

ACCA INTERIM ASSESSMENT

**Performance
Management
December 2011**

Time allowed

Reading and planning: 15 minutes

Writing: 3 hours

All FIVE questions are compulsory and MUST be attempted.

The formulae are on page 3.

Do NOT open this paper until instructed by the supervisor.

During reading and planning time only the question paper may be annotated. You must NOT write in your answer booklet until instructed by the supervisor.

This question paper must not be removed from the examination hall.

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Paper F5

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FORMULAE

Learning curve

$$Y = ax^b$$

Where y = average cost per batch

a = cost of first batch

x = total number of batches produced

b = learning factor ($\log LR / \log 2$)

LR = the learning rate as a decimal

Regression analysis

$$y = a + bx$$

$$b = \frac{n \sum xy - \sum x \sum y}{n \sum x^2 - (\sum x)^2}$$

$$a = \frac{\sum y}{n} - \frac{b \sum x}{n}$$

$$r = \frac{n \sum xy - \sum x \sum y}{\sqrt{(n \sum x^2 - (\sum x)^2)(n \sum y^2 - (\sum y)^2)}}$$

Demand curve

$$P = a - bQ$$

$$b = \frac{\text{Change in price}}{\text{Change in quantity}}$$

a = price when $Q = 0$

ALL FIVE questions are compulsory and MUST be attempted**1 LINEACRE CO**

Linacre Co operates an activity-based costing system and has forecast the following information for next year.

<i>Cost Pool</i>	<i>Cost</i>	<i>Cost Driver</i>	<i>Number of Drivers</i>
Production set-ups	\$105,000	Set-ups	300
Product testing	\$300,000	Tests	1,500
Component supply and storage	\$25,000	Component orders	500
Customer orders and delivery	\$112,500	Customer orders	1,000

General fixed overheads such as lighting and heating, which cannot be linked to any specific activity, are expected to be \$900,000 and these overheads are absorbed on a direct labour hour basis. Total direct labour hours for next year are expected to be 300,000 hours.

Linacre Co expects orders for Product ZT3 next year to be 100 orders of 60 units per order and 60 orders of 50 units per order. The company holds no inventories of Product ZT3 and will need to produce the order requirement in production runs of 900 units. One order for components is placed prior to each production run. Four tests are made during each production run to ensure that quality standards are maintained. The following additional cost and profit information relates to product ZT3:

Component cost:	\$1.00 per unit
Direct labour:	10 minutes per unit at \$7.80 per hour
Profit mark up:	40% of total unit cost

Required:

- (a) Calculate the activity-based overhead absorption rates for each cost pool. **(4 marks)**
- (b) Calculate the total unit cost and selling price of Product ZT3. **(8 marks)**
- (c) Discuss the reasons why activity-based costing may be preferred to traditional absorption costing in the modern manufacturing environment. **(8 marks)**
- (Total: 20 marks)**

2 PHARAOH

Pharaoh Ltd manufactures and sells three products with the following selling prices and variable costs:

	<i>Sphinx</i> £/unit	<i>Pyramid</i> £/unit	<i>Mummy</i> £/unit
Selling price	3.00	2.45	4.00
Variable cost	1.20	1.67	2.60

The company is considering expenditure on advertising and promotion of the Sphinx. It is hoped that such expenditure, together with a reduction in the selling price of the product, would increase sales. Existing annual sales volume of the three products is:

Sphinx	460,000 units
Pyramid	1,000,000 units
Mummy	380,000 units

If £60,000 per annum was to be invested in advertising and sales promotion, sales of Sphinx at reduced selling prices would be expected to be:

590,000 units at £2.75 per unit

or 650,000 units at £2.55 per unit

Annual fixed costs are currently £1,710,000 per annum.

Required:

- (a) Calculate the current breakeven sales revenue of the business. (4 marks)
- (b) Draw a multi-product profit/volume graph, assuming that the advertising and sales promotion does not go ahead. (10 marks)
- (c) Advise the management of Pharaoh Ltd as to whether the expenditure on advertising and promotion, together with selling price reduction, should be introduced on Sphinx. (6 marks)

(Total: 20 marks)

3 MOC

MOC makes and sells two types of executive games, 'Metropolis' and 'Hedge Your Bets'. The company currently has a monopoly for both games. This factor combined with the high quality of the games and the luxury brand image has resulted in MOC being able to charge high prices for each of the games.

The management accountant is considering increasing the price for the Metropolis game and has produced the following information:

At the current selling price of \$55 per game, weekly sales of the Metropolis are 900 units.

If the price is increased to \$70 per game, weekly demand for the Metropolis will fall to 750 units.

The Hedge Your Bets game is sold in two distinct markets. The management accountant believes that there should be price discrimination. The price is currently \$80 per game in either market.

Required:

- (a) Explain the term 'price-discrimination' and discuss the conditions that are necessary for the successful operation of this pricing strategy. (4 marks)
- (b) Find the linear relationship between price (P) and quantity demanded (Q) for the Metropolis game. (3 marks)

- (c) Calculate the price elasticity of demand (PED) for the Metropolis and comment on whether the revenue will increase or decrease if the price is increased from \$55 to \$70 per game. (3 marks)
- (d) Write a report to the management accountant to explain how the pricing strategy may change if new competitors enter the market. Include, as part of your answer, a discussion of the different pricing strategies that may be implemented by MOC or its competitors. (10 marks)

(Total: 20 marks)

4 NEW CONTRACT

You are the management accountant of a publishing and printing company which has been asked to quote for the production of a programme for the local village fair. The work would be carried out in addition to the normal work of the company. Because of existing commitments, some weekend working would be required to complete the printing of the programme. A trainee accountant has produced the following cost estimate based upon the resources required as specified by the production manager:

			\$
Direct materials	– paper (book value)		5,000
	– inks (purchase price)		2,400
Direct labour	– skilled	250 hours @ \$4.00	1,000
	– unskilled	100 hours @ \$3.50	350
Variable overhead		350 hours @ \$4.00	1,400
Printing press depreciation		200 hours @ \$2.50	500
Fixed production costs		350 hours @ \$6.00	2,100
Estimating department costs			400
			—————
Total			13,150
			—————

You are aware that considerable publicity could be obtained for the company if you are able to win this order, and the price quoted must be very competitive.

The following notes are relevant to the cost estimate above:

- (1) The paper to be used is currently in stock at a value of \$5,000. It is of an unusual colour which has not been used for some time. The replacement price of the paper is \$8,000, whilst the scrap value of that in stock is \$2,500. The production manager does not foresee any alternative use for the paper if it is not used for the village fair programmes.
- (2) The inks required are not held in stock. They would have to be purchased in bulk at a cost of \$3,000. 80% of the ink purchased would be used in printing the programmes. No other use is foreseen for the remainder.
- (3) Skilled direct labour is currently at full capacity but additional labour can be hired. To accommodate the printing of the programmes, 50% of the time required would be worked at weekends, for which a premium of 25% above the normal hourly rate is paid. The normal hourly rate is \$4.00 per hour.

- (4) Unskilled labour is presently under-utilised, and at present 200 hours per week are recorded as idle time. If the printing work is carried out at a weekend, 25 unskilled hours would have to occur at this time, but the employees concerned would be given two hours time off (for which they would be paid) in lieu of each hour worked.
- (5) Variable overhead represents the cost of operating the printing press and binding machines.
- (6) When not being used by the company, the printing press is hired to outside companies for \$6.00 per hour. This earns a contribution of \$3.00 per hour. There is unlimited demand for this facility.
- (7) Fixed production costs are those incurred by and absorbed into production, using an hourly rate based on budgeted activity.
- (8) The cost of the estimating department represents time spent in discussions with the village fair committee concerning the printing of its programme.

Required:

- (a) Prepare a revised cost estimate using a relevant cash flow approach, showing clearly the minimum price that the company should accept for the order. Give reasons for each resource valuation in your cost estimate. (16 marks)
- (b) Explain the relevance of opportunity costs in decision making. (4 marks)
- (Total: 20 marks)**

5 QP

QP is a food processing company that produces pre-prepared meals for sale to consumers through a number of different supermarkets. The company specialises in three particular pre-prepared meals and has invested significantly in modern manufacturing processes to ensure a high quality product. The company is very aware of the importance of training and retaining high quality staff in all areas of the company and, in order to ensure their production employees' commitment to the company, the employees are guaranteed a weekly salary that is equivalent to their normal working hours paid at their normal hourly rate of \$7 per hour.

The meals are produced in batches of 100 units. Costs and selling prices per batch are as follows:

<i>Meal</i>	<i>TR</i> \$/batch	<i>PN</i> \$/batch	<i>BE</i> \$/batch
Selling price	340	450	270
Costs:			
Ingredient K (\$5/kg)	150	120	90
Ingredient L (\$10/kg)	70	90	40
Ingredient M (\$15/kg)	30	75	45
Labour (\$7/hour)	21	28	42
Factory costs absorbed	20	80	40

QP has adopted throughput accounting for its short-term decisions.

Required:

- (a) State the principles of throughput accounting and the effects of using it for short-term decision making. (5 marks)**

QP is preparing its production plans for the next three months and has estimated the maximum demand from its customers to be as follows:

TR	500 batches
PN	400 batches
BE	350 batches

These demand maximums are amended figures because a customer has just delayed its request for a large order and QP has unusually got some spare capacity over the next three months. However, these demand maximums do include a contract for the delivery of 50 batches of each to an important customer. If this minimum contract is not satisfied, then QP will have to pay a substantial financial penalty for non-delivery.

The Production Director is concerned at hearing news that two of the ingredients used are expected to be in short supply for the next three months. QP does not hold inventory of these ingredients and, although there are no supply problems for ingredient K, the supplies of ingredients L and M are expected to be limited to:

Ingredient L	7,000 kilos
Ingredient M	5,000 kilos

The Production Director has researched the problem and found that ingredient V can be used as a direct substitute for ingredient M. It also costs the same as ingredient M. There is an unlimited supply of ingredient V.

Required:

- (b) Prepare calculations to determine the production mix that will maximise the profit of QP during the next three months and calculate the total throughput at this profit maximising point. (9 marks)**

The World Health Organisation has now announced that ingredient V contains dangerously high levels of a chemical that can cause life-threatening illnesses. As a consequence it can no longer be used in the production of food.

As a result, the production director has determined the optimal solution to the company's production mix problem using linear programming. This is set out below:

Objective function value	110,714
TR value	500
PN value	357
BE value	71
TR slack value	0
PN slack value	43
BE slack value	279
L shadow price value	3
M shadow price value	28

Required:

- (c) Briefly explain the meaning of each of the values contained in the above solution. (6 marks)**

(Total: 20 marks)