

# Management Accounting Level 3



## Model Answers

Series 2 2008 (Code 3023)

## **Vision Statement**

Our vision is to contribute to the achievements of learners around the world by providing integrated assessment and learning services, adapted to meet both local market and wider occupational needs and delivered to international standards.



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### How to use this booklet

Model Answers have been developed by Education Development International plc (EDI) to offer additional information and guidance to Centres, teachers and candidates as they prepare for LCCI International Qualifications. The contents of this booklet are divided into 3 elements:

- (1) Questions – reproduced from the printed examination paper
- (2) Model Answers – summary of the main points that the Chief Examiner expected to see in the answers to each question in the examination paper, plus a fully worked example or sample answer (where applicable)
- (3) Helpful Hints – where appropriate, additional guidance relating to individual questions or to examination technique

Teachers and candidates should find this booklet an invaluable teaching tool and an aid to success.

EDI provides Model Answers to help candidates gain a general understanding of the standard required. The general standard of model answers is one that would achieve a Distinction grade. EDI accepts that candidates may offer other answers that could be equally valid.

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### QUESTION 1

- (a) Sketch a total cost-volume graph, to demonstrate the general relationship between total cost and volume of activity for a period, for **each** of the following:
- (i) telephone expenses comprising a fixed charge per period plus a cost per call
  - (ii) raw material cost where a trade discount is given by the supplier for additional purchases above a level representing 50% of normal volume.
- (6 marks)
- (b) Discuss the limitations of break-even analysis.
- (7 marks)
- (c) Define the following terms used in process costing and explain the implications for the establishment of product costs:
- (i) equivalent units
  - (ii) joint products.
- (7 marks)

**(Total 20 marks)**

## MODEL ANSWER TO QUESTION 1

- (a) See graph on following page.
- (b) In break-even analysis, as normally applied, it is assumed that:
- (i) some costs are fixed, regardless of the level of activity, and can be identified
  - (ii) cost and revenue behaviour is linear
  - (iii) sales mix will not change
  - (iv) no return on capital is required

The above assumptions limit the application of break-even analysis. It nevertheless remains a useful tool as long as the limitations are recognised.

For example, additional analysis can be carried out with changed assumptions regarding selling prices, sales mix, or fixed/variable cost split. Also, although the linear cost assumption is unlikely to remain valid over the whole activity range, it may well be sufficiently accurate within the relevant range. Greater sophistication regarding cost behaviour can be incorporated in the analysis if desired. Finally, a target profit (other than zero) can be included in the analysis to provide a desired return on capital.

- (c)
- (i) Equivalent units are notional whole units representing uncompleted work, used to apportion costs between work-in-progress and completed output and in performance assessment.

The equivalent whole units of production are divided into the costs incurred in order to establish a cost per unit of output which is then used to value the outputs from the process.

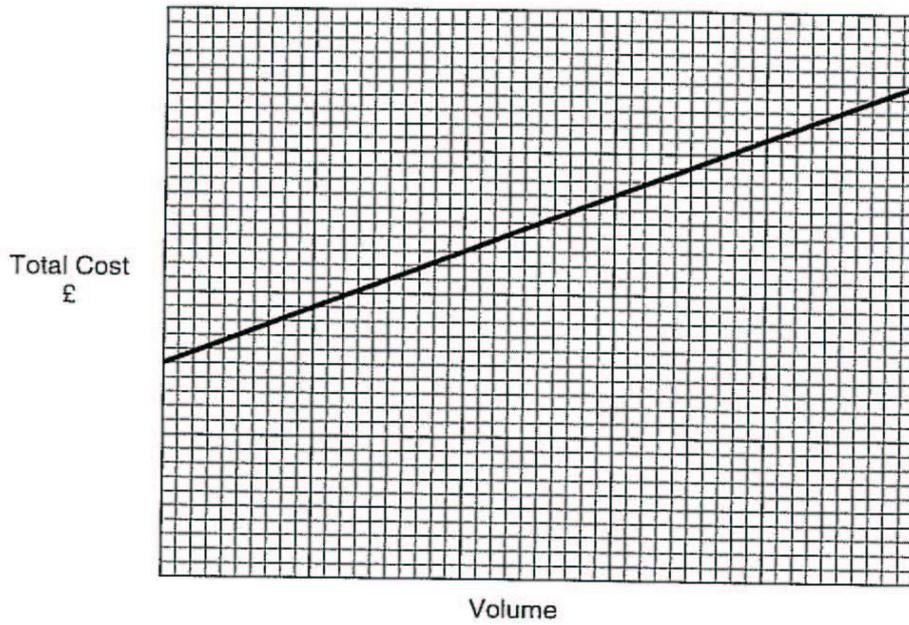
- (ii) Joint products are products (at least two) that are produced simultaneously in a process and that each have a significant relative sales value.

Joint costs incurred in a process (ie all costs incurred prior to product separation) have to be apportioned if product costs are to be established. A number of methods exist, the sole purpose of which is the valuation of unsold stock at the end of an accounting period.

For Question 1(a)

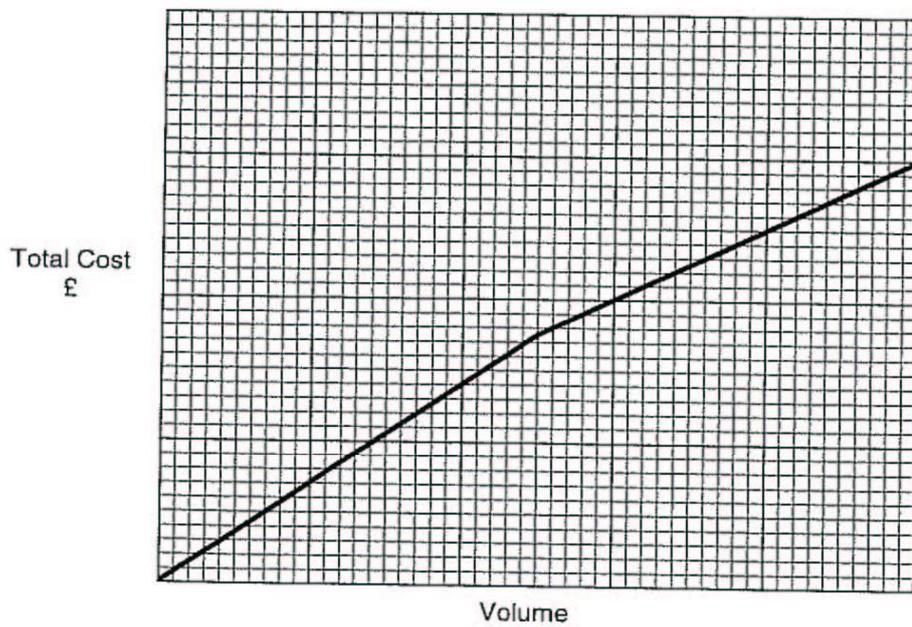
(i)

Telephone Expenses



(ii)

Raw Material Cost



## QUESTION 2

The following information relates to the production of a product for the period just ended. The information has been extracted from a company's marginal costing system.

	£	
Direct materials used (actual cost)	85,146	
Opening stock of finished goods (standard cost)	60,400	
Closing stock of finished goods (standard cost)	73,040	
Variable production cost of sales (standard cost)	134,960	
Direct materials price variance	1,265	Adverse

The standard variable production costs of the product (per unit) are:

Direct materials, 2 kg at £2.30 per kg  
Direct labour, 0.7 hours at £3.00 per hour  
Variable overhead, £1.30 per unit.

### REQUIRED

- (a) Calculate for the period just ended:
- (i) the actual price per kg of direct materials used (6 marks)
  - (ii) the production of the product (units) (6 marks)
  - (iii) the direct materials usage variance (£). (4 marks)
- (b) Suggest possible causes of the direct materials usage variance calculated in a(iii) above. (4 marks)

**(Total 20 marks)**

## MODEL ANSWER TO QUESTION 2

(a)

(i) Actual price per kg of direct materials used

Actual direct materials used

$$\begin{aligned} &= \text{£}85,146 \text{ (actual cost of materials used)} \\ &- \text{£}1,265 \text{ (adverse price variance)} \\ &= \text{£}83,881 \text{ (standard cost of materials used)} \\ &\div \text{£}2.30 \text{ (standard price per kg)} \end{aligned}$$

$$= 36,470 \text{ kg used}$$

$$\begin{aligned} \text{Price per kg} &= \text{£}85,146/36,470 \text{ kilos} \\ &= \underline{\text{£}2.335} \text{ per kg} \end{aligned}$$

(ii) Production of the product (units):

Standard variable costs of production (total £)

$$\begin{aligned} &= \text{£}134,960 \text{ (standard variable production cost of sales)} \\ &+ \text{£}73,040 \text{ (closing stock at standard)} \\ &- \text{£}60,400 \text{ (opening stock at standard)} \end{aligned}$$

$$= \text{£}147,600$$

Standard variable cost of production (£ per unit)

$$\begin{aligned} &= \text{£}4.60 \text{ (direct materials)} \\ &+ \text{£}2.10 \text{ (direct labour)} \\ &+ \text{£}1.30 \text{ (variable overhead)} \end{aligned}$$

$$= \text{£}8.00 \text{ per unit}$$

$$\begin{aligned} \text{Production} &= 147,600/8 \\ &= \underline{18,450} \text{ units} \end{aligned}$$

(iii) Direct materials usage variance (£):

Standard materials cost of production

$$\begin{aligned} &= 18,450 \text{ units} \times \text{£}4.60 \text{ per unit} \\ &= \text{£}84,870 \end{aligned}$$

Usage variance

$$\begin{aligned} &= \text{£}83,881 \text{ (standard cost of materials used)} \\ &- \text{£}84,870 \text{ (standard materials cost of production)} \end{aligned}$$

$$= \underline{\text{£}989} \text{ Favourable}$$

(b) Possible causes: efficient material handling, standard (basic) out-of date, better quality materials, poor record keeping.

### QUESTION 3

A company sells three products. The following information relates to the three products:

	Products		
	A	B	C
Sales (units per period)	2,460	8,742	5,554
Contribution (£ per unit)	1.63	1.90	3.15
Contribution to Sales ratio (%)	35	42	46

Fixed costs are £31,500 per period.

#### REQUIRED

(a) Calculate, based upon the above sales mix:

- (i) the overall contribution to sales ratio (7 marks)
- (ii) the break-even point, in terms of sales revenue, in each period (3 marks)
- (iii) the sales revenue required in order to achieve a profit of £10,000 per period. (3 marks)

It is anticipated that the availability of skilled labour, used in the manufacture of the three products, may be restricted in the near future. The following quantities of the three products are manufactured per hundred hours of skilled labour:

Product A, 700 units  
Product B, 640 units  
Product C, 300 units.

#### REQUIRED

- (b) (i) determine the order of priority for the manufacture of the three products, if skilled labour is in short supply and if the objective is to maximise the profit contribution in each period (5 marks)
- (ii) explain the basis for your ranking in (i) above. (2 marks)

**(Total 20 marks)**

### MODEL ANSWER TO QUESTION 3

(a) Contribution and sales per period:

	<b>Contribution</b>		<b>Sales</b>
Product A, 2,460 units at £1.63	£4,010	÷ 0.35	£11,457
Product B, 8,742 units at £1.90	£16,610	÷ 0.42	£39,548
Product C, 5,554 units at £3.15	<u>£17,495</u>	÷ 0.46	<u>£38,033</u>
	<u>£38,115</u>		<u>£89,038</u>

(i) Contribution to sales ratio =  $\frac{£38,115}{£89,038} \times 100\% = 42.8\%$

(ii) Break-even point =  $\frac{£31,500}{0.428} = £73,598$  per period

(iii) Sales revenue required =  $\frac{£31,500 + £10,000}{0.428} = £96,963$  per period

(b)

(i) Contribution per hundred hours:

Product A, 700 units at £1.63 = £1,141	or £11.41 per
Product B, 640 units at £1.90 = £1,216	hour etc.
Product C, 300 units at £3.15 = £945	

Priority is Product B, then A, then C.

(ii) As there is limited supply of the skilled labour resource, contribution will be maximised if the labour resource available is allocated to the product that generates the largest contribution per unit of that resource. Remaining resource should then be allocated to the product with the next highest contribution per unit of labour, and so on.

#### QUESTION 4

A company is considering the introduction of a new product which would require an investment of £100,000 in new manufacturing equipment. The product would have a selling price of £60 per unit and a contribution margin of 42%. No changes in either selling prices or variable cost prices are anticipated over the five year life of the investment.

Market research indicates the following probabilities relating to demand for the new product in the first year:

Sales units	Probability
7,000	10%
8,000	30%
9,000	45%
10,000	15%

Sales volume would be expected to grow at a rate of 10% per annum.

Incremental fixed costs resulting from the investment are estimated at £225,000 per annum, increasing to £250,000 per annum in years 4 and 5. The investment would be expected to have a terminal value of £5,000 at the end of its five year life. The cost of capital is 10% per annum. Discount factors at 10% are:

Year 1	0.909
Year 2	0.826
Year 3	0.751
Year 4	0.683
Year 5	0.621

#### REQUIRED

- (a) Calculate the expected sales value of the new product for each of the five years. (5 marks)
- (b) Calculate the expected net present value of the new product investment opportunity. (10 marks)
- (c) Calculate an approximate internal rate of return for the investment (to the nearest percentage) using the net present values at 0% (ie undiscounted) and 10%. (5 marks)

**(Total 20 marks)**

## MODEL ANSWER TO QUESTION 4

(a) Sales revenue:

Year 1	7,000	x	0.1	=	700	
	8,000	x	0.3	=	2,400	
	9,000	x	0.45	=	4,050	
	10,000	x	0.15	=	1,500	
					8,650	X 60 = £519,000
Year 2	519,000	x	1.1	=	£570,900	
Year 3	570,900	x	1.1	=	£627,990	(or 519,000 x 1.1 <sup>2</sup> )
Year 4	627,990	x	1.1	=	£690,789	(or 519,000 x 1.1 <sup>3</sup> )
Year 5	690,789	x	1.1	=	£759,868	(or 519,000 x 1.1 <sup>4</sup> )

(b)

	Sales	x	C/S ratio -	Fixed costs =	Cash inflow	x Disc factor 10% =	Present value
Yr 1	£519,000	x	0.42 -	£225,000 =	(£7,020)	x 0.909 =	(£6,381)
Yr 2	£570,900	x	0.42 -	£225,000 =	£14,778	x 0.826 =	£12,207
Yr 3	£627,990	x	0.42 -	£225,000 =	£38,756	x 0.751 =	£29,106
Yr 4	£690,789	x	0.42 -	£250,000 =	£40,131	x 0.683 =	£27,409
Yr 5	£759,868	x	0.42 -	£250,000 =	£69,145	x 0.621 =	£42,939
							<u>£105,280</u>

Net investment:

Yr 0	(£100,000)	x	1.000 =	(£100,000)
Yr 5	£5,000	x	0.621 =	<u>£3,105</u>
				<u>(£96,895)</u> Present value

Net present value (NPV at 10% = 105,280 – 96,895 = £8,385)

(c) NPV at 0% (undiscounted) = 155,790 – 95,000 = £60,790

$$\text{Approximate internal rate of return (IRR)} = 0\% + \left\{ 10\% \left[ \frac{60,790}{60,790 - 8,385} \right] \right\}$$

$$= \underline{12\%}$$

## QUESTION 5

Divisions A and B are investment centres within the AB Group. Division A manufactures a component especially for Division B. The anticipated requirements for, and costs and transfer price of, this component for the year ahead are as follows:

Production	112,500 units
Variable cost	£5.70 per unit
Fixed cost	£2.40 per unit
Transfer price	£8.50 per unit

Company C, which is not part of the AB Group, has offered to supply the component to Division B for £7.50 per unit.

### REQUIRED

- (a) Explain fully the term 'investment centre'.  
(4 marks)
- (b) Contrast an investment centre with a profit centre.  
(3 marks)
- (c) Outline the objectives of transfer pricing.  
(3 marks)
- (d) Establish, on the basis of the figures supplied above, whether it is worthwhile for the AB Group to continue to manufacture the component.  
(4 marks)
- (e) Determine whether Division A would benefit if the component were to be purchased from Company C.  
(4 marks)
- (f) Determine whether Division B would benefit if the component were to be purchased from Company C.  
(2 marks)

**(Total 20 marks)**

## MODEL ANSWER TO QUESTION 5

- (a) An investment centre is a responsibility centre (ie a department or organisation function whose performance is the direct responsibility of a specific manager) in which the manager takes decisions regarding investment in fixed assets. Managers of investment centres are thus responsible for revenues, costs and assets. Performance is usually measured by relating profit to the amount invested.
- (b) In contrast to an investment centre, a profit centre is a responsibility centre where the manager only has responsibility for the profit generated from the use of assets. Managers of profit centres are thus responsible for revenues and for costs but not for fixed assets.
- (c) Objectives of transfer pricing:
  - (i) enable performance evaluation of each responsibility centre
  - (ii) ensure that each responsibility centre is encouraged to act in the best interests of the group.
- (d) In the short term there is a saving of £1.80 per unit (£7.50 - £5.70) from continued manufacture, but it is more questionable longer term (current buying-in price of £7.50 per unit compares with a total unit cost of manufacture of £8.10).
- (e) In the short term Division A would lose a contribution (and profit) of £2.80 per unit (£8.50 - £5.70). In the longer term, even if all costs could be avoided, Division A would still lose profit (£8.50 - £8.10).
- (f) Division B would benefit by £1.00 per unit (£7.50 - £8.50).

## QUESTION 6

A company will commence operations in September with £150,000 cash at bank, raised from an issue of share capital. A stock of goods costing £45,000 will be purchased in August, with further purchases in the following three months sufficient to increase stock by £5,000 each month. Goods are purchased on one month's credit.

Sales are to be made on credit at a mark-up of 40% on cost. Sales in the first three months of operations, at a selling price of £14 per unit, are expected to be:

September	1,500 units
October	4,500 units
November	5,000 units

50% of customers are expected to pay in the month following sale and the remaining 50% one month later.

Variable overheads are forecast at 5% of sales, payable in the month in which they are incurred. Fixed overheads, excluding depreciation, are expected to be £11,800 per month starting in September. Fixed overheads are payable one month after they are incurred. Depreciation of fixed assets will be £2,000 per month on the capital expenditure of £120,000 that will take place in August. Payment will be made in September.

Interest is payable monthly, at a rate of 12% per annum, on any opening overdraft balances.

### REQUIRED

- (a) Prepare a cash budget for **each** of the three months, September to November, showing clearly any overdraft required and the associated interest costs. (13 marks)
- (b) Calculate the number of units in stock at the end of November. (3 marks)
- (c) Calculate the profit after interest in November if a marginal costing system is used. (4 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 6**

(a) Cash Budget:

	September £	October £	November £
Receipts:			
Capital	150,000		
Sales		<u>10,500</u>	<u>42,000</u>
	<u>150,000</u>	10,500	42,000
Payments:			
Goods purchased	45,000	20,000	50,000
Variable overheads	1,050	3,150	3,500
Fixed overheads		11,800	11,800
Capital expenditure	120,000		
Overdraft interest		<u>161</u>	<u>407</u>
	<u>166,050</u>	35,111	65,707
Net cash flow	(16,050)	(24,611)	(23,707)
Opening cash balance	-----	(16,050)	(40,661)
Closing cash balance	(16,050)	(40,661)	(64,368)

**Workings:**

Sales	21,000	63,000	70,000
Purchases (Sales ÷ 1.4 + 5,000)	20,000	50,000	

$$(b) \text{ Stock} = \frac{45,000 + (3 \times 5,000)}{14 \div 1.4}$$

$$= 6,000 \text{ units}$$

(c) Profit in November:

Contribution 5,000 units at £3.30 per unit =	16,500
Less Fixed overheads	13,800
Interest	<u>407</u>
Profit after interest	<u><u>2,293</u></u>