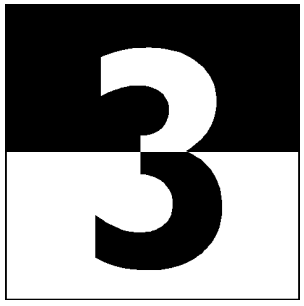
Model Answers for

Management Accounting



THIRD LEVEL

Series 3 2002

(Code 3023)

LCCI Examinations Board

ASP M 1242

Management Accounting Third Level
Series 3 2002

How to use this booklet

Model Answers have been developed by LCCIEB to offer additional information and guidance to Centres, teachers and candidates as they prepare for LCCIEB examinations. 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
(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.

The London Chamber of Commerce and Industry Examinations Board provides Model Answers to help candidates gain a general understanding of the standard required. The Board accepts that candidates may offer other answers that could be equally valid.

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Management Accounting Third Level
Series 3 2002

QUESTION 1

REQUIRED

(a) Explain briefly each of the following cost classifications:

(i) variable
(ii) fixed
(iii) semi-variable
(iv) stepped-fixed.

(7 marks)

REQUIRED

(b) Explain fully the high-low method of identifying cost behaviour and outline its limitations.

(7 marks)

The high-low method has been used by a company to identify the behaviour of costs within its business. The following function has been established:

$y = 10{,}000 + 0.9x$

where:
y represents total costs (£) in a period
x represents the level of activity (output units) in the period

REQUIRED

(c) Prepare a graph to demonstrate the above cost function up to activity of 20,000 units of output in a period.

(6 marks)

(Total 20 marks)

Model Answer to Question 1

(a) (i) Variable cost: a cost which remains the same per unit of output and which thus changes in proportion to the level of activity.

(ii) Fixed cost: a cost which is incurred for an accounting period, unaffected by fluctuations in the level of activity.

(iii) Semi-variable cost: a cost which contains both fixed and variable elements and which is thus partly affected by the level of activity.

(iv) Stepped-fixed cost: a cost which remains fixed within a range of activity but which then requires a step increase in resources to move up to a higher activity range.

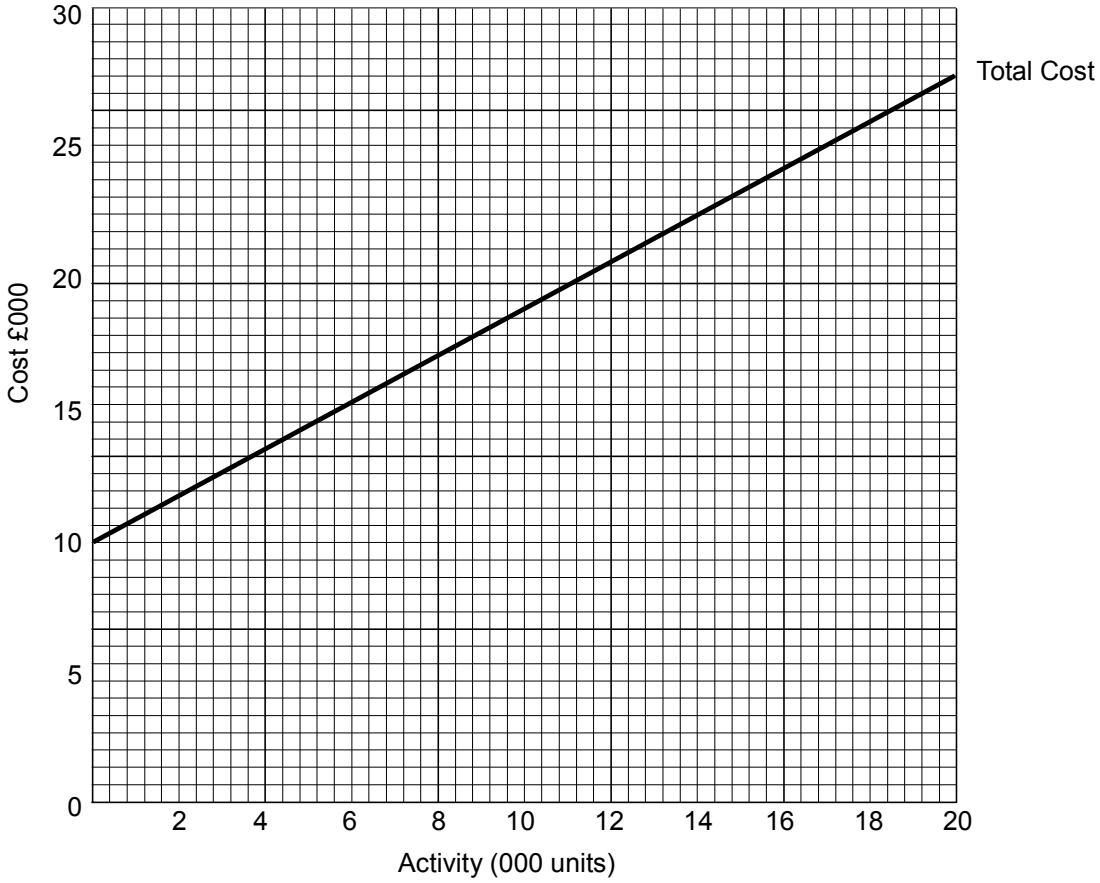
(b) High-low method:

Costs incurred are recorded at various levels of activity. The highest and lowest points, for both costs and activity, are then taken as being representative. As a result, the change in costs in relation to the change in activity (between the highest and lowest points) is assumed to reflect variable costs incurred per unit of activity. Using the data at either the highest or lowest points the fixed costs can then be derived by deducting the product of activity and variable cost per unit from the total costs incurred.

Limitations:

- The highest and lowest points may not be representative
- Cost behaviour may not conform to the simple fixed/variable cost split
- The cost function derived may not apply if used for forecasting outside the known range

(c)



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Model Answer to Question 1 continued

Workings:

Fixed costs = £10,000 (ie costs incurred at zero activity)

Variable costs at 20,000 units = 20,000 × 0.9 = £18,000

Total costs at 20,000 units = £28,000 (18,000 + 10,000)

QUESTION 2

A company manufactures a product which is distributed through three sales offices and sold to customers for £35 per unit. The following information is available relating to the company's budget for the following period:

	Factory	Sales Office 1	Sales Office 2	Sales Office 3
Production (units)	70,000			
Sales (units)		25,000	35,000	12,000
Variable costs (£/unit):				
Production	16.50			
Distribution		2.20	2.10	2.60
Fixed costs (£000)	588,000	147,000	165,000	126,000

REQUIRED

(a) Prepare a budgeted trading statement for the period to determine the profit (net of all costs) for each sales office and for the company as a whole. Assume that a stock of finished units is kept, valued at full production cost based on normal output of 70,000 units per period.

(10 marks)

(b) State whether, and explain why, a higher or lower profit would be budgeted for the period if the company used a marginal costing, rather than an absorption costing, system.

(5 marks)

(c) Calculate the change in the company's budgeted profit if Sales Office 3 was closed prior to the period. Assume that:

- the customers of Sales Office 3 would not be served by either of the remaining sales offices
- all costs would be saved in Sales Office 3
- 12,000 fewer units would be produced but the £ per unit stock valuation would not change.

(5 marks)

(Total 20 marks)

Model Answer to Question 2

(a) Budgeted Trading Statement (£000):

	Sales Office			Total
	1	**2**	**3**	
Sales	875.0	1,225.0	420.0	2,520.0
Production costs:				
Variable	412.5	577.5	198.0	1,188.0
Fixed*	210.0	294.0	100.8	604.8
	622.5	871.5	298.8	1,792.8
Gross profit	252.5	353.5	121.2	727.2
Other costs:				
Distribution	55.0	73.5	31.2	159.7
Sales office	147.0	165.0	126.0	438.0
	202.0	238.5	157.2	597.7
Net profit/(loss)	50.5	115.0	(36.0)	129.5

* Production fixed costs per unit = £588,000 ÷ 70,000 units.
= £8.40 per unit

(b) Profit would be higher under marginal costing.

Sales units in the period exceed production by 2,000 units. As a consequence the fixed production costs charged against profit under absorption costing include not only the £588,000 incurred, which are charged as a period cost under marginal costing, but in addition a further £8.40 per unit on the 2,000 units taken out of stock (ie a further £16,800).

(c) Sales Office 3 contribution = £190,800 [420,000 – (198,000 + 31,200)].

Loss of profit would be £64,800 (190,800 – 126,000 sales office costs) or (add back the apportioned fixed production costs of 100.8 to the loss of 36.0).

QUESTION 3

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

Year	Project A	Project B
	£000	**£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	0.567	0.543	0.519	0.497	0.476	0.456	0.437
	3.605	3.517	3.433	3.352	3.274	3.199	3.127

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 3

(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	500	0.567	283.5
	600		100.2 = NPV

Project B:

PV of cash inflows (£000) = 721 (200 × 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	248.5
			12.9

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

Project B:

$$\text{Cum disc factor} = \frac{640}{200} = 3.2 = 17.0\% \text{ IRR}$$

(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 flows are discounted at the company's cost of capital. If, on the other hand, 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.

QUESTION 4

A component requires three separate operations in the course of its manufacture. Details of the standard time required by direct operatives in each operation (expressed as the number of components processed per hour) and the labour grade for each operation, are as follows:

	Operation 1	**Operation 2**	**Operation 3**
Components per hour	40	50	25
Labour grade	B	B	A

A standard 40 hour week is worked and the budgeted production target is 16,000 components per week. The hourly wage rates for operatives in Grades A and B are £7.50 and £6.00 respectively.

REQUIRED

Calculate:

(a) the budgeted number of direct operatives required for each operation, and in total, in order to achieve the production target

(4 marks)

(b) the standard direct labour cost per component (in each operation and in total).

(4 marks)

In the week just ended, output was increased by 12½% over target by each of the budgeted operatives working six hours overtime. The basic wage rate paid was as per standard with overtime paid at a premium of 50% over the basic rate. Overtime premium is included within the direct labour cost.

REQUIRED

Calculate for the week:

(c) the actual total direct labour cost per component manufactured (to three decimal places of £)

(5 marks)

(d) the direct labour rate and efficiency variances. Show clear workings for each variance.

(7 marks)

(Total 20 marks)

Model Answer to Question 4

(a) Budgeted number of direct operatives:

Operation 1 = 16,000 units ÷ (40 hours × 40 units) = 10 operatives
Operation 2 = 16,000 units ÷ (40 hours × 50 units) = 8 operatives
Operation 3 = 16,000 units ÷ (40 hours × 25 units) = 16 operatives
34 operatives

(b) Standard direct labour cost:

Operation 1 = £6.00/hr ÷ 40 units/hr = £0.15/unit
Operation 2 = £6.00/hr ÷ 50 units/hr = £0.12/unit
Operation 3 = £7.50/hr ÷ 25 units/hr = £0.30/unit
£0.57/unit

(c) Actual direct labour cost:

	Basic	**O/time premium**	**Total**
Operation 1 (£)	2,760 (10 × 46 × 6)	180 (10 × 6 × 3)	£2,940
Operation 2 (£)	2,208 (8 × 46 × 6)	144 (8 × 6 × 3)	£2,352
Operation 3 (£)	5,520 (16 × 46 × 7.5)	360 (16 × 6 × 3.75)	£5,880
			£11,172

Output = 18,000 units (16,000 × 1.125)

Direct labour cost per unit = £0.621 (11,172 ÷ 18,000)

(d) Direct labour rate variance = £684 adverse (overtime premium 180 + 144 + 360)

Direct labour efficiency variance = £228 adverse [(actual hrs at std rate 2,760 + 2,208 + 5,520) – (std cost of output 18,000units × £0.57/unit)]

QUESTION 5

The following standard costs relate to the two products manufactured and sold by a company:

	Product Y	**Product Z**
	£/unit	**£/unit**
Direct materials	25.00	18.00
Direct labour	20.00	15.00
Variable overhead	5.00	4.00
Fixed overhead	20.00	20.00

Fixed overhead per unit is based on production of 25,000 units of Product Y and 20,000 units of Product Z per period.

Unit selling prices are £80 for Product Y and £65 for Product Z.

REQUIRED

Calculate:

(a) the contribution/sales ratio (percentage to one decimal place):

(i) of each of Products Y and Z
(ii) of the company, based on the above production mix

(6 marks)

(b) the margin of safety (nearest £000) on the assumption that the above production quantities are sold each period

(7 marks)

(c) the percentage increase in profit per period if the sales volume of each product was 10% higher than the figures given above

(4 marks)

(d) the break-even point (nearest £000) if the sales mix changed such that the total sales revenue was divided equally between the two products.

(3 marks)

(Total 20 marks)

Model Answer to Question 5

(a) Contribution/sales ratios:

	Product Y		Product Z		Total
	£/unit	£000	£/unit	£000	£000
Sales	80	2,000	65	1,300	3,300
Variable costs	50		37		
Contribution	30	750	28	560	1,310
(i) C/S ratio (by product)	37.5%		43.1%		
(ii) C/S ratio (total mix)					39.7%

(b) Margin of safety:

Break-even sales revenue = Fixed costs ÷ C/S ratio

= (45,000 units × £20/unit) ÷ 0.397

= £2,267,000

Margin of safety = £1,033,000 (3,300 – 2,267)

(c) % increase in profit:

Increase in profit (£) = increase in contribution (£)

= £131,000 (1,310,000 × 0.1)

Existing profit (£) = £410,000 (1,310,000 – 900,000)

% increase = (131,000 ÷ 410,000) × 100%

= 32%

(d) Break-even:

Revised C/S ratio = (37.5 + 43.1) ÷ 2 = 40.3% (or 40.29% if calculated from original data to two decimal places)

Break-even sales revenue = 900,000 ÷ 0.403 (or 0.4029)

= £2,233,000 (or £2,234,000)

QUESTION 6

1,000 tonnes of a raw material costing £118,500 were input to Process 1 in a period. At the end of this process, 5 tonnes of material per 100 tonnes of input are normally extracted as valueless waste. 55 tonnes of waste were actually extracted in the period. The remaining output was transferred to Process 2 where no further materials were added.

Weight loss occurs by evaporation in Process 2. During the period a 20% weight loss occurred. This was normal as was the output of 20 tonnes of a by-product, saleable at £36 per tonne, and joint products X and Y in equal proportions by weight.

Conversion costs in the period were:

Process 1, £48,700
Process 2, £41,952

There was no work-in-process at the beginning or end of the period in either process.

Selling prices of Products X and Y are £260 and £380 per tonne respectively.

REQUIRED

(a) Prepare the Process 1 Account for the period.

(7 marks)

(b) Apportion the costs incurred in Process 2 in the period (including the cost of transfers from Process 1 and net of by-product sales) to the joint products on the basis of sales value.

(6 marks)

(c) Calculate the profit per tonne of each of the two main products.

(7 marks)

(Total 20 marks)

Model Answer to Question 6

(a)

Process 1 Account

	tonnes	£		tonnes	£
Raw materials	1,000	118,500	Normal loss	50	—
Conversion costs		48,700	Abnormal loss	5	880
			Transfer to Process 2	945	166,320
	1,000	167,200		1,000	167,200

Workings:

Normal output = 1,000 tonnes less normal loss of 50 tonnes (10 × 5)
= 950 tonnes

This comprises:
Transfers to Process 2 945 tonnes
Abnormal loss 5 tonnes

Cost per equivalent unit = £167,200 ÷ 950 tonnes = £176 per tonne

Valuation:
Transfers to Process 2 £166,320(945 × 176)
Abnormal loss £880 (5 × 176)

(b) Cost apportionment, Process 2:

Total costs:

	£	
Transfers from Process 1	166,320	
Conversion costs, Process 2	41,952	
	208,272	
less value of by-product	720	(20 tonnes × £36 per tonne)
	207,552	

Cost apportionment:

Product X = 207,552 × 260/640 = £84,318

Product Y = 207,552 × 380/640 = £123,234

(c) Profit per tonne:

Output from Process 2:

	tonnes
80% of input	756 (945 × 0.8)
less by-product	20
	736

= Product X 368 (736 × 0.5)
Product Y 368 (736 × 0.5)

Cost per tonne:
Product X £229.125 (£84,318 ÷ 368 tonnes)
Product Y £334.875 (£123,234 ÷ 368 tonnes)

Profit per tonne:
Product X £30.875 (260.0 – 229.125)
Product Y £45.125 (380.0 – 334.875)

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