

# Management Accounting Level 3



## Model Answers

Series 3 2008 (Code 3023)

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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

### REQUIRED

- (a) An expanding business which is budgeting high profits may produce a cash budget indicating a deficit. Explain why this is so. (7 marks)
- (b) Outline **three** objectives of budgetary planning and control systems. 7 marks)
- (c) State the formula used in cost – volume – profit analysis to calculate **each** of the following:
- (i) the break-even point in sales revenue
  - (ii) the break-even point in sales units
  - (iii) the sales revenue required to achieve a target profit.

(6 marks)

**(Total 20 marks)**

## MODEL ANSWER TO QUESTION 1

- (a) Period profit is based upon the matching of revenue from sales with those resources utilised in generating the sales, and not upon cash receipts and payments.

Factors contributing to a cash deficit during a period of high profit could include:

- (i) investment in fixed assets (in excess of depreciation)
- (ii) increase in stock (possibly to support an increase in sales)
- (iii) increase in debtors (also likely to result from an increase in activity)
- (iv) decrease in creditors (but less likely if stock increases)
- (v) repayment of loans
- (vi) a deficit cash position at the start of the period.

- (b) The objectives of budgetary planning and control systems are:

- (i) to force management to think ahead about future events and the best way to achieve objectives
- (ii) to provide a clear plan of expected future progress towards objectives
- (iii) to communicate to personnel within an organisation what is required of them and to set them targets to achieve
- (iv) to co-ordinate plans throughout an organisation in order to ensure the availability of the required resources and their efficient acquisition and utilisation
- (v) to enable better control through the comparison of actual results against budget and investigation of variances
- (vi) to identify limiting factor
- (vii) to enable cash planning.

- (c) (i) Break-even point (sales revenue) =  $\frac{\text{fixed costs}}{\text{contribution/sales ratio}}$
- (ii) Break-even point (sales units) =  $\frac{\text{fixed costs}}{\text{contribution per unit}}$
- (iii) Sales revenue for target profit =  $\frac{\text{fixed costs} + \text{target profit}}{\text{contribution/sales ratio}}$

## QUESTION 2

### REQUIRED

- (a) Briefly describe, and appraise, **two** different types of standard that may be used as the basis for a standard costing system. (6 marks)

A company budgeted to sell 7,500 units of a product in a month at a standard selling price of £20 each. The standard cost of the product is £14 per unit. During the month actual sales of the product were 7,720 units with revenue of £152,470.

### REQUIRED

- (b) Calculate the sales price variance and the sales volume profit variance for the month. (6 marks)

In the same month, the following labour cost variances were reported relating to the manufacture of the product:

Labour rate variance, £1,150 Adverse  
Labour efficiency variance, £624 Favourable.

The standard labour rate is £8 per hour and labour costs of £37,006 were incurred in the manufacture of 7,600 units of the product during the month.

### REQUIRED

- (c) (i) Calculate the number of labour hours worked in the month (4 marks)  
(ii) Calculate the standard hours per unit of product manufactured. (4 marks)

**(Total 20 marks)**

## MODEL ANSWER TO QUESTION 2

- (a) There are 4 types of standard that may be used in a standard costing system (any 2 may be given in answer to the question):
- (i) Ideal standards, are the levels of performance that can be achieved under perfect operating conditions ie maximum efficiency. Such standards are unlikely to be achieved and may, as a consequence, be de-motivational.
  - (ii) Attainable standards, which assume efficient levels of operation but make some allowance for losses, waste, etc where appropriate. Such standards are commonly adopted as they can be seen to be achievable with effort and, thus, may provide motivation to improve performance.
  - (iii) Current standards, which are the present levels of attainment within a business. They provide a benchmark to assess improvement but may not be sufficiently motivational.
  - (iv) Basic standards, which are original standards that may have been set some time ago. They provide a benchmark for measuring progress over time but will require amendment from time to time to reflect changed operating conditions.

$$(b) \text{ Sales price variance} = 7,720 \times \left( \frac{152,470}{7,720} - 20 \right) \text{ or } 152,470 - (7,720 \times 20)$$

$$= \text{£}1,930 \text{ Adverse}$$

$$\text{Sales volume profit variance} = (7,720 - 7,500) \times 6$$

$$= \text{£}1,320 \text{ Favourable}$$

$$(c) \text{ (i) Hours worked} = (37,006 - 1,150) \div 8$$
$$= 4,482$$

$$\text{(ii) Standard hours per unit} = \frac{(624 + 4,482)}{8} \div 7,600$$

$$= 0.6$$

$$\text{or } 37,006 - 1,150 + 624$$

$$= \frac{36,480}{8} = 4,560 \text{ std hrs} \div 7,600$$

$$= 0.6$$

### QUESTION 3

The following are the expected production overhead costs for a factory department at three different levels of activity in a period:

	Output (units)		
	16,000	20,000	24,000
	£	£	£
Variable costs	14,000	17,500	21,000
Semi-variable costs	12,200	13,000	13,800
Fixed costs	<u>31,000</u>	<u>31,000</u>	<u>31,000</u>
	<u>57,200</u>	<u>61,500</u>	<u>65,800</u>

The total production overhead costs of the department for a period can be calculated using an equation of the form:

$$y = a + bx$$

where:

- $y$  is the total production overhead cost (£)
- $a$  is the total fixed production overhead cost (£)
- $b$  is the variable production overhead costs (£ per unit of output)
- $x$  is the number of units of output.

### REQUIRED

- (a) Using the above data, calculate the values of  $a$  and  $b$ . (6 marks)
- (b) Estimate the total production overhead costs for the department in a period if 18,000 units are manufactured. (2 marks)
- (c) Calculate the predetermined production overhead absorption rate, per unit of output for the department, based on planned production of 20,000 units in a period. (2 marks)
- (d) Using the absorption rate established in (c) above, calculate the over/under absorbed overhead if actual output is 21,500 units and costs are as expected. (5 marks)
- (e) Contrast the way in which production overhead costs are attributed to products using activity based costing (ABC) with the more traditional full absorption costing approach. (5 marks)

**(Total 20 marks)**

### MODEL ANSWER TO QUESTION 3

- (a) Linear equation is established from high-low analysis as follows:

$$\text{Variable costs per unit (b)} = \frac{65,800 - 57,200}{24,000 - 16,000}$$

$$= \text{£}1.075 \text{ per unit}$$

$$\text{Total fixed costs (a)} = 65,800 - (24,000 \times 1.075)$$

$$= \text{£}40,000 \text{ per period}$$

$$\text{Equation: } y = 40,000 + 1.075x$$

- (b)  $y = 40,000 + (18,000 \times 1.075)$

$$= \text{£}59,350$$

$$\text{or } \frac{57,200 + 61,500}{2} = 59,350$$

- (c) Absorption rate =  $61,500 \div 20,000 = \text{£}3.075 \text{ per unit}$

- (d) Costs =  $40,000 + (21,500 \times 1.075) = 63,112.5$

$$\text{Absorption} = 21,500 \times 3.075 = 66,112.5$$

$$\text{Over-absorption} = \text{£}3,000 \text{ (ie } 1,500 \text{ units} \times \text{£}2.00 \text{ per unit fixed overhead)}$$

- (e) Traditional methods allocate or apportion all production overheads to production departments. A variety of bases may be used for apportionment depending upon the main influence on cost occurrence. However, within each production department, the absorption of overhead into product costs is traditionally based on a single measure of output activity (typically labour hours or machine hours). As a consequence, any link with the cause of occurrence of allocated or apportioned costs tends to be lost.

The key difference in ABC systems is that the key drivers of overhead costs are more closely linked with the use that each product makes of those drivers. This is achieved by first collecting overhead costs according to each cost driver in cost pools. The use that products make of each key driver is then measured and used as a basis for linking overhead costs with products. As a consequence, product costs should be more accurate.

#### QUESTION 4

Two divisions of a company have the following balance sheets at the end of a period:

	<b>Division A</b>	<b>Division B</b>
	<b>£000</b>	<b>£000</b>
Long term capital at start of period	1,075	3,210
Profit before interest for period	<u>182</u>	<u>458</u>
Long term capital at end of period	<u>1,257</u>	<u>3,668</u>
Fixed assets (net book value)	832	2,689
Current assets:		
Stock	241	512
Debtors	276	582
Bank	<u>24</u>	<u>79</u>
	541	1,173
Current liabilities:		
Creditors	<u>116</u>	<u>194</u>
Net current assets	<u>425</u>	<u>979</u>
Net assets	<u>1,257</u>	<u>3,668</u>

Additional information for the period:

Sales (all on credit)	£2,685,000	£10,634,000
Gross profit margin	36%	28%

#### REQUIRED

- (a) Calculate the return on average capital employed and the residual income for each of the divisions. The cost of capital of each division is 12% per annum. (6 marks)
- (b) Calculate **two** other ratios to provide further analysis of the profitability of the two divisions. (6 marks)
- (c) Calculate **two** ratios to provide analysis of the divisions' management of working capital. (6 marks)
- (d) Using the ratios calculated in (c) above, contrast the two divisions' management of working capital. (2 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 4**

(a)	<b>Division A</b>	<b>Division B</b>
Return on av capital employed	$\frac{182 \times 100\%}{1,166 \frac{(1,075 + 1,257)}{2}}$	$\frac{458 \times 100\%}{3,439 \frac{(3,210 + 3,668)}{2}}$
	= <u>15.6%</u>	= <u>13.3%</u>
Residual income	$182,000 - 139,900 (0.12 \times 1,166)$ <u>£42,100</u>	$458,000 - 412,700 (0.12 \times 3,439)$ <u>£45,300</u>
(b) Net profit % of sales	$\frac{182 \times 100\%}{2,685}$	$\frac{458 \times 100\%}{10,634}$
	= <u>6.8%</u>	= <u>4.3%</u>
Sales/long term av capital	$\frac{2,685}{1,166}$	$\frac{10,634}{3,439}$
	= <u>2.3 times</u>	= <u>3.1 times</u>
(c) Stock turnover	$\frac{1,718 (2,685 \times 0.64)}{241}$	$\frac{7,656 (10,634 \times 0.72)}{512}$
	= <u>7.1 times</u>	= <u>15.0 times</u>
Debtor collection	$\frac{276 \times 365}{2,685}$	$\frac{582 \times 365}{10,634}$
	= <u>37.5 days</u>	= <u>20.0 days</u>

NB. The current ratio and/or acid test ratio could have been calculated.

- (d) Division B has significantly better stock turnover than Division A and extends much less credit to its customers. On the face of it, working capital management in Division B seems to be better than that in Division A.

## QUESTION 5

A company is working at full labour capacity and will be unable to recruit additional skilled labour for the foreseeable future.

A component currently manufactured by the company has the following unit costs:

	<b>£ per unit</b>
Direct materials	1.60
Direct labour (0.25 hours at £5.60 per hour)	1.40
Variable overheads	0.60
Fixed overheads	<u>1.90</u>
	<u>5.50</u>

The component could be obtained from an outside supplier for £4.50 per unit.

If the component is not manufactured by the company, the direct labour released could be employed in increasing the output (and sales) of an existing product (Product A) which is sold for £35 and which has the following unit costs:

	<b>£ per unit</b>
Direct materials	9.00
Direct labour (2 hours at £5.60 per hour)	11.20
Variable overheads	3.80
Fixed overheads	<u>11.00</u>
	<u>35.00</u>

The production director believes that the component must continue to be manufactured by the company as special equipment was installed only a year ago. The special equipment cost £65,000 but has no resale value or alternative use.

### REQUIRED

- (a) State, with supporting calculations, whether the component should continue to be manufactured by the company, or whether it should be bought-in, whilst labour remains in short supply. (11 marks)
- (b) Comment upon the production director's views. (5 marks)
- (c) Calculate the additional profit that would result if an additional hour of skilled labour could be made available. (4 marks)

**(Total 20 marks)**

### MODEL ANSWER TO QUESTION 5

(a) Bought-in price of component	<u>£4.50/unit</u> (to save 0.25 labour hours)
Variable costs of manufacture	<u>£3.60/unit</u>
Extra cost of buying-in	(£0.90)/unit
Extra contribution if bought-in	<u>£1.375/unit</u>
Net gain if bought-in	<u>£0.475/unit</u>

#### Workings:

$$\begin{aligned} \text{Extra contribution if component bought-in} &= \text{£35 selling price} \\ &\text{less } \underline{\text{£24}} \text{ variable costs} \\ &= \underline{\text{£11}} \text{ per unit of Product A} \\ & \\ &\times \frac{\underline{\text{0.25 hours}}}{\text{2 hours}} \\ & \\ &= \text{£1.375 per unit of component} \end{aligned}$$

- (b) The reason given by the production director should not be used as justification for continued manufacture of the component. The key issue is whether better use could be made of the scarce labour. The fact that the investment cost of £65,000 is a sunk cost, and that the equipment has no resale value or alternative use, does increase the attractiveness of continuing to manufacture the component. However, despite this, analysis indicates that the company would be better off buying-in the component and putting the scarce labour to an alternative use.
- (c) Additional profit = contribution from Product A £11 per unit  
÷ 2 hours per unit  
= £5.50 per hour

## QUESTION 6

A company has to choose between two projects, Project A and Project B. Cash inflow projections are as follows:

Year	Project A £000	Project B £000
1	100	200
2	200	200
3	300	200
4	400	200
5	500	200

The projects require an initial investment of:

Project A	£900,000
Project B	£640,000

The cost of capital is 12% per annum. Discount factors between 12% and 18% are as follows:

Year	12%	13%	14%	15%	16%	17%	18%
1	0.893	0.885	0.877	0.870	0.862	0.855	0.847
2	0.797	0.783	0.769	0.756	0.743	0.731	0.718
3	0.712	0.693	0.675	0.658	0.641	0.624	0.609
4	0.636	0.613	0.592	0.572	0.552	0.534	0.516
5	<u>0.567</u>	<u>0.543</u>	<u>0.519</u>	<u>0.497</u>	<u>0.476</u>	<u>0.456</u>	<u>0.437</u>
	<u>3.605</u>	<u>3.517</u>	<u>3.432</u>	<u>3.353</u>	<u>3.274</u>	<u>3.200</u>	<u>3.127</u>

### REQUIRED

(a) Calculate for each project:

- (i) the net present value
- (ii) the internal rate of return.

(12 marks)

(b) On the basis of your calculations in (a), advise management regarding the choice of project and explain the reasoning behind your advice.

(4 marks)

(c) Explain how the profitability index is calculated and discuss whether the profitability index would assist management in its choice of project in the situation above.

(4 marks)

**(Total 20 marks)**

## MODEL ANSWER TO QUESTION 6

(a) (i) Net present value (NPV):

Project A:

Year	Cash flow £000	Disc. factor 12%	Present value £000
0	(900)	1.000	(900)
1	100	0.893	89.3
2	200	0.797	159.4
3	300	0.712	213.6
4	400	0.636	254.4
5	<u>500</u>	0.567	<u>283.5</u>
	<u>600</u>		NPV <u>100.2</u>

Project B:

PV of cash inflows (£000) = 721 (200 x 3.605)

NPV (£000) = (640) – 721 = 81.0

(ii) Internal rate of return (IRR):

Project A:

NPV at 0% = 600: NPV at 12% = 100

Reduction in NPV = approx. 40 per %

Therefore, discount cash flows again at 15%

Year	Cash flow £000	Disc. Factor 15%	Present Value £000
0	(900)	1.000	(900)
1	100	0.870	87.0
2	200	0.756	151.2
3	300	0.658	197.4
4	400	0.572	228.8
5	500	0.497	<u>248.5</u>
			<u>12.9</u>

IRR = 12% + {3% x  $\frac{100.2}{87.3}$ } = 15.4%

Project B:

Cum disc. Factor =  $\frac{640}{200} = 3.2 = \underline{17.0\%}$  IRR

- (b) The company should invest in Project A as long as funds are available for investment in all projects yielding a positive NPV. Despite the lower IRR% from Project A, the additional investment of £260,000 yields an incremental NPV. When cash funds available for investment are limited there may be a better use for the additional £260,000.
- (c) The profitability index measures the NPV per £ of investment. This is, therefore, like the IRR%, a relative measure of investment project value. As such, the profitability index may be useful for project selection where funds available for investment are limited. If this is not the case here, then prioritising Project B on the basis of its higher profitability index (0.127 compared with 0.111 for Project A) would not result in the correct decision.