

# THE PUBLIC ACCOUNTANTS EXAMINATIONS BOARD

*A Committee of the Council of ICPAU*

## CPA(U) EXAMINATIONS

### LEVEL TWO

#### MANAGEMENT DECISION AND CONTROL - PAPER 10

**WEDNESDAY, 9 DECEMBER 2009**

#### INSTRUCTIONS TO CANDIDATES:

1. Time allowed: **3 hours 15 minutes.**  
The first 15 minutes of this examination have been designated for reading time. You may not start to write your answer during this time.
2. Section **A** has **one** compulsory question carrying 30 marks.
3. Section **B** has **four** questions and only **three** questions are to be attempted. Each question carries 20 marks.
4. Section **C** has **two** questions and only **one** question is to be attempted. Each question carries 10 marks.
5. Please read further instructions on the answer book.

## SECTION A

### Question 1

Red Cheers Ltd is divided into four operating divisions (P, Q, R and S) each of which is autonomous. The cost of capital for the company is 12% per annum and it is currently earning 15% return on capital employed (ROCE).

In the ROCE calculation, return is equated with net profit and capital employed is the figure at the beginning of the year. All non-current assets are depreciated on a straight line basis. Investments in new projects include incremental working capital. Assets sold or withdrawn from any project are treated as consisting of non-current assets only.

If no new capital expenditure transactions take place the positions of the four divisions would be as follows;

Division	Capital employed 1 January 2010 Shs million	Net profit Shs million	Budgeted sales for 2010 Shs million
P	320	80	800
Q	450	150	1,400
R	280	84	700
S	200	26	200

The following transactions are anticipated for the year to 31 December 2010:

Division P: Investment of Shs 100 million to yield sales of Shs 150 million per annum and net profit of Shs 20 million per annum.

Division Q: Sale for Shs 75 million of a project that is budgeted to yield a net profit of Shs 15 million in 2010. The original equipment of the project cost Shs 600m seven years ago with an expected life of eight years.

Division R: Sale of a product line at book value. The original equipment cost Shs 60 million two years ago with an expected useful life of three years. This line is budgeted to yield a net profit of Shs 20 million in 2010. In addition, an investment of Shs 100 million in a new product to yield Shs 30 million per annum is planned for 2010.

Division S: Investment of Shs 80 million in a project to yield sales of Shs 36 million per annum and net profit of Shs 11.2 million per annum.

The company's operations manager has instructed that all the above transactions have to be completed by 31 January so as to be included in the relevant ROCE

calculations of the year 2010. He has further advised that taxation and inflation will not have a material impact on the above transactions.

**Required:**

- (a) On the assumption that each transaction goes ahead:
- (i) Calculate the ROCE for each division for the year ending 31 December 2010.  
**(10 marks)**
  - (ii) Identify those divisional managers whose bonuses will be higher if they receive annual bonuses directly related to the level of their respective ROCE.  
**(2 marks)**
  - (iii) State, in respect of each division, whether the company's interests will be favourably or adversely affected by the proposed transactions. Explain briefly in each case  
**(6 marks)**
- (b) (i) Compare the old results of divisions P and S, both of which are in the same type of business and briefly advise the divisional manager of S on how he should improve his performance based on the data concerning division P.  
**(5 marks)**
- (ii) Comment briefly on how the new project for division S fits in the advice given in b(i) above.  
**(5 marks)**
- (c) Explain briefly the concept of "residual income" in the context of performance evaluation  
**(2 marks)**
- (Total 30 marks)**

## SECTION B

### Question 2

- (a) Planning, programming budgeting systems (PPBS) is a method of budgeting used by Arot Ltd.

**Required:**

Explain PPBS as a method of budgeting, giving the procedure of its implementation.

**(7 marks)**

- (b) Products Limited operates a 30-day term for all its customers. Experience has shown that 80% of all its accounts are settled within 1 month and 70% of the remainder is settled during the second month after the customer has been sent a standard “overdue account letter”. Of those accounts still unpaid after 2 months, 50% are settled during the third month after the ‘final demand’ has been sent.

Any accounts still not paid after 3 months are dealt with in one of the two ways:

- (i) If the amount owing exceeds Shs 1,000,000 the company institutes legal proceedings to recover the money. Taking into account the legal costs involved, the proportion of the original sum owing which is ultimately recovered varies as follows:

Proportion Recovered (%)	Probability
0 - 40	0.1
40 - 60	0.3
60 - 80	0.4
80 - 100	0.2

This process takes another 3 months before payment is finally received.

- (ii) If the amount owing is less than Shs 1 million the debt is sold to a debt recovery company in return for 50% of the sum involved, which is received at the end of the 4<sup>th</sup> month.

In recent months, the size of the accounts issued by Products Limited is shown by the following distribution:

Size of Account Shs '000'	Probability
0- 200	0.1
200-500	0.2
500-1,000	0.3
1,000-2,000	0.3
2,000-5,000	0.1

The sales manager of the company has informed you that there exists no relationship between the size of the account, when it is settled and the proportion recovered. All the accounts are settled on the last day of the month.

**Required:**

What is the probability that, for any particular account, payment is received at the end of the:

- |       |              |                         |
|-------|--------------|-------------------------|
| (i)   | second month | (5 marks)               |
| (ii)  | third month  | (2 marks)               |
| (iii) | fourth month | (3 marks)               |
| (iv)  | sixth month  | (3 marks)               |
|       |              | <b>(Total 20 marks)</b> |

**Question 3**

Zed Limited experiences difficulty in its budgeting process because it finds it necessary to quantify the learning effect as new products are introduced. Substantial product changes occur and result in the need for retraining.

An order of 30 units of a new product has been received by Zed Limited. So far, 14 units have been completed. The first unit required 40 direct labour hours and a total of 240 direct labour hours have been recorded for the 14 units.

The production manager expects an 80% learning effect for this type of work.

The company uses standard absorption costing. Direct costs attributable to the centre in which the unit is manufactured and its direct materials costs are as follows:

Direct materials	Shs 30 per unit
Direct labour	Shs 6 per hour
Variable overheads	Shs 0.5 per direct labour hour
Fixed overhead	Shs 6,000 per four-week operating period.

There are ten direct labour employees working a five-day week, eight hours per day. Personal and other downtime allowances account for 25% of the total available time. The company usually quotes a four-week delivery period for orders.

**Required:**

- (a) Determine whether the assumption of an 80% learning effect is a reasonable one in this case by using the standard formula;

$$y = ax^b$$

Where  $y$  = cumulative average direct labour time per unit.

$a$  = average labour time for the first batch.

$x$  = cumulative number of batches produced.

$b$  = learning index.

**(5 marks)**

- (b) Calculate the number of direct labour hours likely to be required for an expected second order of 20 units.

**(7 marks)**

- (c) Use the cost data given to produce an estimated product cost for the initial order, examining the problems which may be created by budgeting in the presence of the learning effect.

**(8 marks)**

**(Total 20 marks)**

**Question 4**

The engineering division of Alpha Limited prepared the following budget for the financial year ending 31 December 2009. The company's machines use fuel oil for their smooth running. To obtain their consumption levels, the chief mechanical engineer uses an estimation equation of  $y = a + bx$ , where  $y$  is the total expense at an activity level  $x$ ,  $a$  is the fixed expense that must protect the machines from rusting irrespective of the level of activity in the engineering department and  $b$  is the rate of variable cost.

The following data relates to the year ending 31 December 2008.

Month	Machine hours	Fuel oil expense Shs '000'	Month	Machine hours	Fuel oil expense Shs '000'
January	26	500	July	34	640
February	26	500	August	30	620
March	31	530	September	34	620
April	35	550	October	39	590
May	43	580	November	42	500
June	48	680	December	32	530

**Required:**

- (a) Estimate the fixed and variable elements of fuel oil expense from the above data using the:
- (i) high-low method. **(5 marks)**
  - (ii) least squares regression analysis. **(9 marks)**
- (b) Compare briefly the methods used in ( a ) above in relation to the task of estimating fixed and variable elements of a semi-variable cost. **(6 marks)**
- (Total 20 marks)**

**Question 5**

Bunyali Limited produces two industrial products: EXE which sells for Shs 90 a unit and DYG which sells for Shs 85 a unit. Limited labour, materials and equipment capacity has limited the profitability of the firm.

The technical department believes that linear programming can be used to have the production schedule for the two products.

The following data is available to the production department:

		Amount required per unit	
		Product EXE	Product DYG
Direct material S:	Supply limited to 1,800 at Shs 12 per kilo	4 kg	2 kg
Direct labour:			
Department 1	Supply limited to 10 people at 40 hrs each at an hourly rate of Shs 16	0.67 hours	1 hour
Department 2	Supply limited to 15 people at 40 hrs each at an hourly rate of Shs 8	1.25 hours	1 hour
Machine time:			
Department 1	Capacity limited to 250hours	0.5 hours	0.5 hours
Department 2	Capacity limited to 300hours	0	1 hour

The overhead costs for Bunyali Limited are accumulated on a plant wide-basis. The overhead is assigned to products on the basis of the number of direct-labour hours required to manufacture the product. The estimated overhead cost per direct labour hour is:

	<b>Shs</b>
Variable overhead	342
Fixed overhead	<u>342</u>
Total overhead	<u><u>684</u></u>

The technical department has formulated the following equations for the linear-programming statement of the problem:

x = number of units of EXE to be produced

y = number of units of DYG to be produced

Objective function to minimize costs; minimize  $z = 85x + 62y$

Constraints:

Materials  $4x + 2y \leq 1,800$  kg

Department 1 labour  $\frac{2}{3}x + y \leq 400$  hours.

Department 2 labour  $1\frac{1}{4}x + y \leq 600$  hours.

Non-negativity;  $x \geq 0, y \geq 0$ .

**Required:**

- (a) The formulation of the linear-programming equations as prepared by Bunyali Limited are incorrect. Explain what errors have been made in the formulation prepared by the technical department.

**(8 marks)**

- (b) Formulate and label the proper equations for the LP statement of Bunyali Ltd's production problem.

**(12 marks)**

**(Total 20 marks)**



## SECTION C

### Question 6

The new consultant for Msy Limited has informed senior management of the company that in order for the company to fully analyse its cost base, it must engage in total cost of ownership (TCO) and target costing. In addition, for it to gain a full understanding of competitor products, reverse engineering must be done and in order to understand its internal dynamics, the company must perform full value engineering.

**Required:**

Define the following terms as used in the extract, giving **two** advantages and **one** disadvantage of implementing each.

- (a) Total cost of ownership (TCO).
- (b) Reverse engineering.
- (c) Value engineering.

**(10 marks)**

### Question 7

In the business planning exercise for the year 2010, the chief finance officer (CFO) of a multinational corporation in Uganda has stated the following:

"The chief marketing officer has given estimates of sales and marketing costs that do not represent his best estimates or expectations of what will actually occur in the market. Instead, he has gone on to give estimates that help him achieve his performance bonus targets. Such attitudes are counterproductive and a solution must be sought".

**Required;**

You, as the management accountant of the multinational corporation, write a memo to the CFO discussing the factors that may lead top management of companies to give estimates of budgets that do not represent best estimations of market realities. Suggest at least **two** solutions to the CFO.

**(10 marks)**