THE UNIVERSITY OF THE WEST INDIES

EXAMINATIONS OF December 2011.

CODE AND NAME OF COURSE: ACCT2017 Management Accounting

DATE AND TIME: DURATION: 2 Hours

INSTRUCTIONS TO CANDIDATES: This paper has 7 pages and 5 questions.

ANSWER ANY THREE (3) QUESTIONS

Question 1[25 marks]

a) The Kandi Supermarket Chain (KSC) is preparing its activity-based budget for January 2012. KSC has three product categories: soft drinks, fresh produce, and package food. The following table shows the four activities that consume indirect resources at the Swan Street Store; the cost drivers and their rates, and the cost-driver amount budgeted to be consumed by each activity in January 2012.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Cost driver</th>
<th>January 2012 Budgeted cost driver rate</th>
<th>January 2012 Budgeted Amount of cost driver used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordering</td>
<td># of purchase orders</td>
<td>$45</td>
<td>Soft drinks Fresh produce Packaged Food</td>
</tr>
<tr>
<td>Delivery</td>
<td># of deliveries</td>
<td>$41</td>
<td>14 24 14</td>
</tr>
<tr>
<td>Packing</td>
<td>Hours of packing</td>
<td>$10.50</td>
<td>16 62 19</td>
</tr>
<tr>
<td>Cashing</td>
<td># of items sold</td>
<td>$0.09</td>
<td>4,600 34,200 10,750</td>
</tr>
</tbody>
</table>

KSC has a Kaizen (continuous improvement) approach to budgeting monthly activity costs for each month of 2012. Each successive month, the budgeted cost-driver rate decreases by 1% relative to the preceding month.

(i) Using the Activity based budgeting approach calculate the budgeted cost-driver rates for the month of March 2012 [4 marks]

(ii) Using the March 2012 rates compute the total budgeted cost of each activity and for each product category at the KSC Swan Street store for the month of March 2012. [10 marks]

TURN OVER
Question 1 continued

B) Casey Corporation produces a special line of basketball hoops. Casey Corporation produces the hoops in batches. To manufacture a batch of the basketball hoops, Casey Corporation must set up the machines and molds. Setup costs are batch-level costs because they are associated with batches rather than individual units of products. A separate Setup Department is responsible for setting up machines and molds for different styles of basketball hoops.

Setup overhead costs consist of some costs that are variable and some costs that are fixed with respect to the number of setup-hours. The following information pertains to January 2005.

<table>
<thead>
<tr>
<th>Static-budget Amounts</th>
<th>Actual Amounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basketball hoops produced and sold</td>
<td>30,000</td>
</tr>
<tr>
<td>Batch size (number of units per batch)</td>
<td>200</td>
</tr>
<tr>
<td>Setup-hours per batch</td>
<td>5</td>
</tr>
<tr>
<td>Variable overhead cost per setup hour</td>
<td>$10</td>
</tr>
<tr>
<td>Total fixed setup overhead costs</td>
<td>$22,500</td>
</tr>
</tbody>
</table>

Required:

a. Calculate the efficiency variance for variable setup overhead costs. [2 marks]
b. Calculate the spending variance for variable setup overhead costs. [2 marks]
c. Calculate the flexible-budget variance for variable setup overhead costs. [2 marks]
d. Calculate the spending variance for fixed setup overhead costs. [2 marks]
e. Calculate the production-volume variance for fixed setup overhead costs. [3 marks]

Question 2 [25 marks]

a) Global Defence manufactures radar systems. It has just completed the manufacture of its first newly designed system, RS32. It took 3,000 direct manufacturing labour hours to produce this one unit. Global believes that a 90% cumulative learning curve model for direct manufacturing labour hours to RS32.

The costs of producing RS32 are:
- Direct material costs: $80,000 per unit of RS32
- Direct manufacturing labour costs: $25 per direct labour hour
- Variable manufacturing overhead costs: $15 per direct labour hour
- Fixed manufacturing overhead costs: 40% of direct labour costs

Required:
Calculate the total variable costs of producing twenty (20) RS32. [7 marks]
Question 2 continued

b) Scott Company manufactures and sells a single product, Dee. Direct labour has been the largest component of cost of production until recent automation of some of the important operations in the manufacturing process. Raw material is now the largest component. The controller has therefore decided to replace direct labour with raw material in the flexible budget formula for estimating total production cost. The choice is among cost of raw material purchased, cost of raw material used, and quantity (kilograms) of raw material used. The results of three regressions with each of the three competing cost drivers are presented in Exhibit 4-1. Each regression is based on 26 weeks of observations.

Raw material purchases are made in bulk to take advantage of quantity discounts while at the same time balancing the costs of carrying and ordering raw material. The cost of raw material is also subject to frequent price increases. Raw material usage is controlled by means of a standard cost system that is revised as often as possible to reflect price increases.

Required

i. What are the estimating equations for each cost driver? [3 marks]

ii. Prepare a report outlining which one of the three cost drivers is the best for estimating weekly production cost in terms of plausibility, strength of linear relationship, and statistical significance of the slope coefficient? (10 marks)

iii. Suppose Scott Company incurs a total production cost of $130,500 in a week that it produced 5,000 units of Dee, purchased $100,000 of raw material, and used 20,000 kilograms of raw material at a cost of $95,000.

   a) Using the regression results, what is your best estimate of the total production cost variance? (2 marks)

   b) Would you recommend that D Company's controller request an investigation of the total production cost variance? Explain your answer and include supporting calculations. (3 marks)

EXHIBIT 4-1
A. Regression of total weekly production cost with cost of weekly raw material purchases

Regression Results:
- Constant (intercept): 120500
- Standard Error of Regression Estimate: 35400
- R Squared (Coefficient of Determination): 0.15
- No. of Observations: 26
- Degrees of Freedom: 24
- Independent Variable(s): Value of Coefficient: 0.25
- Standard Error of Coefficient: 0.15

TURN OVER
B. Regression of total weekly production cost with cost of weekly raw material used
Regression Results:
Constant (intercept) 52400
Standard Error of Regression Estimate 15600
R Squared (Coefficient of Determination) 0.55
No. of Observations 26
Degrees of Freedom 24
Independent Variable(s):
Value of Coefficient 0.80
Standard Error of Coefficient 0.12

C. Regression of total weekly production cost with weekly quantity (kilograms) of raw material used
Regression Results:
Constant (intercept) 15300
Standard Error of Regression Estimate 3400
R Squared (Coefficient of Determination) 0.85
No. of Observations 26
Degrees of Freedom 24
Independent Variable(s):
Value of Coefficient 5.15
Standard Error of Coefficient 0.45
The critical t-value for each regression is 2.064 [d.f.24; α/2=0.025]

Question 3 [25 marks]
a) The Gows Company processes unprocessed goat milk up to the splitoff point where two products, condensed goat milk and skim goat milk result. The following information was collected for the month of October:

Direct Materials processed: 130,000 gallons (shrinkage was 10%)
Production:
- condensed goat milk 52,200 gallons
- skim goat milk 64,800 gallons
Sales:
- condensed goat milk $3.50 per gallon
- skim goat milk $2.50 per gallon

The costs of purchasing the 130,000 gallons of unprocessed goat milk and processing it up to the splitoff point to yield a total of 117,000 gallons of salable product was $144,480. There were no inventory balances of either product. Condensed goat milk may be processed further to yield 39,000 gallons (the remainder is shrinkage) of a medicinal milk product, Xyla, for an additional processing cost of $3 per usable gallon. Xyla can be sold for $18 per gallon. Skim goat milk can be processed further to yield 56,200 gallons of skim goat ice cream, for an additional processing cost per usable gallon of $2.50. The product can be sold for $9 per gallon. There are no beginning and ending inventory balances.

Required:
Determine the amount allocated to each product if the estimated net realizable value method is used, and compute the cost per case for each product. [15 marks]
Question 3 continued

b) Antigua University College (AUC) offers only associate degree programs in the High-Tech area. AUC has two principal operating departments, Engineering and Computer Sciences, and two support departments, Facility and Technology Maintenance and Enrollment Services. The base used to allocate facility and technology maintenance is budgeted total maintenance hours. The base used to allocate enrollment services is number of credit hours for a department. The Facility and Technology Maintenance budget is $350,000, while the Enrollment Services budget is $950,000. The following chart summarizes budgeted amounts and allocation-base amounts used by each department:

<table>
<thead>
<tr>
<th>Services Provided: (Annually)</th>
<th>Budget</th>
<th>Engineering</th>
<th>Computer Sciences</th>
<th>F&amp;T Maintenance</th>
<th>Enrollment Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering</td>
<td>$3,500,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Sciences</td>
<td>$1,400,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F&amp;T Maintenance (in hours)</td>
<td>$350,000</td>
<td>2,000</td>
<td>1,000</td>
<td>Zero</td>
<td>5,000</td>
</tr>
<tr>
<td>Enrollment Service (in credit hrs)</td>
<td>$950,000</td>
<td>24,000</td>
<td>36,000</td>
<td>2,000</td>
<td>Zero</td>
</tr>
</tbody>
</table>

Required:

i. Set up algebraic equations in linear equation form for each activity. [4 marks]

ii. Determine total costs for each department by solving the equations from part (i) using the reciprocal method. [6 marks]

Question 4 [25 marks]

Sade Branson, a management accountant with the Atlantic Corporation, is evaluating whether a component ABC-100 should continue to be manufactured by Atlantic or purchased from Pacific Corporation, an outside supplier. Pacific has submitted a bid to manufacture and supply 48,000 units of ABC-100 that Atlantic will need for 2002 at a selling price of $25.95 to be delivered according to Atlantic’s production specifications and needs. With the contract price of $25.95 is only applicable in 2000, Pacific is interested in entering into a long-run arrangement beyond 2002.

Sade has gathered the following information regarding Atlantic’s costs to manufacture 45,000 units of ABC-100 in 2000:

- Direct materials: $292,500
- Direct manufacturing labour: $180,000
- Factory rental: $126,000
- Leasing of equipment: $54,000
- Other manufacturing overhead: $337,500
**Question 4 continued**

Sade has also collected the following information relating to the ABC-100:

- Prices of direct materials used in the production of ABC-100 are expected to increase in 2002 by 8%.
- Atlantic's direct manufacturing labour contracts calls for a 5% increase in 2002.
- Atlantic can withdraw from the renting the factory without any penalty. Atlantic will not need this space if ABC-100 is not manufactured.
- The equipment lease can be terminated by paying $6,000.
- 40% of the other manufacturing overhead is considered variable. Variable overhead changes with the number of units produced, but the rate per unit is not expected to change in 2002. The fixed manufacturing overhead costs are expected to remain the same whether or not ABC-100 is manufactured.

John Porter plant manager at Atlantic Corporation is concerned that Sade's analysis may lead to the closing down of the ABC-100 line. Porter indicates to Sade that the current performance of the plant can be significantly improved and that the cost increases she is assuming are unlikely to occur. Hence, the analysis should be done assuming costs will be considerable below current levels. Sade knows that Porter is concerned about outsourcing ABC-100 because it will mean that some of his closed friends will be laid off. Furthermore, Porter plays a key role in convincing management to produce ABC-100 internally.

**Required:**

(i) One the basis of the information Sade has obtained, should Atlantic make ABC-100 or buy it in 2002? Show your calculations [20 marks]

(ii) What other factors should Atlantic consider before making a decision? [5 marks]

**Question 5 [25 marks]**

The Maya Company is a furniture manufacturer with two departments; molding and finishing. The company uses the weighted-average method of process costing. In November, the following data were recorded for the finishing department:

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units of beginning work in process inventory</td>
<td>12,500</td>
</tr>
<tr>
<td>Percentage completion of beginning work in process units</td>
<td>25%</td>
</tr>
<tr>
<td>Cost of direct materials in beginning work in process</td>
<td>$0</td>
</tr>
<tr>
<td>Units started</td>
<td>87,500</td>
</tr>
<tr>
<td>Units completed</td>
<td>62,500</td>
</tr>
<tr>
<td>Units in ending inventory</td>
<td>25,000</td>
</tr>
<tr>
<td>Percentage of completion of work in process units</td>
<td>95%</td>
</tr>
<tr>
<td>Spoiled units</td>
<td>12,500</td>
</tr>
<tr>
<td>Total costs added during the current period</td>
<td></td>
</tr>
<tr>
<td>Direct materials</td>
<td>819,000</td>
</tr>
<tr>
<td>Direct manufacturing labour</td>
<td>794,500</td>
</tr>
<tr>
<td>Manufacturing overhead</td>
<td>770,000</td>
</tr>
</tbody>
</table>

**TURN OVER**
Work in process beginning 
   Transferred in costs                          103,625
   Conversion costs                              52,500
   Cost of units transferred in during the current period  809,375

Conversion costs are added evenly during the process. Direct materials costs are added when the production is 90% complete. The inspection point is at the 80% stage of production. Normal spoilage is 10% of all good units that pass inspection. Spoiled units are disposed of at zero net disposal value.

**Required**

Prepare a process costing worksheet clearing indicting the cost of goods manufactured and transferred out, the cost of abnormal spoilage, the cost of work in process inventory at November 30, 2011. [25 marks]

**END OF EXAMINATION**