality inspections (number of inspections) | 250                | 500                 |
| Setting up batches (number of set ups)      | 20                 | 60                  |

Additionally, the following overhead activity costs are reported:

|                       |               |
|-----------------------|---------------|
| Maintaining equipment | \$ 114,000    |
| Engineering support   | 120,000       |
| Material handling     | 20,000        |
| Setting up equipment  | 96,000        |
| Purchasing material   | 60,000        |
| Receiving goods       | 40,000        |
| Quality inspections   | 30,000        |
| Providing space       | <u>20,000</u> |
| Total                 | \$500,000     |
|                       | =====         |

Overhead activity costs are allocated in proportion to machine hours (an approach that provides a measure of the time the facility is used by each product).

**Instructions:**

1. Calculate the cost per unit for each product using machine hours to assign all overhead costs. (3.5 marks)
2. Calculate the cost per unit for each product using activity costing.(10 marks)
3. Compare these costs in number 2 with those calculated using functional-based costing in number 1. Which cost is the most accurate? Explain. (4 marks)

**QUESTION (3) (20 marks) ( 35 minutes)**

Noller Inc. produces customized Equipment for retailers. John Smith, the controller uses normal costing system to prepare its financial statements. He applies overhead at the rate of \$15 per direct labour hour and closes over-applied or under-applied overhead into cost of goods sold at the end of the year.

The company's inventory accounts at the beginning of the year 2004 included \$89,000 of direct materials in the storage room and \$35,000 of finished goods in the warehouse. At the beginning of 2004, Noller Inc. did not have any work in process, but during the year they started three new Jobs. Actual data and costs for each job incurred during the year 2004 are as follows:

|  | <u>Special order<br/>Job#1</u> | <u>Special Order<br/>Job#2</u> | <u>Special Order<br/>Job#3</u> |
|--|--------------------------------|--------------------------------|--------------------------------|
| Number of equipments                       | 2 equipments                   | 4 equipments                   | 2 equipments                   |
| Direct material costs <u>per</u> equipment | \$150,000                      | \$86,500                       | \$45,000                       |
| Direct labour hours <u>per</u> equipment   | 10,000 hours                   | 4,375 hours                    | 1,000 hours                    |
| Direct labour costs <u>per</u> equipment   | \$100,000                      | \$66,000                       | \$10,000                       |

The following costs were incurred during the year 2004:

|                                    |            |
|------------------------------------|------------|
| Administrative expenses            | \$ 200 000 |
| Purchases direct materials         | \$ 731 000 |
| Property Taxes on factory          | \$ 90 000  |
| Administrative office rent         | \$ 25 000  |
| Indirect material used             | \$ 45 000  |
| Depreciation on factory building   | \$125 000  |
| Sales commission expense           | \$ 69 000  |
| Depreciation on factory equipment  | \$ 60 000  |
| Indirect materials used            | \$ 45 000  |
| Insurance on factory and equipment | \$ 40,000  |
| Utilities for factory              | \$ 70,000  |
| Indirect labour cost incurred      | \$150,000  |
| Factory maintenance                | \$ 29,000  |

In addition, during the year 2004 the following events occurred:

- Both Special orders Job #1 and Job #2 were completed and sold with a 50% mark up.
- Special Order Job # 3 remained in work in process.

**Required:**

- a) Prepare job-order costs for each job #1, #2, and #3 for 2004. (5 marks)
- b) Prepare Noller Inc.'s formal statement of cost of goods manufactured for 2004. (9 marks)
- c) Prepare Noller's Inc. income statement for 2004. (Assume no income taxes) (6 marks)

**QUESTION 4 (20 marks) ( 35 minutes)**

The Lester Change Manufacturing Company paints wood-imported products. The following are the production data for July:

| Work in Process—Painting |    |           |       |                         |
|--------------------------|----|-----------|-------|-------------------------|
| July                     | 1  | Balance   | 4,450 | July 31 Transferred out |
|                          | 31 | Materials | 6,100 |                         |
|                          | 31 | Labour    | 2,500 |                         |
|                          | 31 | Overhead  | 1,650 |                         |
|                          | 31 | Balance   | ?     |                         |

Production records show that there were 700 units in the beginning inventory, 30% complete; 1,100 units started; and 1,300 units transferred out. The beginning work in process had materials costs of \$2,900 and conversion costs of \$1,550. The units in ending inventory were 40% complete. Materials are entered at the beginning of the painting process.

**Required: using the FIFO method calculate the following:**

- (a) How many units are in process at July 31? ( 2 marks)
- (b) What is the unit materials cost for July? ( 3 marks)
- (c) What is the unit conversion cost for July? ( 3 marks)
- (d) What is the total cost of units transferred out in July? ( 3 marks)
- (e) What is the cost of the July 31 inventory? ( 3 marks)
- (f) What were the conversion costs per equivalent unit of production last period and this period? ( 3 marks)
- (g) What was the per-unit conversion cost of the units started last period and completed this period? ( 3 marks)



**Question 5 A ( 11 marks) ( 20 minutes)**

Lane Company produces and sells an economy line of ski parkas. The budgeted income statement for the coming year is as follows:

|                         |                  |
|-------------------------|------------------|
| Sales                   | \$450,000        |
| Less: Variable expenses | <u>202,500</u>   |
| Contribution margin     | \$247,500        |
| Less: Fixed expenses    | <u>90,000</u>    |
| Operating income        | \$157,500        |
| Less: Taxes             | <u>47,250</u>    |
| Net Income              | <u>\$110,250</u> |

Required:

1. What is Lane's variable-cost ratio? What is its contribution margin ratio? (2 marks)
2. Suppose Lane's actual sales revenues increase by \$45,000 . By how much will operating income before taxes increase? Give the answer without preparing a new income statement. (2 marks)
3. How much sales revenue must Lane earn in order to breakeven? What is the expected margin of safety in dollars? (2 marks)
4. How much sales revenue must Lane generate to earn an operating income before tax of \$75,000? (2 marks)
5. How much sales revenue must Lane generate to earn an after-tax profit of \$63,000? Prepare a contribution income statement to verify the accuracy of your answer. ( 3 marks)

**Question 5 B (9 marks) ( 15 minutes)**

Parker Pottery produces a line of vases and a line of ceramic figurines. Each line uses the same equipment and labour; hence, there are no traceable fixed costs. Common fixed costs equal \$300,000. Parker's accountant has begun to assess the profitability of the two lines and has gathered the following data for last year:

|                                | Vases      | Figurines  |
|--------------------------------|------------|------------|
| Sales                          | \$ 400 000 | \$ 420 000 |
| Unit sales price               | \$ 40      | \$ 70      |
| Unit variable costs            | \$ 30      | \$ 42      |
| Unit contribution margin in \$ | \$ ?       | \$ ?       |
| Sales mix                      | ?          | ?          |

Required:

1. Calculate the break even points in units . (4.5 marks)
2. Parker Pottery is considering upgrading its factory to improve the quality of its product. If the upgrade (additional fixed cost of \$50 000) is successful, the projected sales of vases will be an additional \$ 200 000 sales and Figurines will be increased by \$140 000. What is the new breakeven point in units for each of the products? What do you recommend? (4.5 marks)



√√ means 1 mark

√ means ½ mark

## QUESTION 1

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

**QUESTION 2****Instruction 1: 3.5 marks**

|              |           |                      |                        |                  |                   |  |
|--------------|-----------|----------------------|------------------------|------------------|-------------------|--|
| Est OH       | 500000    |                      |                        |                  |                   |  |
| Est Mach hrs | 10000     | OH rate              | \$50.00 per Mach hrs ✓ | <b>Basic</b>     | <b>Deluxe</b>     |  |
| Basic        | 5000x\$50 | 250000/40000 units ✓ | OH                     | ✓\$6.25          | ✓\$12.50          |  |
| Deluxe       | 5000X50   | 250000/20000 units ✓ | Prime costs            | \$80.00          | \$160.00          |  |
|              |           |                      |                        | ✓ <b>\$86.25</b> | ✓ <b>\$172.50</b> |  |

**Instruction 2 (10 marks)**

1 mark for table or Equation set up

| Activity              | Driver                 | Basic Model | Deluxe model | Total costs | Total activity | Cost per activity | Basic            | Deluxe            |
|-----------------------|------------------------|-------------|--------------|-------------|----------------|-------------------|------------------|-------------------|
| Maintaining equipment | hours used             | 1000        | 3000         | \$114,000   | 4000           | ✓\$28.50          | \$28,500.00      | \$85,500.00       |
| Engineering support   | hours                  | 1500        | 4500         | \$120,000   | 6000           | ✓\$20.00          | \$30,000.00      | \$90,000.00       |
| Material Handling     | number of moves        | 2000        | 4000         | \$20,000    | 6000           | ✓\$3.33           | \$6,660.00       | \$13,320.00       |
| Setting up equipment  | number of set up s     | 20          | 60           | \$96,000    | 80             | ✓\$1,200.00       | \$24,000.00      | \$72,000.00       |
| Purchasing material   | Number of requisitions | 100         | 200          | \$60,000    | 300            | ✓\$200.00         | \$20,000.00      | \$40,000.00       |
| Receiving goods       | Orders processed       | 250         | 500          | \$40,000    | 750            | ✓\$53.33          | \$13,325.00      | \$26,650.00       |
| Inspection            | Number of inspections  | 250         | 500          | \$30,000    | 750            | ✓\$40.00          | \$10,000.00      | \$20,000.00       |
| Providing space       | Machine hours          | 5000        | 5000         | \$20,000    | 10000          | ✓\$2.00           | \$10,000.00      | \$10,000.00       |
|                       |                        |             |              |             |                |                   | ✓\$142,485.00    | ✓\$357,470.00     |
|                       |                        |             |              |             |                |                   | 40,000           | 20,000            |
| OH cost per product   |                        |             |              |             |                |                   | ✓\$3.56          | ✓\$17.87          |
| Prime costs           |                        |             |              |             |                |                   | \$80.00          | \$160.00          |
|                       |                        |             |              |             |                |                   | ✓ <b>\$83.56</b> | ✓ <b>\$177.87</b> |

1 mark for table or equation format in calculations

**Instruction 3: (4 marks)**

Compare 86 vs 83 and 172 vs 178 – not much difference but :

Any two points : 1 mark each

Activity costing provides the most precise allocation

The ABC costs are more accurate (better tracing-closer representation of actual resource consumption).

This shows that the basic model was over costed and the deluxe model under costed when the plant wide overhead rate was used.

Activity costing Leads to better cost pools

and Leads to better control over overhead costs

and to better management decisions

When the manufacturing process changes, activity offers a better allocation

QUESTION 3

Job cost Problem and Manufacturing Statement

| A. 5 marks | Job 1      | Job 2      | Job 3     |           |
|------------|------------|------------|-----------|-----------|
|            | 2          | 4          | 2         | Total     |
| Equipments |            |            |           |           |
| DM         | √\$300,000 | √\$346,000 | √\$90,000 | \$736,000 |
| DL         | √\$200,000 | √\$264,000 | √\$20,000 | \$484,000 |
| OH         | √\$300,000 | √\$262,500 | √\$30,000 | \$592,500 |
|            | \$800,000  | \$872,500  | \$140,000 |           |
| √          | CGS        | CGS        | WIP       |           |

B. 9 marks

Manufacturing Statement  
Dec 31st 2004

|                            |                |               |
|----------------------------|----------------|---------------|
| Beg WIP                    |                | \$0           |
| DM                         |                |               |
| Beg Inv.                   | √89000         |               |
| Purchases                  | √731000        |               |
| Goods available            | 820000         |               |
| Less: Ending Inv           | √84000         |               |
| Cost of materials used     | 736000         | √\$736,000    |
| DL                         |                | √√\$484,000   |
| OH                         |                |               |
| Total actual OH costs **** | 3 MARKS 609000 |               |
| Less Under applied OH      | √√16500        | \$592,500     |
|                            |                | √√\$1,812,500 |
| Less: Ending WIP           |                | √-\$140,000   |
| Cost of goods manufactured |                | √\$1,672,500  |

\*\*\*\*Students should add the undernoted OH costs to determine the actual costs:

3 MARKS OVERALL –MAXIMUM FOR THIS

|                                   |        |
|-----------------------------------|--------|
| Property taxes on factory         | 90000  |
| Indirect materials                | 45000  |
| Insurance on factory equipment    | 40000  |
| Utilities for factory             | 70000  |
| Indirect labour cost incurred     | 150000 |
| Factory maintenance               | 29000  |
| Depreciation on factory equipment | 60000  |
| Depreciation on factory building  | 125000 |

c. 6 MARKS Income Statement

Jan 1 st to Dec 31st 2004

|                                 |             |               |
|---------------------------------|-------------|---------------|
| Sales                           |             | √√\$2,508,750 |
| Less: Cost of goods sold        |             |               |
| Beg Inv                         | √35000      |               |
| Plus Cost fo goods manufactured | \$1,672,500 |               |
| Goods available                 | 1707500     |               |
| Less ending inventory           | 35000       | \$1,672,500   |
| Adj: Under applied OH           |             | √√\$16,500    |
| Cost of goods sold              |             | 1,689,000     |
| Gross profit                    |             |               |
| Expenses                        |             | 819 750\$     |
| Administrative expenses         | √200000     |               |
| Administrative office rent      | √25000      |               |
| Sales commission expenses       | √69000      |               |
| Net Income                      |             | \$525 750     |

## QUESTION 4

**A- 2 PTS,**

**B – G 3PTS each**

|            |                             |                  |                    |              |            |            |            |      |
|------------|-----------------------------|------------------|--------------------|--------------|------------|------------|------------|------|
| 1-Q        | QUANTITIES                  |                  | Units              | 2-E          | Equivalent |            |            |      |
|            |                             |                  |                    |              | Mat added  | Conv Added |            |      |
|            | WIP beg (IN)                |                  | 700                |              |            |            |            |      |
|            | Started                     |                  | 1100               |              |            |            |            |      |
|            | Total                       |                  | 1800               |              |            |            |            |      |
|            | Accounted for (OUT):        |                  |                    |              |            |            |            |      |
|            | Transferred out             |                  |                    |              | Added      |            | Added      |      |
|            | 1)WIP beg (IN)              |                  | 700                |              | 0%         | 0          | 490        | 70%  |
|            | 2)Started and completed     |                  | 600                |              | 100%       | 600        | 600        | 100% |
|            | 3)WIP end                   |                  | (A) 500            |              | 100%       | 500        | 200        | 40%  |
| Total      |                             | 1800             |                    | 1100         | 1290       |            |            |      |
| 3-C        | COSTS                       |                  |                    |              | Mat        | Conv       | Total      |      |
|            | Costs                       |                  |                    | During month | 6100       | 4150       | 10250      |      |
|            | Eq units                    |                  |                    | costs        | 1100       | 1290       |            |      |
|            | Per unit                    |                  |                    |              | (B) 5.5455 | (C) 3.2171 | 8.7625     |      |
|            | Accounted for:              |                  |                    |              |            |            |            |      |
|            | WIP                         |                  |                    |              |            |            | 4450       |      |
|            | Started in prod             |                  |                    |              |            |            | 10250      |      |
|            | Total                       |                  |                    |              |            |            | 14700      |      |
|            |                             |                  |                    |              |            |            |            |      |
|            |                             |                  |                    |              |            |            |            |      |
| 4-R        | RECONCILIATION              |                  |                    |              |            |            |            |      |
|            | Accounted for :             |                  |                    |              |            |            |            |      |
|            | Tr out                      |                  |                    |              |            |            |            |      |
|            | 1)WIP at beg                |                  | Given              |              |            |            | 4,450      |      |
|            | + Added costs to complete   |                  | 490 units x 3.2171 |              |            |            | 1,576      |      |
|            | Total costs                 |                  |                    |              |            |            | 6,026      |      |
|            | 2) started and completed    |                  | 600 units x 8.7625 |              |            |            | 5,258      |      |
|            | Total costs transferred out |                  |                    |              |            |            | (D) 11,284 |      |
|            | 3) WIP end                  |                  | 500 units          |              |            |            |            |      |
|            | Mat                         |                  | Mat 500x 5.5455    |              |            | 2,773      |            |      |
| Conv costs |                             | Conv 200x 3.2171 |                    |              | 643        | (E) 3,416  |            |      |
| Total      |                             |                  |                    |              |            | *14,700    |            |      |

\*If students use 2 decimals they have a \$ 4.00 variance ( 14704 rather than 14700)

- A.  $500 \text{ u} = 700 + 1100 - 1300$  2 marks
- B.  $5.55 = \$6100 / 1100 \text{ u}$  3 marks
- C.  $3.22 = \$2,500 + \$1,650 / 1,290 \text{ u}$  3 marks
- D.  $11,284 = 4,450 + (490 \times 3.22 = 1578) + (600 \times (5.55 + 3.22) = 5262)$  3 marks
- E. July 31<sup>st</sup> WIP ending \$ 3416 ( mat 2773 + 643 conv)  $\sqrt{\sqrt{\sqrt{\phantom{x}}}}$
- F. Conversion costs this period, =  $\$4,150 / 1290 = 3.2171 \sqrt{\sqrt{\phantom{x}}}$   
Conversion costs prior period \$ 1550  $\sqrt{\phantom{x}} / (700 \times .30 \text{ eq units}) \sqrt{=} 7.3809 \sqrt{\phantom{x}}$
- G. Units started last period and completed this period 600 units with per unit conversion cost  
 $(\$3.2171 \times 70\%) + (\$7.3809 \times 30\%) = \$4.466$  ( 3 marks)  
Or  
 $(\$1,550 + \$1,576) / 700 = \$4.466$

QUESTION 5

Part A ( 11 marks)

1. 2 PTS  
Variable cost ratio: \$ 202,500/ \$450,000= .45✓✓  
Contribution margin : \$247,500/ \$ 450 000= .55✓✓
2. CM X increase in sales = 55% X \$45,000 = \$24,750 2 PTS
3. 2 PTS  
Break even revenue = \$ 90 000 / .55= \$ 163, 636 ✓✓  
Margin of safety : \$ 450 000 less \$ 163,636 = \$ 286,364 ✓✓
4. 2 PTS  
Revenue = (\$90 000+ 75 000)/ .55✓✓  
Sales Revenue = \$ 300,000✓✓
5. 3 PTS  
Before tax income = \$ 63 000/ ( 1-.3) = \$ 90 000✓✓  
Tax Rate = \$ 47 250/ \$ 157, 500 = .30 ✓✓  
Revenue = ( \$ 90 000 + \$90 000) / .55 = \$ 327, 273✓✓

|                                    |                      |
|------------------------------------|----------------------|
| Sales                              | \$ 327, 273          |
| Variable Costs (\$ 327, 273 * 45%) | <u>\$ 147,272.85</u> |
| Contribution Margin                | \$180,000.15         |
| Fixed <u>Costs</u>                 | <u>\$90,000</u>      |
| Net Income                         | \$90,000             |
| Income Tax 30%                     | <u>\$27,000</u>      |
| Net Income after tax               | \$63,000             |

Part B (9 marks)

1. 4.5 PTS

Calculate the break even points in UNITS for the company.

Sales mix \$400,000 / \$40 = 10,000 units Vases  
\$420,000 / \$70 = 6,000 units Figurines

CM Vases SP \$40 – VC \$30 =\$ 10  
Figurines \$70 - \$42 = \$28✓

STUDENTS CAN APPROACH THIS QUESTION IN TWO WAYS:

10 000 vases / 16000 overall units = .625  
6000 Figurines / overall units = .375

(.625 x \$ 10 CM per Vase) + (.375 x \$ 28.00 CM per Figurines ) = \$16.75

Calculate the break even point in units:

Fixed cost \$ 300,000 / \$16.75 = 17, 910  
The question did not stipulate precisely the BE units per product line.  
Students may have added  
17910 x .625 = vases = 11,195  
17 910 x .375 = figurines= 6,716

**OR**

The company sells 5 vases for every 3 figurines

Weighted average contribution margin per unit:

$$\text{CM X sales mix} = \$10 \times 5 + \$28 \times 3 = 134 \text{ per basket}$$

$$\text{Break-even} = \$300\,000 \div 134 = 2238.806 \text{ baskets}$$

Determine the number of units to be sold at the breakeven point for EACH product.

$$\text{Vases : } 2238.806 \times 5 = 11194.03 \text{ units} \quad \mathbf{\times \$10 = \$111,940.3}$$

$$\text{Figurines : } 2238.806 \times 3 = 6716.418 \text{ units} \quad \mathbf{\times \$28 = \$188,059.70 =}$$

$$\mathbf{\text{Total fixed costs} = \$300,000.004}$$

Students may be rounding off to 2 or 3 decimals

Giving a very slight difference

**BOTH APPROACHES GIVE IDENTICAL ANSWERS**

### Question 5- Number 2. 4.5 PTS

Calculate the break even points in UNITS for the company.

$$\begin{aligned} \text{Sales mix } \$400\,000 + 200\,000 / \$40 &= 15,000 \text{ Vases} \\ \$420\,000 + 140\,000 / \$70 &= 8,000 \text{ Figurines} \end{aligned}$$

$$\begin{aligned} \text{CM Vases SP } \$40 - \text{VC } \$30 &= \$10 \\ \text{Figurines } \$70 - \$42 &= \$28 \end{aligned}$$

**STUDENTS CAN APPROACH THIS QUESTION IN TWO WAYS:**

$$\begin{aligned} (15,000 / 23,000) \times \$10.00 + (8,000 / 23,000) \times \$42 &= \\ (.652 \times \$10 + .348 \times \$28) &= \$6.52 + 9.74 = 16.264 \end{aligned}$$

$$\text{Fixed costs } \$300\,000 + \text{additional fixed cost } \$50,000 = \$350,000 / \$16.264 = 21\,520$$

Here the question specifies breakeven for EACH PRODUCT

$$\begin{aligned} 21\,520 \times .652 &= \text{Vases } 14\,031 \\ 21\,520 \times .348 &= \text{Figurines } 7\,489 \end{aligned}$$

**OR**

The company sells 7.50 vases for every 4 figurines

Weighted average contribution margin per unit:

$$\text{CM X sales mix} = \$10 \times 3.75 + \$28 \times 2 = 93.5 \text{ per basket}$$

$$\text{Break-even} = \$350\,000 \div 93.5 = 3743.3155 \text{ baskets}$$

Determine the number of units to be sold at the breakeven point for EACH product.

$$\text{Vases } 3743.3155 \times 3.75 = 14\,037.43$$

$$\text{Figurines } 3743.3155 \times 2 = 7486.6$$

$$\begin{aligned} \text{Vases : } 14\,037.43 \text{ units} \quad \mathbf{\times \$10} &= \mathbf{\$140\,374.30} \\ \text{Figurines : } 7486.6 \text{ units} \quad \mathbf{\times \$28} &= \mathbf{\$209\,624.80 =} \\ &\mathbf{\text{Total fixed costs} = \$349\,999.10.} \end{aligned}$$

Students may be rounding off to 2 or 3 decimals .Giving a very slight difference

students can mention various points here, the added FC will increase the number of units to break even, the added investment to be considered would be preferably to have an impact on reducing the VC, or if possible increasing the price slightly. An increase in sales volume does not reduce the break even. Various points are acceptable. ✓

Weighted average contribution margin per unit:



