LCCI International Qualifications

**Management Accounting
Level 3**

International
Qualifications from EDI

Model Answers
Series 4 2008 (3023)

Management Accounting Level 3
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How to use this booklet

Model Answers have been developed by 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) Discuss the relevance of both absorption and marginal costing statements to decision-making.

(7 marks)

(b) Define, and explain fully, the term **opportunity cost**.

(6 marks)

(c) (i) Define, with an example, the term **limiting factor.**

(3 marks)

   (ii) Describe the approach to the allocation of resources, for short-term profit maximisation in a business manufacturing a range of products, where direct labour hours are the limiting factor.

(4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 1

(a) Costing statements, whether using the absorption costing method or the marginal costing method, may be prepared routinely (eg monthly) to assess the performance of a business organisation as a whole or of key parts of that organisation. These statements may have some relevance to decisions taken at that level of the organisation. However, many business decisions will require more detailed information to be prepared at a lower level in the organisation.

Absorption costing may provide a guide to long-term performance, and thus long-term decisions, but it is not appropriate for short-term decisions where certain costs and assets will tend to be fixed. **Marginal costing** is more appropriate for short-term decisions because it focuses on variable costs and contribution. As already noted above, in many cases a special exercise will be required in order to identify decision specific information.

(b) An **opportunity cost** is the benefit sacrificed in favour of an alternative course of action. Every decision, which involves making a choice between two or more mutually exclusive alternatives, has an opportunity cost.

For example, where a business's available resources are insufficient to meet customer demand for the business's products or services, the use of resources in a particular way will mean giving up the opportunity of using them in one or more other ways. The benefit that would have arisen from an alternative use of a resource becomes an opportunity cost of the course of action being considered.

(c) (i) The term 'limiting factor' refers to anything that limits the activity of a business.

   Examples are a shortage of supply of a resource (eg skilled labour) or a restriction on sales demand at a particular price.

   (ii) In a situation where, for a manufacturing business, direct labour hours are the limiting factor then, in order to maximise short-term profit, the available hours need to be allocated to those products that provide the highest level of profit. The measure of profit that is relevant is the contribution (sales less variable costs) that each product earns in relation to the amount of direct labour hours utilised in generating that contribution.

The product with the highest contribution per direct labour hour should be allocated hours up to the limit of its sales demand and then the next most profitable product, and so on, until the available direct labour hours are fully utilised.

QUESTION 2

A company manufactures Product Y by mixing three raw materials together. The raw material standards for a batch of 100 kg of Product Y are:

Material S   25 kg @ £3.60 per kg
Material T   40 kg @ £2.80 per kg
Material U   <u>60</u> kg @ £0.90 per kg
           <u>125</u> kg

Standard wastage in the preparation of each material is 20% of input.

In the period just ended the actual raw material usage and costs, incurred in the manufacture of 24,300 kg of Product Y, were:

    Material S   5,840 kg costing £21,215
    Material T 10,140 kg costing £28,340
    Material U 14,820 kg costing £13,320.

REQUIRED

(a) Calculate the standard direct material cost per kg of Product Y.

(2 marks)

(b) Calculate the following direct material variances:

    (i)   price for Material S only (2 marks)

    (ii)   total usage (4 marks)

    (iii) total mix (4 marks)

    (iv) total yield. (4 marks)

(c) Define the terms: **ideal standard** and **attainable standard**.

(4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 2

(a) Standard direct material cost per kg:

	£
Material S (25 kg @ £3.60)	90
Material T (40 kg @ £2.80)	112
Material U (60 kg @ £0.90)	54
	256

$\div$ 100 kg = £2.56 per kg

(b) (i) Direct material price variance, Material S = AC – (AQ x SP)

[£21,215 – (5,840 kg @ £3.60)] = £191 adverse

(ii) Total direct material usage variance:

Actual usage at standard price:	£
Material S (5,840 kg @ £3.60)	21,024
Material T (10,140 kg @ £2.80)	28,392
Material U (14,820 kg @ £0.90)	13,338
	62,754
Standard usage (24,300 kg of output @ £2.56)	62,208
	546 adverse (usage variance)

(iii) Total direct material mix variance:

Total weight of materials used = 30,800 kg (5,840 + 10,140 + 14,820)

Actual usage in standard mix at standard price:			£
Material S	20%	(6,160 kg @ £3.60)	22,176.00
Material T	32%	(9,856 kg @ £2.80)	27,596.80
Material U	48%	(14,784 kg @ £0.90)	13,305.60
Total		30,800 kg	63,078.40

(£62,754 – £63,078.40) = £324.40 favourable (mix variance)

(iv) Total direct material yield variance:

(£63,078.40 – £62,208) = £870.40 adverse (yield variance)

Or 30,800 kg of input $\times$ 0.8 = 24,640 kg standard output

– 24,300 kg actual output

=   340 kg adverse yield $\times$ £2.56/kg = £870.40

(c) (i) Ideal standard:

An ideal standard is a standard that can be attained only under the most efficient operating conditions. It makes no allowance for normal loss, waste or machine downtime.

(ii) Attainable standard:

An attainable standard is a standard that assumes efficient levels of operation but which includes allowance for normal loss, waste and machine downtime.

QUESTION 3

The following information relates to the three products that are manufactured and sold by a company:

(£ per unit)	**P**	**Q**	**R**
		Product	
Selling price	8.60	5.00	11.20
Variable production costs	4.90	3.00	5.24
Variable non-production costs	1.12	0.60	1.48

Sales per period are:

Product P	3,800 units
Product Q	6,340 units
Product R	2,900 units

Fixed costs per period are:

Production	£15,620
Non-production	£9,110

REQUIRED

(a) Calculate the:

    (i) contribution/sales ratio of each product (3 marks)

    (ii) net profit per period. (3 marks)

(b) Calculate, based upon the above sales mix (units), the:

    (i) overall contribution/sales ratio (to one decimal place of %) (4 marks)

    (ii) break-even point sales (to the nearest £ hundred) (3 marks)

    (iii) sales (to the nearest £ hundred) required in a period to earn a profit of £10,000. (3 marks)

(c) Calculate the overall contribution/sales ratio (to one decimal place of %) based upon the following revised sales mix:

Product P	30% of total sales revenue
Product Q	30% of total sales revenue
Product R	40% of total sales revenue.

    (4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 3

(a) (i) Contribution/sales ratio by product:

      Product P   (£2.58/unit ÷ £8.60/unit) × 100% = <u>30%</u>

      Product Q   (£1.40/unit ÷ £5.00/unit) × 100% = <u>28%</u>

      Product R   (£4.48/unit ÷ £11.20/unit) × 100% = <u>40%</u>

(ii) Net profit per period:

Contribution:		£
Product P	3,800 units @ £2.58/unit =	9,804
Product Q	6,340 units @ £1.40/unit =	8,876
Product R	2,900 units @ £4.48/unit =	<u>12,992</u>
		31,672
Less Fixed costs (£15,620 + £9,110)		<u>24,730</u>
Net profit		<u>6,942</u>

(b) (i) Overall contribution/sales ratio:

Sales:		£
Product P	3,800 units @ £8.60/unit =	32,680
Product Q	6,340 units @ £5.00/unit =	31,700
Product R	2,900 units @ £11.20/unit =	<u>32,480</u>
		96,860

Overall contribution/sales ratio:

= (£31,672 ÷ £96,860) × 100%

= <u>32.7% (or 0.327)</u>

(ii) Break-even point = $\dfrac{FC}{C/S}$

= £24,730 ÷ 0.327

= <u>£75,600</u>   (to the nearest £ hundred)

(iii) Required sales for £10,000 profit = $\dfrac{(FC + P)}{C/S}$

= £34,730 ÷ 0.327

= <u>£106,200</u> (to the nearest £ hundred)

(c) Revised overall contribution/sales ratio:

Product P	30% × 0.3 = 0.090
Product Q	28% × 0.3 = 0.084
Product R	40% × 0.4 = <u>0.160</u>
	<u>0.334</u> ie <u>33.4%</u>

QUESTION 4

A company is divided into 2 investment centres. Investment Centre A manufactures a single product which is sold to Investment Centre B as well as to outside customers. The transfer price of the product between the 2 investment centres is under review.

The following information is available for Investment Centre A:

	Sales to outside customers	Sales to Investment Centre B	Total
Sales units per period	16,600	9,300	25,900
Selling price	£7.80 per unit		
Variable costs	£4.45 per unit	£4.20 per unit	
Fixed costs per period	£46,480	£26,040	£72,520
Capital employed			£96,400

Fixed costs have been apportioned on the basis of sales units.

Investment Centre B sells entirely to outside customers. Sales and costs per period are:

Sales   £267,100
Costs   £172,440 (excluding the cost of units transferred from Investment Centre A).

REQUIRED

(a) If the transfer price is set at £7.20 per unit, calculate per period:

   (i)   the net profit for each investment centre   (7 marks)

   (ii) the return on capital employed (ROCE) for Investment Centre A.   (2 marks)

(b) Calculate the transfer price (to 3 decimal places of £) that is required for Investment Centre A to earn a ROCE of 12% per period.

(7 marks)

(c) Calculate the change in period profit for each investment centre, and for the company as a whole, if the transfer price is set at £7.00 per unit, rather than £7.20 per unit.

(4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 4

(a) (i)   Net profit for each investment centre:

		Investment Centre A £		Investment Centre B £
Sales:				
	External	129,480	(16,600 @ £7.80)	267,100
	Transfer to B	66,960	(9,300 @ £7.20)	
		196,440		
Costs:				
	Variable	112,930	(16,600 @ £4.45) + (9,300 @ £4.20)	
	Fixed	72,520		
		185,450		
	Transfer from A			66,960
	Other			172,440
				239,400
	Net profit	10,990		27,700

(ii)   Return on capital employed – Investment Centre A:

ROCE = (10,990 ÷ 96,400) x 100% = **11.4%**

(b) Transfer price required:

Profit per period for 12% ROCE = £11,568 (£96,400 x 0.12)

                                     = + £578 (£11,568 – £10,990)

                                       = + £0.062 per unit (£578 ÷ 9,300 units)

Transfer price = **£7.20 + £0.062 = £7.262** per unit

(c) Change in period profit:

Change for each investment centre = £1,860 (9,300 units @ £0.20 per unit)

Investment Centre A = - £1,860
Investment Centre B = + £1,860
Group   Nil

QUESTION 5

A company is preparing budgets for a three-month period (November 2008 to January 2009). Details include:

(i) **Sales:**

November 2008	£115,200
December 2008	£180,600
January 2009	£108,900

10% of sales are for cash. 70% of the value of credit sales are payable in the month following sale, with the balance one month later.

(ii) **Gross profit:**
Products are bought-in and have a gross profit margin of 30% of sales. Products are purchased in the month before expected sale, payable 60% in the month following purchase with the balance one month later.

(iii) **Overheads:**
Variable overheads are 6% of sales value. Fixed overheads, including depreciation of £9,100, are £26,400 per month. All overheads, excluding depreciation, are paid for in the month incurred.

(iv) **Capital expenditure:**
Investment of £44,000 in fixed assets will be paid for in January 2009.

The following information relates to the three-month period just ended:

(i) **Sales:**

August 2008	£176,700
September 2008	£153,000
October 2008	£120,200

(ii) Products were purchased in the month before sale.

(iii) The cash balance at the end of October 2008 was £4,640.

REQUIRED

(a) Prepare a cash budget for **each** month (November 2008, December 2008 and January 2009).

(13 marks)

(b) Calculate:

(i) the value of stock at the **end of October 2008**

(ii) the budgeted value of trade creditors at the **end of December 2008**

(iii) the budgeted value of debtors at the **end of January 2009**.

(7 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 5

(a) Cash budget:

	November 2008 £		**December 2008** £		**January 2009** £	
Receipts:						
Cash sales*	11,520		18,060		10,890	
Credit sales*	41,310	(Sept)	32,454	(Oct)	31,104	(Nov)
	75,726	(Oct)	72,576	(Nov)	113,778	(Dec)
	128,556		123,090		155,772	
Payments:						
Goods*	33,656	(Sept)	32,256	(Oct)	50,568	(Nov)
	48,384	(Oct)	75,852	(Nov)	45,738	(Dec)
	82,040		108,108		96,306	
Variable overheads*	6,912		10,836		6,534	
Fixed overheads*	17,300		17,300		17,300	
Capital expenditure					44,000	
	106,252		136,244		164,140	
Net cash flow in month	22,304		(13,154)		(8,368)	
Opening cash balance	4,640		26,944		13,790	
Closing cash balance	26,944		13,790		5,422	

* Cash sales eg Nov receipt = [£115.2k Nov sales x 0.1]
 Credit sales eg Nov receipts = [£153k Sept sales x (0.9 x 0.3)] + [£120.2k Oct sales x (0.9 × 0.7)]
 Purchases of goods (70% of next month's sales value):
   September £84,140; October £80,640; November £126,420; December £76,230
 Payments for goods eg Nov payments = [£84.14k Sept purchases x 0.4] +
 [£80.64k Oct purchases x 0.6]
 Variable overheads eg Nov = [Nov sales £115.2k x 0.06]
 Fixed overheads = [£26.4k – £9.1k]

(b) (i) Stock at the end of October 2008:

  = November sales £115,200 x 0.7

  = **£80,640** (ie October purchases)

 (ii) Trade creditors at the end of December 2008:

  = [November purchases £126,420 x 0.4] + December purchases £76,230

  = **£126,798**

 (iii) Debtors at the end of January 2009:

  = [December sales £180,600 x 0.27] + [January sales £108,900 x 0.9]

  = **£146,772**

QUESTION 6

A company is evaluating an investment project requiring an outlay of £1.4million on new machines (Year 0). The machines would be expected to have a useful working life of six years, with a residual value of £80,000 (Year 6), and would be depreciated on a straight-line basis.

Estimates of cost savings (net of depreciation of the new machines) arising from the investment are:

Year	£'000
1	20
2	50
3 to 6	80 per annum

REQUIRED

(a) Calculate, in relation to the investment project, the:

  (i) average annual accounting rate of return

(5 marks)

  (ii) payback period

(6 marks)

  (iii) discounted cash flow internal rate of return.

  Discount factors:

Year	5%	10%	15%	20%	25%
1	0.952	0.909	0.870	0.833	0.800
2	0.907	0.826	0.756	0.694	0.640
3	0.864	0.751	0.658	0.579	0.512
4	0.823	0.683	0.572	0.482	0.410
5	0.784	0.621	0.497	0.402	0.328
6	0.746	0.564	0.432	0.335	0.262

(6 marks)

(b) State whether the investment project is financially worthwhile if the company's cost of capital is 8% per annum. Explain your reasoning.

(3 marks)

(Total 20 marks)

QUESTION 6

(a) (i) Accounting rate of return:

$$\frac{\text{Average annual profit}}{\text{Average investment}} \times 100\%$$

$$= \frac{[20 + 50 + (4 \times 80)] \div 6}{[(1400 + 80) \div 2]} \times 100\% = \frac{65}{740} \times 100\% = \underline{8.8\%}$$

(ii) Payback:

Cash flow = profit + depreciation
Annual depreciation = (1400 - 80) ÷ 6 = 220

Therefore, cash flow:

Year 1	240	(20 + 220)
Year 2	270	(50 + 220)
Years 3 to 6	300	(80 + 220)

Cumulative cash flow:

End Year 1	(1160)	(1400 - 240)
End Year 2	(890)	(1160 - 270)
End Year 3	(590)	(890 - 300)
End Year 4	(290)	(590 - 300)
End Year 5	10	(290 - 300)

Payback = <u>5 years</u>

(iii) Total cash inflow = 1790 [240 + 270 + (4 × 300) + 80]
Approximate average discount factor required over 6 years
= 1320 (net investment) ÷ 1790 (total cash inflow) = 0.74 (between 5% & 10% - see discount factors given in the question).

		Discounting at 10%		Discounting at 5%	
Year	Cash flow	Factor	Present value	Factor	Present value
0	(1400)	1.000	(1400)	1.000	(1400)
1	240	0.909	218.2	0.952	228.5
2	270	0.826	223.0	0.907	244.9
3 to 6	300	2.619	785.7	3.217	965.1
6	80	0.564	45.1	0.746	59.7
	390		(128.0)		98.2

Internal rate of return = 5% + {5% × [98.2 ÷ (98.2 + 128)]}

= <u>7.2%</u>

(b) Although the ARR is above 8% this method fails to take account of the time value of money. On the basis of discounted cash flow the investment is not justified financially because the IRR is below the cost of capital.

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