

Management Accounting Level 3



Model Answers

Series 4 2007 (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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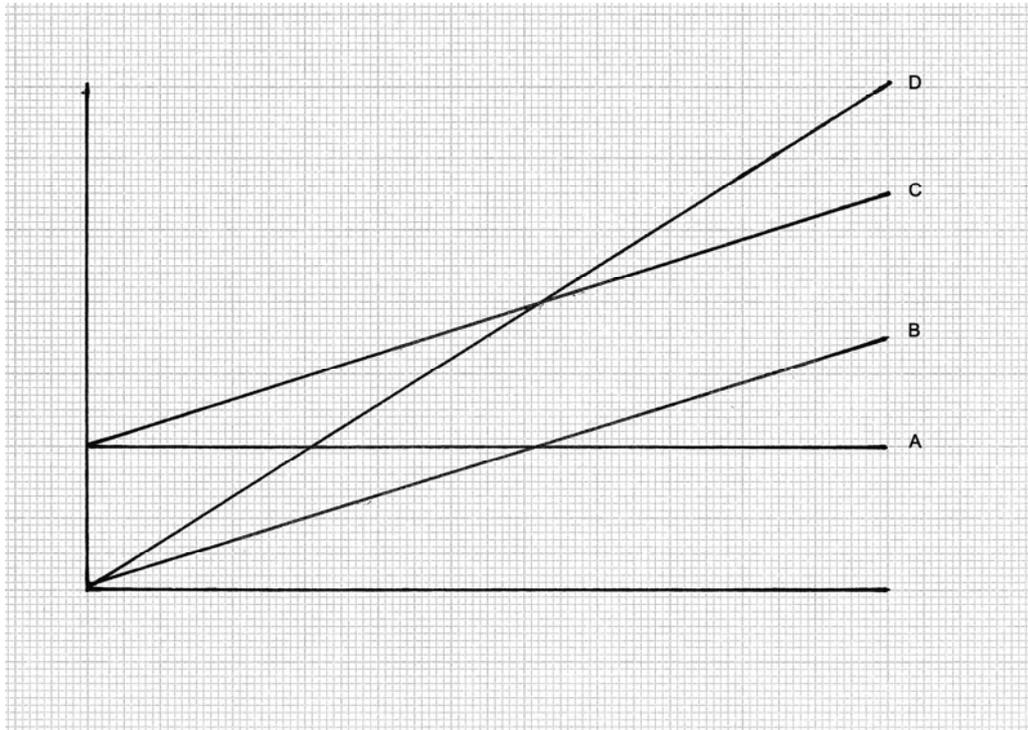
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QUESTION 1

Four lines have been drawn on a cost/volume/profit chart representing revenue and costs over the range of possible output of a business up to full capacity.



REQUIRED

- (a) Discuss briefly the assumptions and limitations of cost/volume/profit analysis. (7 marks)
- (b) State what each line on the chart above (labelled A, B, C & D) represents. (4 marks)
- (c) Explain each of the following, making reference to the chart above:
- (i) the break-even point; (3 marks)
 - (ii) how the total contribution may be determined at a particular level of output; (3 marks)
 - (iii) how a profit/volume (PV) chart would be prepared. (3 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 1

(a) Assumptions and limitations of cost/volume/profit analysis

In cost/volume/profit (CVP) analysis, as normally applied, it is assumed that:

- (i) all costs can be separated into fixed and variable elements
- (ii) fixed costs in total will not change at different levels of output
- (iii) variable costs will stay the same per unit of output
- (iv) the same selling prices apply across the range of output
- (v) the sales mix is a constant.

The above assumptions may limit the application of CVP analysis although the cost assumptions may be sufficiently valid over the relevant range of activity and it remains a useful tool as long as the limitations are recognised.

Also, further analysis can be carried out if required, for example:

- (i) greater sophistication regarding cost behaviour can be incorporated into the analysis. For example, stepped-fixed costs can be included and/or economies of scale on variable costs
- (ii) changed assumptions regarding selling prices and/or sales mix
- (iii) inclusion of a target profit to provide a desired return on capital.

(b) Line A – total fixed costs

Line B – total variable costs

Line C – total costs

Line D – total sales revenue

(c)

- (i) The break-even point is the point at which total revenue equals total costs i.e. zero profit. Referring to the chart, this point occurs where lines C and D cross. The break-even sales revenue can be read off the vertical axis or the break-even units from the horizontal axis on traditional charts such as in the question.
- (ii) The total contribution is the difference between the total sales revenue and the variable costs. Referring to the chart, the total contribution is the difference between lines D and B: it cannot be read off directly.
- (iii) A PV chart plots the profit/loss over the entire range of output as a single line on a chart. The line starts from the total loss that would arise at zero activity – the total fixed costs – which is plotted below the horizontal axis.

Referring to the chart, the profit figures that are plotted on a PV chart can be determined as the difference between lines D and C. Below the break-even point a loss occurs whilst above the break-even point is profit.

QUESTION 2

The elements of the standard production cost of a company's single product are set out below:

	£ per unit
Direct materials	12.90
Direct labour	4.20
Fixed production overheads	8.60

The above fixed production overhead cost per unit is based on budgeted production of 11,600 units in a period (Period 7) and is absorbed on the basis of direct labour hours.

Actual production in Period 7 was 11,320 units of the product. Actual production costs incurred in the period were:

	£
Direct materials	146,610
Direct labour	48,340
Fixed production overheads	98,980

No raw material stocks are held.

REQUIRED

- (a) Prepare a statement for Period 7 that reconciles the actual production costs incurred with the standard costs of production and includes the total variance for each element of cost. (6 marks)

5,610 direct labour hours were actually worked in Period 7. The standard direct labour wage rate is £8.40 per hour.

REQUIRED

- (b) Calculate the following direct labour variances for period 7:
- (i) rate; (2 marks)
 - (ii) efficiency. (2 marks)
- (c) Calculate the following fixed production overhead variances for Period 7:
- (i) expenditure; (2 marks)
 - (ii) volume; (2 marks)
 - (iii) capacity; (2 marks)
 - (iv) efficiency. (2 marks)
- (d) Reconcile the fixed production overhead variances in parts (a) and (c). (2 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 2

(a) Period 7 reconciliation statement

	£	£	
Actual costs		293,930	(146610 + 48340 + 98980)
Variances			
Direct materials	582 Adv		[146610 – (11320 x 12.90)]
Direct labour	796 Adv		[48340 – (11320 x 4.20)]
Fixed production o'hd	1,628 Adv		[98980 – (11320 x 8.60)]
Total		3,006 Adv	
Standard costs		<u>290,924</u>	[11320 x (12.90 + 4.20 + 8.60)]

(b) Direct labour variances

- (i) Rate £1,216 Adv [£48340 – (5610 hrs × £8.40/hr)]
- (ii) Efficiency £420 Fav [(5610 hrs × £8.40/hr) – (11320 units × £4.20/unit)]

(c) Fixed production overhead variances

- (i) Expenditure £780 Fav [£98980 – (11600 units × £8.60/unit)]
- (ii) Volume £2,408 Adv [(11600 – 11320 units) × £8.60/unit]
- (iii) Capacity £3,268 Adv [(11600 units × £8.60/unit) – (5610 hrs × £17.20/hr)]
- (iv) Efficiency £860 Fav [(5610 hrs × £17.20/hr) – (11320 units × £8.60/unit)]

(d) Reconciliation of variances

Capacity ± Efficiency = Volume ± Expenditure = Total Variance

£3,268 Adv - £860 Fav = £2,408 Adv - £780 Fav = £1,628 Adv

QUESTION 3

A company operates a process which creates two joint products, A & B.

The following general information relates to Products A & B:

- (i) The products are created in the ratio of 8:2 by weight;
- (ii) There is no weight loss or gain in the process;
- (iii) No stocks of work-in-progress or finished goods are held at the end of an accounting period;
- (iv) Joint production costs are apportioned on the basis of sales value;
- (v) Non-production overheads are apportioned on the basis of kgs sold.

In the last accounting period:

- (i) 8,400 kgs of raw material, costing £97,245, were processed;
- (ii) 6,750 direct labour hours were worked, paid at a rate of £7.80 per hour;
- (iii) Production overheads were absorbed at a rate of 170% of direct labour cost;
- (iv) Non-production overheads attributable to Products A & B totalled £78,960;
- (v) Selling prices achieved were:

Product A	£40.00 per kg
Product B	£50.00 per kg

REQUIRED

- (a) Prepare a statement for the period that includes the sales, gross profit and net profit of each product both in total £ and £ per kg.
(15 marks)
- (b) Calculate both the gross profit per unit and the gross profit margin of each product if joint production costs are instead apportioned on the basis of weight of output.
(5 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 3

a) Workings:

Product A $8,400 \times 0.8 = 6,720$ kgs \times £40.00/kg = £268,800 sales value
 Product B $8,400 \times 0.2 = 1,680$ kgs \times £50.00/kg = £84,000 sales value
£352,800

Production costs:

Raw materials	£97,245	
Direct labour	£52,650	(6,750 hrs \times £7.80/hr)
Production overheads	<u>£89,505</u>	(£52,650 \times 1.7)
	<u>£239,400</u>	

Production cost apportionment:

Product A	£182,400	[£239,400 \times (£268,800 \div £352,800)]
Product B	£57,000	[£239,400 \times (£84,000 \div £352,800)]

Non-production costs:

	£9.40/kg	(£78,960 \div 8,400 kgs)
Product A	£63,168	(6,720 kgs \times £9.40/kg)
Product B	£15,792	(1,680 kgs \times £9.40/kg)

Profit statement

	Product A		Product B	
	£	£/kg	£	£/kg
Sales	268,800	40.00	84,000	50.00
Production costs	<u>182,400</u>	<u>27.14</u>	<u>57,000</u>	<u>33.93</u>
Gross profit	86,400	12.86	27,000	16.07
Non-production costs	<u>63,168</u>	<u>9.40</u>	<u>15,792</u>	<u>9.40</u>
Net profit	<u>23,232</u>	<u>3.46</u>	<u>11,208</u>	<u>6.67</u>

b) Joint production costs apportioned on weight of output:

Cost per kg = £28.50 (£239,400 \div 8,400 kgs)

Gross profit per unit:

Product A	<u>£11.50/kg</u>	(40.00 - 28.50)
Product B	<u>£21.50/kg</u>	(50.00 - 28.50)

Gross profit margin:

Product A	<u>28.75%</u>	[(11.50 \div 40.00) \times 100%]
Product B	<u>43.0%</u>	[(21.50 \div 50.00) \times 100%]

QUESTION 4

A company manufactures and sells two products (Product P1 and Product P2). Budgeted costs for the next period are:

	Product P1 £ per unit	Product P2 £ per unit	
Raw materials:			
Material X	3.00	3.00	(at £6.00 per kg)
Material Y	2.72	4.76	(at £13.60 per kg)
Direct labour:			
Grade 1	1.05	1.05	(at £10.50 per hour)
Grade 2	1.64	2.05	(at £8.20 per hour)
Production overheads	<u>4.49</u>	<u>5.94</u>	
	<u>12.90</u>	<u>16.80</u>	

The sales and stock budgets for the next period have been agreed as follows:

	Product P1	Product P2
Sales	16,400 units	27,500 units
Finished goods stock:		
start of budget period	£27,090	£105,000
end of budget period	£32,508	£80,640
Raw materials stock:		
start of budget period	£5,160	£6,936
end of budget period	£4,440	£7,616

Stock valuations are at budgeted cost

REQUIRED

Prepare the following budgets for the next period:

- (a) Production (units of each product); (5 marks)
- (b) Direct labour (hours and cost of each grade); (5 marks)
- (c) Raw material usage (kgs of each material); (5 marks)
- (d) Raw material purchases (kgs and cost of each material). (5 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 4

(a) Production budget (units of product)

	Product P1	Product P2
Sales	16,400	27,500
Increase/(decrease) in stock*	<u>420</u>	<u>(1,450)</u>
Production	<u>16,820</u>	<u>26,050</u>

* Product A $(£32,508 - £27,090) \div 12.90/\text{unit}$
 Product B $(£80,640 - £105,000) \div 16.80/\text{unit}$

(b) Direct labour budget (hours and cost):

Grade 1	Grade 2
(16,820 + 26,050 units) × £1.05/unit	(16,820 units × £1.64/unit) + (26,050 units × £2.05/unit)
= <u>£45,013.50</u>	= <u>£80,987.30</u>
÷ £10.50/hr	÷ £8.20/hr
= <u>4,287 hours</u>	= <u>9,876.5 hours</u>

(c) Raw material usage budget (kgs):

Material X	Material Y
(16,820 + 26,050 units) × £3.00/unit	(16,820 units × £2.72/unit) + (26,050 units × £4.76/unit)
= <u>£128,610</u>	= <u>£169,748.40</u>
÷ £6.00/kg	÷ £13.60/kg
= <u>21,435 kgs</u>	= <u>12,481.5 kgs</u>

(d) Raw material purchases budget (kgs and cost):

	Material X	Material Y
	£	£
Usage	128,610	169,748.40
Increase/(decrease) in stock	<u>(720)</u>	<u>680</u>
Purchases	<u>127,890</u>	<u>170,428.40</u>
	÷ £6.00/kg	÷ £13.60/kg
	= <u>21,315 kgs</u>	= <u>12,531.5 kgs</u>

QUESTION 5

A company has developed a new product and now has to make the final decision whether to go ahead and invest in new facilities in order to be able to launch the product.

The following information is available in relation to the new product:

(i) Sunk cost:			
Development expenditure		£85,000	
(ii) Future incremental cash flows (estimated):			
Year 0	Capital investment	£790,000	
Year 1	Net cash inflow	£40,000	
Year 2	Net cash inflow	£210,000	
Year 3	Net cash inflow	£320,000	
Year 4	Net cash inflow	£280,000	
Year 5	Net cash inflow	£200,000	
Year 6	Net cash inflow	£170,000	(including the proceeds of £60,000 from the disposal of the capital investment)

Both the development expenditure and the capital investment (net of disposal value) would be written off on a straight line basis over 6 years.

The company's weighted average cost of capital is 10% per annum.

Discount factors:

Year	5%	10%	15%
1	0.952	0.909	0.870
2	0.907	0.826	0.756
3	0.864	0.751	0.658
4	0.823	0.683	0.572
5	0.784	0.621	0.497
6	0.746	0.565	0.431

REQUIRED

- (a) Calculate, on the basis of future incremental cash flows, the internal rate of return (IRR) of the new product investment. (7 marks)
- (b) Calculate, on the basis of profit net of all expenditure, the accounting rate of return (ARR) of the new product investment. (5 marks)
- (c) Discuss which of the calculation methods, used in (a) and (b) above, would be preferred. (6 marks)
- (d) Advise whether the launch of the new product should go ahead. (2 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 5

(a) Internal rate of return (IRR)

Discounting firstly at 10% per annum as this is the weighted average cost of capital:

Year	Cash flow £000	Disc factor 10%	Present value £000
0	(790)	1.000	(790)
1	40	0.909	36.4
2	210	0.826	173.5
3	320	0.751	240.3
4	280	0.683	191.2
5	200	0.621	124.2
6	<u>170</u>	0.565	<u>96.1</u>
	<u>430</u>		<u>71.7</u>

NPV is positive at 10% so further discounting at 15%:

Year	Cash flow £000	Disc factor 10%	Present value £000
0	(790)	1.000	(790)
1	40	0.870	34.8
2	210	0.756	158.8
3	320	0.658	210.6
4	280	0.572	160.2
5	200	0.497	99.4
6	170	0.431	<u>73.3</u>
			<u>(52.9)</u>

IRR (using 10% and 15%)

$$= 10\% + [5\% \times (71.7 \div 124.6)] = \underline{12.9\%}$$

(b) Accounting rate of return (ARR)

$$\frac{\text{Average profit}}{\text{Initial investment}} \times 100\% \quad \text{or} \quad \frac{\text{Average profit}}{\text{Average investment}} \times 100\%$$

$$\begin{aligned} \text{Average profit} &= \text{£}430,000 \text{ (net incremental cash flow)} \\ &- \text{£}85,000 \text{ (development expenditure)} \\ &\text{£}345,000 \end{aligned}$$

$$\div 6 \text{ years} = \text{£}57,500 \text{ per year}$$

$$\text{ARR} = \frac{57,500}{790,000 + 85,000} \times 100\%$$

$$= \underline{6.6\%}$$

$$\text{OR ARR} = \frac{57,500}{(790,000 + 85,000 + 60,000) \div 2} \times 100\%$$

$$= \underline{12.3\%}$$

MODEL ANSWER TO QUESTION 5 CONTINUED

- (c) A discounted cash flow method (e.g. IRR) is preferable to the more 'traditional' methods (e.g. ARR) because it takes account of the time value of money. The fact that there is no agreed method for the calculation of the ARR, nor is there a clear yardstick for measuring the viability of an investment using this method, are further disadvantages of the ARR method.

Also, the investment should be evaluated on the basis of incremental costs and benefits and thus the way that the IRR has been used in this example is preferable to the inclusion of all costs (including sunk costs) as instructed in the evaluation using the ARR method.

Nevertheless, it should be of concern to management that the present value of the future incremental cash flows (at 10%) of £71.7k is less than the amount already spent on development costs.

- (d) The new product should proceed to launch, and thus the investment in new facilities should go ahead. This is because the IRR at 13% (approx) exceeds the company's weighted average cost of capital of 10%, or because, discounting at 10%, the NPV is positive.

QUESTION 6

A new business is being set up from 1 January 2008. The following estimates have been made:

- (i) Initial capital of £230,000 will be provided by the owners
- (ii) Sales:

January	£25,000
February	£45,000
March	£110,000
April	£120,000
- (iii) Payment terms for customers: 50% at point of sale, 50% one month after sale
- (iv) Gross profit margin, 35%
- (v) Stockholding: £30,000 (at cost) purchased on 1 January. Further purchases in each month will be £12,000 (at cost) in excess of the cost of sales
- (vi) Payment terms from suppliers: one month after purchase
- (vii) Fixed assets totalling £150,000 will be purchased, payable in January. Fixed assets will be depreciated on a straight line basis at 1.5% of cost each month
- (viii) Expenses, other than depreciation, will be £21,000 per month, payable in the month after they are incurred.

REQUIRED

For the four-month period (January to April 2008) prepare:

- (a) A **single** profit statement. (3 marks)
 - (b) A cash budget for **each month**. (8 marks)
 - (c) A **single** flow of funds statement, listing:
 - (i) net cash flow from operating activities (provide detailed workings)
 - (ii) investment in fixed assets
 - (iii) long-term financing
 - (iv) cash balance at the end of the period.(9 marks)
- (Total 20 marks)**

MODEL ANSWER TO QUESTION 6

(a) Profit Statement (January to April 2008)

	£000	£000	
Sales		300	100%
Cost of sales		<u>195</u>	65%
Gross profit		105	35%
Expenses			
Depreciation	9		
Other	<u>84</u>	<u>93</u>	
Net profit		<u>12</u>	

(b) Cash Budget (January to April 2008)

	January (£)	February (£)	March (£)	April (£)
Receipts:				
Capital	230,000			
Sales:				
January	12,500	12,500		
February		22,500	22,500	
March			55,000	55,000
April				<u>60,000</u>
	<u>242,500</u>	35,000	77,500	115,000
Payments:				
Goods purchased*		58,250	41,250	83,500
Fixed assets	150,000			
Expenses		21,000	21,000	21,000
	<u>150,000</u>	79,250	62,250	104,500
Net cash flow	92,500	(44,250)	15,250	10,500
Opening cash balance		92,500	48,250	63,500
Closing cash balance	<u>92,500</u>	<u>48,250</u>	<u>63,500</u>	<u>74,000</u>

* Purchases:			
(sales × 0.65)	16,250	29,250	71,500
	+12,000	+12,000	+12,000
	<u>+30,000</u>		
	<u>58,250</u>	<u>41,250</u>	<u>83,500</u>

MODEL ANSWER TO QUESTION 6 CONTINUED

(c) Flow of Funds Statement (January to April 2008)

	£000
Net cash outflow from operating activities	(6)*
Investment in fixed assets	(150)
Long term finance introduced	230
Cash balance at 30 April 2008	<u>74</u>

*Net cash outflow from operating activities:

	£000	£000
Net profit		12
Add back depreciation		<u>9</u>
		21
Changes in working capital:		
Increase in stock	(78)	
Increase in debtors	(60)	
Increase in creditors	<u>111</u>	<u>(27)</u>
		<u>(6)</u>

Workings:

Stock	$[30,000 + (4 \times 12,000)] = 78,000$	
Debtors	$(120,000 \times 0.5) = 60,000$	
Creditors:		
for goods	$[(120,000 \times 0.65) + 12,000] = 90,000$	
+ for expenses	<u>21,000</u>	111,000