Mid-Term Exam

ADM 2341
Managerial Accounting

March 1, 2014

Professor: Shujun Ding Duration: 18:00 to 20:30

NAME: _____MARKING KEYS___ **SECTION (M, P, and R):**_____

STUDENT #: _____ **SEAT #:**_____

Statement of Academic Integrity
The School of Management does not condone academic fraud, an act by a student that may result in a false academic evaluation of that student or of another student. Without limiting the generality of this definition, academic fraud occurs when a student commits any of the following offences: plagiarism or cheating of any kind, use of books, notes, mathematical tables, dictionaries or other study aid unless an explicit written note to the contrary appears on the exam, to have in his/her possession cameras, radios (radios with head sets), tape recorders, pagers, cell phones, or any other communication device which has not been previously authorized in writing.

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 copy or booklet without that signed statement will not be graded and will receive a final exam grade of zero.

Instructions:

1. Answer all questions in this booklet. The booklet is not to be removed from the examination room. You may separate the pages but ensure that you put them back together and staple before handing in. Ensure that you show all supporting calculations.
2. Limit your answer to the space provided. Indicate if you use the back of a page.
3. The use of standard abbreviations (for example, COGS for Cost of Goods Sold) is quite acceptable.
4. Only non-programmable calculators are allowed.
5. The use of electronic communication devices such as cell phones is strictly prohibited during the exam. Sharing of calculators is also strictly prohibited.
6. It is highly recommended that you use blue or black ink for your answers. If you do use pencil, you will not be able to submit your midterm for re-appraisal should you believe that the marking key was not applied appropriately to your answers.

Multiple Choice (Q1-Q10)	**/20**
Problem 1	**/20**
Problem 2	**/20**
Problem 3	**/20**
Problem 4	**/20**
TOTAL	**/100**

Multiple Choice (20 marks, 2 marks each)

Select the best answer for each of the following multiple-choice questions and answer ALL parts to this question on the table provided below. Only one answer will be accepted for each question. There is no penalty for guessing. No account will be taken of any explanations provided.

1	_____	2	_____	3	_____	4	_____	5	_____
6	_____	7	_____	8	_____	9	_____	10	_____

1. Which of the following best describes a method of budgeting in which the cost of each program must be justified every year?
A. Operational budgeting.
B. Zero-based budgeting.
C. Continuous budgeting.
D. Responsibility accounting.

Ans: B

2. Carver Company produces a product that sells for $30. Variable manufacturing costs are $15 per unit. Fixed manufacturing costs are $5 per unit based on the current level of activity, and fixed selling and administrative costs are $4 per unit. A selling commission of 10% of the selling price is paid on each unit sold. What is the contribution margin per unit?
A. $3.
B. $15.
C. $8.
D. $12.

Ans: D

3. For a manufacturing company, which of the following is an example of a period rather than a product cost?
A. Depreciation of factory equipment
B. Wages of salespersons.
C. Wages of machine operators
D. Insurance on factory equipment.

Ans: B

4. Telfer Company's 1999 operating income computation follows:

Sales	$87,000
Variable costs	$30,450
Contribution margin	$56,550
Fixed costs	$29,367
Income	$27,183
	=======

The company’s breakeven point for 1999 was 6,024 units. Calculate Telfer's actual unit sales volume.
A. 2,900 units
B. 5,800 units
C. 8,500 units
D. 11,600 units

Ans: D

5. Anaconda Mining Company shipped 9,000 tons of copper concentrate for $450,000 in March and 11,000 tons for $549,000 in April. Both activities are within the relevant range. Use the high-low method to estimate the shipping costs for 12,000 tons to be shipped in May.
A. $548,780.
B. $549,020.
C. $594,000.
D. $598,500.

Ans: D

6. If company A has a higher degree of operating leverage than company B, then which of the following statements is true?
A. Company A has higher variable expenses.
B. Company A’s contribution margins are higher.
C. Company A is more profitable.
D. Company A's profits are more sensitive to percentage changes in sales.

Ans: D

7. Modesto Company produces and sells Product AlphaB. 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 AlphaB over the next four months are:

June	30,000 units
July	40,000 units
August	60,000 units
September	50,000 units

What would be the budgeted production for August?
A. 50,000 units.
B. 58,000 units.
C. 62,000 units.
D. 70,000 units.

Ans: B

8. A manufacturing company prepays its insurance coverage for a three-year period. The premium for the three years is $2,700 and is paid at the beginning of the first year. Eighty percent of the premium applies to manufacturing operations and 20% applies to selling and administrative activities. What amounts should be considered product costs and period costs respectively for the first year of coverage?

Options	Product Costs	Period Costs
1	$2,700	$0
2	$2,160	$540
3	$1,440	$360
4	$720	$180

A. Option 1
B. Option 2
C. Option 3
D. Option 4

Ans: D

9. Which of the following types of budgets is more conducive to better employee morale and higher motivation?
A. master budget
B. imposed budget
C. continuous budget
D. participatory budget

Ans: D

10. A product sells for $20 per unit and has a contribution margin ratio of 40%. Fixed expenses total $240,000 annually. How many units of the product must be sold to yield an operating income of $60,000?
A. 37,500 units.
B. 40,000 units.
C. 65,000 units.
D. 30,000 units.

Ans: A

Problem 1 (20 marks)

The United Manufacturing Company currently manufactures and sells its only product, SW. The company employs CVP analysis for its short-term planning and decision making. The company analyzed cost behavior of its expenses, successfully divided mixed expenses into variable and fixed components, and prepared its income statement following a contribution margin format. The following monthly data are available for the company and its product, SW:

Table I

	Total	Per Unit
Sales (400 units)	$110,000	$275
Variable Expenses	44,000	110
Contribution Margin	66,000	165
Fixed Expenses	52,800	
Net Income	13,200	

REQUIRED:

a) What is the margin of safety in units at the sales volume of 400 units? [2 marks]

b) What is the degree of operating leverage at the sales volume of 400 units? [2 marks]

c) Assume that United Company is currently selling 400 units of Product SW. Management wants to automate a portion of the production process for Product SW. The new equipment would reduce direct labour costs by $20 per unit but would result in a monthly rental cost for the new robotic equipment of $10,000. Management believes that the new equipment will increase the reliability of Product SW, thus resulting in an increase in monthly sales of 12%. Should these changes be made? Show all supporting calculations. [8 marks]

d) The United Company is considering adding a new product line, Product NW, to their range of products. They have collected budgeted information for product NW as follows.

Table II

Selling price	$300 per unit
Variable manufacturing cost	$90 per unit
Variable selling and administrative expenses	$25 per unit
Additional fixed cost incurred to support product NW	$14,800 per month

The United Company expects that out of every 10 units sold, they sell 8 units of SW and 2 units of NW. What volume of sales in units of SW and NW must the United Company achieve to break even? Assuming that the addition of NW does not affect SW's sales and the sales mix remains constant. The information regarding product SW remains unchanged as presented in Table I. [8 marks]

Suggested Solutions:

a) BEP = FC/CM per unit = 52,800 / 165 = 320 units

Margin of Safety in units = actual sales – BEP = 400 – 320 = 80 units

[if the final solution is correct, then 2 marks. If not, then 1 mark for calculating the BEP correct. **Give full marks** to students if they determine margin of safety in dollars or express it as a percentage.]

b) DOL = 66,000/13,200 = 5 [2 marks or nothing]

c) The use of the automated process would affect both fixed and variable costs. Fixed costs will increase by $10,000 from $52,800 to $62,800. Variable costs will decrease by $20 from $110 to $90, and the unit contribution margin will increase from $165 to $185.

Expected total CM:

400 units x 112% x 185/unit = 82,880

Present total CM:

400 x 165 = 66,000

Incremental total CM = 16,880 [4 marks for determining incremental CM. If students get 16,880, then 4; if not, then give 2 for determining the new CM, and 1 for calculating the difference between the old and new CM.]

Incremental total fixed costs = 10,000 [1 mark or nothing]

Increase in operating income = 6,880 [2 marks or nothing]

The changes should be made since they increase operating income. [1 mark for the conclusion]

[If the final solution and conclusion is correct, then full marks; if not, follow the above scheme to assign partial marks. If students use different methods and get the same solution and conclusion, give full marks]

d) Units of SW: 8x, Units of NW: 2x
CM of NW=300-90-25=$185 per unit [2 marks or nothing]

To break even, Total CM=Total FC
CM of SW + CM of NW = Total FC
165*8x + 185*2x = 52800 + 14800 [2 marks for having this equation correct]
X=40 [1 mark for determining x]

Units of SW=8*40=320 units [1.5 marks or nothing]
Units of NW=2*40=80 units [1.5 marks or nothing]

[If the final solution is correct, then 8 marks in total; if not, follow the above scheme to assign partial marks. **If students use different methods and get the same solution and conclusion, give full marks**]

Problem 2 (20 marks)

The BestDeal Company manufactures a part for smartphones, and keeps three inventory accounts: raw materials, work-in-process, and finished goods. Raw Materials consist of both direct and indirect materials. The following data (in thousands of dollars) have been taken from the records of BestDeal for the year of 2013:

Manufacturing utilities of the factory	$20
Rent on manufacturing facilities	$15
Sales travel	$10
Salaries for the accountants	$20
Insurance of the plant	$10
Depreciation on manufacturing equipment	$45
Sales	$990
Raw Materials, Beginning	$20
Purchases of raw materials	$100
Raw Materials, Ending	$80
Indirect materials	$10
Direct labour	$240
Indirect labour	$100
Work-in-process, Beginning	$50
Work-in-process, Ending	$30
Executive salaries	$60
Advertising	$40
Sales commission	$20
Other administrative expenses	$20
Other selling expenses	$70
Other factory overhead	$10
Finished Goods, Beginning	$160
Finished Goods, Ending	$150

REQUIRED:

(a.) Calculate direct material used. [3 marks]
(b.) Prepare a schedule of cost of goods manufactured in good form [8 marks].
(c.) Compute the cost of goods sold [2 marks].
(d.) Using data from your answers above as needed, prepare an income statement in good form [7 marks].

Suggested Solutions:

(a & b.) Schedule of cost of goods manufactured

a. [If students get 30 as DM usage, then 3 marks; if not, then give 1 mark for having 40.]

b. [If the final solution and format is correct, then 8 marks. If not, then follow the scheme below. 1 mark each for DM and DL; 3.5 marks for MOH, i.e. 0.5 for each MOH item; 1.5 for using beginning and ending balances of WIP correctly; 1 mark for the overall format.]

Direct materials			
	Raw materials, beginning	20	
	Add: purchase	100	
	Raw materials available for use	120	
	Deduct: raw materials, ending	80	
	Raw materials used in production	40	
	Deduct: Indirect materials	10	
Direct materials used			30
Direct labour			240
Manufacturing overhead			
	utilities	20	
	rent	15	
	insurance	10	
	depreciation	45	
	Indirect materials	10	
	Indirect labour	100	
	other factory overhead	10	
Total Manufacturing Overhead			210

Total Manufacturing Costs	480
Add: WIP, beginning	50
	530
Deduct: WIP, ending	30
COGM	500

(c.) Computation of cost of goods sold
[2 marks if the final number is correct; if not, then 0.5 marks for each item highlighted below.]

FG, beginning	160
Add: COGM	500
Goods available for sale	660
Deduct: FG, ending	150
COGS	510

(d.) Income statement [if the final income and the format are correct, then 7 marks. If not, then 1.5 marks each for selling and admin. expenses. 1.5 marks each for determining gross margin and income. 1 mark for the format.]

The BestDeal Company
Income Statement
For the year ended Dec.31, 2013

Sales			990
Deduct: COGS			510
Gross margin			480
Deduct: Operating expenses			
	Selling expenses	140	
	Admin. Expenses	100	
	Total expenses		240
Operating income			240

Problem 3 (20 marks)

The Future Electronics Company manufactures small appliances, and sells them to customers around the world. The company's manufacturing overhead consisted of depreciation, machine supplies, and plant maintenance. The accounting records of Future Electronics reflected the following information for two months during the year of 2013.

	May	July
Sales in units	9,000	10,000
Sales Revenues	$450,000	500,000
Cost of Goods Sold	(90,000)	(93,500)
Gross Margin	360,000	406,500
Operating Expenses		
Selling Expenses	(36,000)	(40,000)
Administrative Expenses	(64,000)	(64,000)
Operating Income	260,000	302,500

REQUIRED:

1. Identify the above expenses as either variable, fixed, or mixed [3 marks].

2. Separate each mixed expense into variable and fixed expense by using the high-low methods. State the cost formula for each mixed expense [4 marks].

3. Prepare a contribution margin income statement for the month of July [5 marks].

4. The accountant at the company wants to take a closer look at the behavior of manufacturing overhead, and has identified supplies, depreciation, and maintenance as variable, fixed, and mixed, respectively. Accounting records show the detailed manufacturing overhead information in May as follows, and the total manufacturing overhead in July is recorded as $73,500. Using the high-low method, please determine the cost formula for Future Electronics' maintenance cost. Assume the activities in both months are within the relevant range [8 marks].

	May
Machine Supplies	$9,000
Depreciation	38,500
Maintenance	24,500

Suggested Solutions:

1. COGS: mixed; Selling: variable; Admin: fixed. [1 mark for each item]

2. Y=58,500 + 3.5x [2 marks each for a and b]

3. [2 for variable expenses: 1.5 for variable COGS and 0.5 for selling expense. 1 mark for calculating CM correct. 0.5 marks each for fixed COGS, admin., and operating income, highlighted below. 0.5 for format]

The Future Electronics Company
Income Statement
For the month ended July 31, 2013

Sales Revenues	500,000
Variable Expenses	(3.5*10,000 + 40,000)
Contribution Margin	425,000
Fixed Expenses	
Fixed COGS	(58,500)
Administrative Expenses	(64,000)
Operating Income	302,500

4. Maintenance in July= 73,500 – 10K*(9K supply cost/9K units) – 38,500 (Dep.) = 25K

Maintenance in May = 24,500

b= (25k-24.5k) / (10k-9k) = $0.5 per unit
a= 24,500 – 9K * 0.5 = 20K

Maintenance = 20K + 0.5x

[if the final formula is correct, then 8 marks; if not, the assign partial marks as follows. 1.5 marks for determining supply cost in July correct, highlighted; 1 for deducting depreciation, highlighted; 0.5 for getting maintenance in July correct, highlighted. 2 marks each for getting b and a correct; 1 mark for the formula.]

Problem 4 (20 marks)

Green Space Manufacturing Inc. produces and sells golf carts. A budgeting committee has been established by the management, involving both managers and employees, to lead the preparation of master budget. The committee has agreed on the following guidelines in preparing the budget for the first quarter of 2014:

1) Projected sales in units are as follows; the selling price is $350 per cart.

January, 2014	5,000
February, 2014	6,200
March, 2014	4,800
April, 2014	3,200
May, 2014	3,600

2) Sales are 10% for cash and 90 % on credit. Of the credit sales, 40% are received in the month of sale, and 60% are received in the month following the sale, assuming all of the accounts receivable are collectable. The accounts receivable balance at December 31, 2013 was $378,000.
3) The management at Green Space carefully calculated the desired level of the ending inventory of finished goods when preparing the production budget, and believed that an ending inventory should be equal to 20% of the next month's budgeted sales in units to avoid any possible lost sales. On Dec. 31, 2013, 1,000 units were on hand.
4) At Green Space material cost of $45 is required per unit of cart, and the management wants materials on hand at the end of each month equal to 10% of the following month's production needs. On Dec. 31, 2013, the direct materials had a balance of $25,000.
5) When materials are purchased, 60 % are paid in the month of purchase and 40 % are paid in the month following the purchase. The accounts payable balance at December 31, 2013 was $108,000. Assuming the accounts payable is used for materials purchase only.
6) Selling and administrative expenses are 10% of sales revenues plus a fixed expense of $60,000 monthly. Included in the monthly selling and administrative expenses is $15,500 of depreciation. The operating expenses are paid in the month incurred.
7) Green Space pays a cash dividend of $49,000 in January, and purchases $143,700 of equipment in February and $48,300 in March (both purchases will be paid in cash). The company will purchase land costing $2,000,000 in February 2014. It is a cash purchase as well.
8) The beginning cash balance of Jan.1, 2014 is assumed to be $10,000, which reflects the company's desired minimum monthly cash balance. Loans if needed, are made in $ 1,000 amounts and cost 12% per year. Interest is paid upon loan repayment. The company borrows on the first day of the month and repays loans on the last day of the month.

REQUIRED:

Using the data above, complete the following statements and schedules for January, February, and March, 2014 (ignore direct labor and overhead budget).

Show supporting calculations, if any, below the cash budget.

[Please see the marking key in the Excel file attached. I highlighted 40 cells/numbers; please assign 0.5 marks for each number/cell highlighted.]

1. Sales collections budget

	Jan.	**Feb.**	**Mar.**
Cash sales			
Accounts receivable balance-December			
Credit sales-January			
Credit sales-February			
Credit sales-March			

Total collections			

2. Production budget in units

	Jan.	**Feb.**	**Mar.**
Budgeted sales			
Ending inventory			
Total needs			
Beginning inventory			
Required production			

3. Direct materials purchases budget in dollars

	Jan.	**Feb.**	**Mar.**
Budgeted production			
× Material cost per unit			
Production needs			
Ending inventory			
Total needs			
Beginning inventory			
Materials to be purchased			

4. Cash disbursements-Materials Purchases

	Jan.	**Feb.**	**Mar.**
Accounts payable-December Purchases			
For January purchases			
For February purchases			
For March purchases			
Total disbursements			

5. Operating expenses budget

	Jan.	**Feb.**	**Mar.**
Budgeted sales			
Variable selling and administrative expenses percentage			
Variable expenses			
Fixed expenses			
Total selling and administrative expenses			
Depreciation			
Cash disbursement for selling and administrative expenses			

6. Cash Budget

Green Space

Cash Budget
For the Quarter Ended March 31, 2014

	Jan.	Feb.	Mar.
Cash balance, beginning.....			
Add collections from sales			
Total cash available.....			
Less disbursements:			
For inventory purchases.....			
For selling & admin. expenses.....			
For equipment purchase……			
For land purchase……..			
For dividends payment…….			
Total disbursements.....			
Excess (deficiency) of cash available over disbursements.....			
Financing:			
Borrowings.....			
Repayment			
Interest			
Total financing.....			
Cash balance, ending.....			