

# THE PUBLIC ACCOUNTANTS EXAMINATIONS BOARD

*A Committee of the Council of ICPAU*

## CPA(U) EXAMINATIONS

### LEVEL THREE

#### MANAGEMENT DECISION AND CONTROL - PAPER 12

**MONDAY, 16 JUNE 2003**

#### **INSTRUCTIONS TO CANDIDATES:**

1. Time allowed: **3 hours**
2. Section **A** has two compulsory questions. Question **one** carries 30 marks and question **two** carries 10 marks.
3. Section **B** has **four** questions and only **three** questions are to be attempted. Each question carries 20 marks.
4. Please read further instructions on the answer book.

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## SECTION A

### Questions 1

Tikrit Overseas Ltd has prepared cost and revenue budget information as follows:

	Production data per unit of output			
	Cee	Dee	Gee	Jay
Machine hours	10	27	25	60
Labour hours	5	21	17.50	30
Metres of material	4	8	14	8

### Additional information:

1. The wage rate per hour is Shs. 1,000.
2. Material costs are Shs. 1,500 per metre.
3. The power costs to drive the machines are charged by UEDCL at Shs. 500 per hour.
4. Non attributable fixed overheads are absorbed at the rate of Shs. 8 per machine hour based on a monthly budgeted output of:

Product	Cee	Dee	Gee	Jay
Units	4,000	1,750	2,500	1,500

5. The product profit margins are determined by the need to earn 15% annual return on the total assets of Shs. 12,000,000. Each product is budgeted to contribute 25% of the total planned output.
6. The revenue and costs are spread evenly on a monthly basis throughout the year.
7. The products are sold independent of each other and the closure of one product line does not affect others.

### Required:

Using the information above, answer the following questions that arise over a 6 months' period (each month's scenario should be treated independently):

- (a) July: Determine the prices to be charged if the company is to achieve its monthly profit targets.

**(5 marks)**

- (b) August: Calculate the maximum profit for the month if the maximum available machine hours amount to 180,000 hours.

**(6 marks)**

- (c) September: What would be the maximum achievable profit if the maximum available labour hours were 160,000 hours.

**(3 marks)**

- (d) April: A new competitor enters the market and is offering identical products to those of the company at the following prices:

Product	Cee	Dee	Gee	Jay
Price Shs.	50,000	48,000	60,000	130,000

The market conditions determine the following outcomes:

- (i) If the company fixes its price at the competitor's price, it will sell its budgeted units for the product line.
- (ii) If it fixes a price above that of the competitor, the customers will buy elsewhere and the company will sell none of the products.
- (iii) The company has the freedom to determine what products it wishes to produce and sell.

**Required:**

Calculate the optimal prices, units produced per product and maximum achievable profit for the month within the scenario outlined above.

**(7 marks)**

- (e) Outline the limitations of limiting factor analysis.

**(5 marks)**

- (f) Explain the term shadow price as used in limiting factor analysis (illustrate your answer using products Cee and Dee).

**(4 marks)**

**(Total 30 marks)**

**Question 2**

- (a) Distinguish between a Planning, Programming Budgeting System (PPBS) and a traditional incremental system. Give one limitation of each of the above budgeting systems.

**(4 marks)**

- (b) Explain how inaccuracy may exist in each of the following management accounting information situations and how such inaccuracy may be minimised:

- (i) Analysis of costs into fixed and variable components.

**(3 marks)**

- (ii) Calculation of material cost per unit for inclusion in a product price quotation.

**(3 marks)**

**(Total 10 marks)**

## SECTION B

## Question 3

Division B of a divisionalised organisation manufactures a single standardised product. Some of the outputs are sold externally whilst the remainder are transferred to Division E which has a sub-assembly for the manufacture of its product. The unit costs of Division B's product are as follows:

	Shs
Direct material	44
Direct labour	22
Direct expense	32
Variable manufacturing overheads	12
Fixed manufacturing overheads	24
Selling and packing expenses (variable)	<u>11</u>
	<u>145</u>

- 25,000 units of the product are sold externally each year at the standard price of Shs. 290.
- In addition to the external sales, 15,000 units are transferred annually to division E at an internal transfer charge of Shs. 279. This transfer price is obtained by deducting variable selling and packing expense from the external price since this expense is not incurred for internal transfers.
- Division E incorporates the transferred in goods into a more advanced product. The unit costs of this product are as follows:

	Shs
Transferred-in-item (from Division B)	279
Direct material and components	250
Direct labour	50
Variable overheads	120
Fixed overheads	120
Selling and packing expense (variable)	<u>10</u>
	<u>829</u>

- Division E's manager disagrees with the basis used to set the transfer price. He argues that the transfers should be made at a variable cost plus an agreed (minimal) mark up since he claims that his division is taking output that Division B would be unable to sell at the price of Shs. 290. Partly because of this disagreement, a study of the relationship between selling price and demand has recently been made for each division by the company's Sales Director. The resulting report is as follows:

	Shs	Shs	Shs
<b>Division B</b>			
Selling price	280	290	300
Demand	35,000	25,000	15,000
<b>Division E</b>			
Selling price	829	900	950
Demand	17,000	10,000	5,000

- The manager of Division E claims that this study supports his case. He suggests that a transfer price of Shs. 120 would give Division B a reasonable contribution to its fixed overheads while allowing Division E to earn a reasonable profit and improving overall level of company profits.

**Required:**

- Calculate the effect that the transfer pricing system had on the company's profit.  
(14 marks)
- Establish the likely effect on profits of adopting the suggestion by the manager of Division E of a transfer price of Shs. 120.  
(6 marks)

**(Total 20 marks)**

**Question 4**

- A company has decided to diversify its activities and a new product has been developed which will be included in the master budget preparation for the coming year.

**Required:**

Explain ways in which the Learning curve effect may create problems in the preparation of the master budget and in its use as a base against which to measure results in the budget period.

**(8 marks)**

- H Ltd is contemplating investing in an additional production line to produce its range of antiretroviral drugs.
  - A market research study, undertaken by a well known firm of Ugandan young consultants, has revealed scope to sell an additional output of 500,000 units per annum. The study cost Shs. 10,500,000 but the amount has not been settled.

The price and cost structure of a typical antiretroviral drug is as follows:

	Shs.	Shs.
Price per unit		15,000
Cost per unit:		
Material cost per unit	1,800	
Direct labour costs per unit	600	
Variable overhead per unit	600	
Fixed overhead per unit	<u>1,800</u>	<u>4,800</u>
Profit		<u>10,200</u>

- The fixed overhead represents an apportionment of central administration and marketing costs. These are expected, to rise in total by Shs. 75,000,000 per annum as a result of undertaking this project.
- The production line is expected to operate for 5 years and requires a total outlay of Shs. 200,000,000, including Shs. 8,000,000 of material inventories. Because the company is moving towards a JIT inventory management policy, it is expected that this project will involve steadily reducing working capital needs, expected to decline at about 2% per annum by volume.
- The production line will be accommodated in an unutilised building for which an offer of Shs. 15,000,000 has recently been received from another company; if the building is retained. It is expected that property price inflation will increase its value to Shs. 16,000,000 after 5 years.
- While the precise rates of price and cost inflation are uncertain economists in H Ltd's corporate planning department make the following forecasts for the average annual rates of inflation relevant to the project.

Retail price Index	8% p.a
Drug prices	6% p.a
Material prices	4% p.a
Direct labour wage rates	7% p.a
Variable overhead costs	5% p.a
Other overhead costs	5% p.a

**Note:** Ignore taxation and capital allowances in this question.

**Required:**

Given that H Ltd's shareholders require a real return of 8.5% for projects of this degree of risk, assess the financial viability of this proposal.

**(12 marks)**  
**(Total 20 marks)**

**Question 5**

Kalangala Eagles Ltd makes and sells two products, KE1 and KE2. Both products are manufactured through two consecutive processes – making and packing. Raw material is input at the commencement of the making process. The following estimated information is available for the period ending 30 April 2004:

	<b>Making</b> <b>Shs. '000'</b>	<b>Packing</b> <b>Shs. '000'</b>
Labour and overheads		
Variable	7,000	5,600
Fixed	4,200	2,800

60% of fixed costs are product specific and the balance is general fixed costs.

Fixed costs will remain unchanged throughout a wide activity range.

<b>(ii) Products information</b>	<b>KE1</b>	<b>KE2</b>
Production time per unit:		
Making (minutes)	10.50	10.50
Packing (minutes)	12.00	8.00
Production/sales (units)	15,000	13,000
Selling price per unit (Shs)	400	450
Direct material cost per unit (Shs)	100	60

- (iii) Conversion costs are absorbed by products using estimated time based rates.

**Required:**

- (a) Use the above information to:

- Calculate unit costs for each product, analysed as relevant.  
(10 marks)
- Comment on a management suggestion that the production and sale of one of the products should not proceed in the period ending 30 April 2004.  
(4 marks)

- (b) Given that the selling price for KE1 can be derived from the Formula: selling price = cost plus 20%. Determine the number of units of KE 1 that can be sold to realise a target profit of Shs. 10,000,000.

(6 marks)  
(Total 20 marks)

**Question 6**

- (a) Management make decisions all the time but decision-making is affected by risk and uncertainty. In conditions of risk and uncertainty, management can use pay off matrices and decision trees to assist in making reasonable decisions.

Explain a pay off matrix and how the following can be of use to management in decision-making:

- (i) The Minimax Rule.
- (ii) The Minimax Regret Rule.
- (iii) Decision Trees.

**(10 marks)**

- (b) Explain the following:

- (i) Goal congruence. **(3 marks)**
- (ii) Decision support systems. **(3 marks)**
- (iii) Management information systems. **(4 marks)**

**(Total 20 marks)**