

Management Accounting Level 3



Model Answers

Series 3 2007 (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

(a) Different types of standard may be set in a standard costing system.

REQUIRED

Explain the meaning and usefulness of:

- (i) attainable standards (3 marks)
- (ii) ideal standards. (3 marks)

(b) The behaviour of participants in a budgetary planning and control system will be an important factor influencing the effectiveness of the system.

REQUIRED

Discuss the human behavioural problems that may arise in the operation of a budgetary planning and control system.

(8 marks)

(c) Identification of the principal budget factor is an important element in the budgeting process.

REQUIRED

- (i) Define the term 'principal budget factor' and give an example. (3 marks)
- (ii) Explain the importance of the principal budget factor. (3 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 1

QUESTION 1

(a)

(i) Attainable standards

Attainable standards are performance targets which assume efficient levels of operation but which include allowances for normal loss, waste and machine downtime.

Attainable standards are intended to be challenging, i.e. probably above the current level of performance, but motivational in that they will be seen as achievable.

(ii) Ideal standards

Ideal standards are performance targets which make no allowances for loss, waste or machine downtime, and which are, therefore, only attainable under the most favourable conditions.

Ideal standards are intended to indicate what could be achieved but they may be unrealistic, and thus demotivational, if they are some way from current performance.

(b) Human behavioural problems of budgeting

- Imposing standards/budgets, i.e. without the participation (or with pseudo-participation) of those held responsible for their achievement. This is likely to be demotivational with adverse consequences for morale and performance. This result is especially likely if the budget is perceived to be unattainable.
- The incorporation of budget slack (i.e. understating revenue and/or overstating costs) by those involved in the setting of their budgets. This is to make budgets easier to achieve with the result that profit is not as high as it could be.
- Spending the budget amount, whether or not it is necessary/justified, so that the budget for the next period will not be reduced. Again, profit is not as high as it could be.
- Holding an individual accountable for adverse variances that are perceived by the individual to be uncontrollable or arising from unattainable standards. This again is likely to be demotivational.

(c) Principal budget factor

The principal budget factor is the factor (aspect of business/resource) that will limit the activities of an organisation for the budget period. It is important that the principal factor is identified at the start of the budgeting process because it will influence all other budgets.

Sales demand is often the factor that limits an organisation's activities and as a result the sales budget would be the first one prepared in such a situation with all other budgets following from that. However, availability of resources, for example skilled labour or production capacity, could at times limit the sales that could otherwise be achieved and could thus be the principal budget factor.

QUESTION 2

A company manufactures and sells a single product. The budgeted profit statement for the first trading period is set out below.

Budgeted Profit Statement		
	£	£
Sales		120,000
Production cost of sales:		
Cost of production	86,700	
Closing stock	<u>(1,700)</u>	<u>85,000</u>
Gross profit		35,000
Non-production overheads		<u>21,000</u>
Net profit		<u>14,000</u>

Notes:

- (i) Budgeted sales and production are 10,000 units and 10,200 units respectively
- (ii) It is estimated that the cost of production would total £83,060 if 9,500 units were produced
- (iii) Non-production overheads are fixed costs.

REQUIRED

- (a) Applying the high-low method to the above estimates of production costs, calculate:
- (i) the variable production cost per unit (3 marks)
 - (ii) the total fixed production cost in the period. (2 marks)
- (b) Prepare a revised budgeted profit statement for the period using marginal costing. (8 marks)
- (c) Explain fully, supported by appropriate calculations, how and why the net profit in the statement set out in the question above differs from that calculated in answer to part (b). (7 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 2

(a)

(i) Variable production cost per unit

$$(\pounds 86,700 - \pounds 83,060) \div (10,200 - 9,500 \text{ units}) = \underline{\pounds 5.20} \text{ per unit}$$

(ii) Total fixed production cost

$$\pounds 86,700 - (10,200 \text{ units} \times \pounds 5.20 \text{ per unit}) = \underline{\pounds 33,660}$$

(b) Budgeted profit statement – Marginal costing

	£	£
Sales		20,000
Variable cost of sales:		
Variable production costs	53,040	
Closing stock	<u>(1,040)</u>	<u>52,000</u>
Contribution		68,000
Fixed costs:		
Production	33,660	
Non-production	<u>21,000</u>	<u>54,660</u>
Net profit		<u>13,340</u>

(c) Profit difference

The net profit using absorption costing differs from that determined using marginal costing where there is a change in the level of stockholding. This is because fixed production costs are included in the valuation of stock under absorption costing, whereas they are treated as a period cost under marginal costing.

Thus, under absorption costing a share of the fixed production costs are included in the valuation of the closing stock of 200 units and thus carried forward to be charged against profit in a future period when the goods are sold.

The share of costs carried forward is £660 [200 × (£33,660 ÷ 10,200 units)] which accounts for the difference between the net profit under absorption costing of £14,000 and that under marginal costing of £13,340.

QUESTION 3

A company has three products (Product A, Product B and Product C). Selling price and variable costs of the products are as follows:

	Product A £ per unit	Product B £ per unit	Product C £ per unit
Selling price	6.00	9.00	4.60
Direct materials:			
Material X	1.20	2.40	0.48
Other materials	0.60	1.00	0.52
Direct labour	1.50	2.40	1.20

Maximum available supplies of Material X (costing £6.40 per kg) and hours of direct labour (paid at £8.00 per hour) are expected to be 4,500 kg and 3,780 hours respectively in the following period. Other materials are freely available.

Sales demand in the following period is expected to be:

- Product A 8,000 units
- Product B 6,000 units
- Product C 5,400 units

REQUIRED

For the following period:

- (a) Determine the limiting factor. Show calculations clearly and fully justify your conclusion.
(7 marks)
- (b) Prepare a production schedule with the objective of maximising profit.
(9 marks)
- (c) Calculate the contribution of each product, and the total contribution, if the production schedule in your answer to part (b) above is followed.
(4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 3

(a) Resource requirements

	Product A	Product B	Product C
Material X	8,000 units × £1.20 per unit = £9,600	6,000 units × £2.40 per unit = £14,400	5,400 units × £0.48 per unit = £2,592
Direct labour	8,000 units × £1.50 per unit = £12,000	6,000 units × £2.40 per unit = £14,400	5,400 units × £1.20 per unit = £6,480

Total Material X required = £26,592 ÷ £6.40 per kg

= 4,155 kg

Total direct labour required = £32,880 ÷ £8.00 per hour

= 4,110 hours

The **limiting factor** is **direct labour**. The hours required to satisfy the sales demand (4,110) exceed the hours available (3,780) whereas sufficient quantities of Material X are available (4,500 > 4,155).

(b) Production schedule

	Product A	Product B	Product C
Selling price (£ per unit)	6.00	9.00	4.60
Variable costs (£ per unit)	<u>3.30</u>	<u>5.80</u>	<u>2.20</u>
Contribution (£ per unit)	2.70	3.20	2.40
Contribution (£ per £ of labour)	1.80	1.33	2.00
Priority (on the basis of contribution per £ of labour)	2	3	1

Schedule:

	hours	units
Product C	810	5,400
Product A	1,500	8,000
Product B	<u>1,470</u>	4,900 (1,470 hours ÷ 0.3 hours per unit)
	<u>3,780</u>	

(c) Contribution

	£
Product A	21,600 (8,000 units × £2.70 per unit)
Product B	15,680 (4,900 units × £3.20 per unit)
Product C	<u>12,960</u> (5,400 units × £2.40 per unit)
Total	<u>50,240</u>

QUESTION 4

The following incomplete information is available for two periods:

	Period 1	Period 2
Budget:		
Sales and production units	15,600	18,000
Sales revenue (£)	187,200	219,600
Variable cost of sales (£)	106,080	127,800
Actual:		
Sales and production units	16,220	
Sales revenue (£)		214,865
Variable cost of sales (£)	111,438	
Variances:		
Sales volume contribution variance (£)		2,346 A
Selling price variance (£)	2,433 F	

A = Adverse

F = Favourable

REQUIRED

(a) Calculate, for **Period 1**, the:

- (i) Budgeted selling price per unit (1 mark)
- (ii) Budgeted contribution per unit (2 marks)
- (iii) Actual selling price per unit (3 marks)
- (iv) Sales volume contribution variance (3 marks)
- (v) Variable cost variance. (3 marks)

(b) Calculate, for **Period 2**, the:

- (i) Actual sales units (4 marks)
- (ii) Selling price variance. (4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 4

(a) Period 1

- (i) Budgeted selling price per unit = £12.00 ($£187,200 \div 15,600$ units)
- (ii) Budgeted contribution per unit = £5.20 [$(£187,200 - £106,080) \div 15,600$ units]
- (iii) Actual selling price per unit = £12.15 [$(£2,433 \div 16,220$ units) + £12.00 per unit]
- (iv) Sales volume contribution variance = £3,224 Fav [$(16,220 - 15,600$ units) \times £5.20 per unit]
- (v) Variable cost variance = £1,142 Adv [$£111,438 - [16,220$ units \times ($£106,080 \div 15,600$ units)]]

(b) Period 2

- (i) Actual sales units = 17,540 units [$18,000$ units - [$£2,346 \div (£91,800 \div 18,000$ units)]]
- (ii) Selling price variance = £877 Fav [$£214,865 - [17,540$ units \times ($£219,600 \div 18,000$ units)]]

QUESTION 5

A company is considering a capital investment in order to increase profits over an expected project life of 5 years. The project would require an initial investment of £440,000 followed by expected incremental profits for the 5 years as follows:

Year 1	£20,000
Year 2	£40,000
Year 3	£70,000
Year 4	£55,000
Year 5	£30,000

The above profit figures, which are all in 'current' £ prices, are net of straight-line depreciation of the investment assuming a residual value at the end of Year 5 of £65,000 (in 'current' £ prices).

Price inflation of 5% per annum is anticipated and the company's cost of capital, in 'money' (as opposed to 'real') terms is 15% per annum.

Discount factors:

	10%	15%	20%
Year 1	0.909	0.870	0.833
Year 2	0.826	0.756	0.694
Year 3	0.751	0.658	0.579
Year 4	0.683	0.572	0.482
Year 5	0.621	0.497	0.402

REQUIRED

(a) Calculate, for the capital investment project, the:

- (i) accounting rate of return (on average investment) (3 marks)
- (ii) undiscounted payback period (4 marks)
- (iii) net present value (5 marks)
- (iv) internal rate of return. (4 marks)

(b) State whether, and explain why, the capital investment project is, or is not, worthwhile:

- (i) on the basis of net present value (2 marks)
- (ii) on the basis of internal rate of return. (2 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 5

(a)

(i) Accounting rate of return

$$\frac{\text{Average annual profit (£000)}}{\text{Average investment (£000)}} = \frac{[(20 + 40 + 70 + 55 + 30) \div 5]}{[(440 + 65) \div 2]} \times 100\%$$

$$= \frac{43}{252.5} \times 100\%$$

$$= \underline{17.0\%}$$

(ii) Undiscounted payback period

$$\text{Annual depreciation} = (£440,000 - £65,000) \div 5 = £75,000$$

Cash flows (£000):

Year	Each year	Cumulative
1	95 (20 + 75)	95
2	115 (40 + 75)	210
3	145 (70 + 75)	355
4	130 (55 + 75)	485
5	170 (30 + 75 + 65)	655

$$\text{Undiscounted payback} = 3 \text{ years} + [(440 - 355) \div 130]$$

$$= \underline{3.7 \text{ years}}$$

(iii) Net present value

Year	Cash flow (current) £000		Cash flow (money) £000	Discount factor 15%	Present value £000
1	95	× 1.05	99.8	0.870	86.8
2	115	× 1.05 ²	126.8	0.756	95.9
3	145	× 1.05 ³	167.9	0.658	110.5
4	130	× 1.05 ⁴	158.0	0.572	90.4
5	170	× 1.05 ⁵	217.0	0.497	<u>107.8</u>
					491.4
				less investment	<u>440.0</u>
				net present value	<u>51.4 positive</u>

(iv) Internal rate of return

Year	Cash flow (money) £000	Discount factor 20%	Present value £000
1	99.8	0.833	83.1
2	126.8	0.694	88.0
3	167.9	0.579	97.2
4	158.0	0.482	76.2
5	217.0	0.402	<u>87.2</u>
			431.7
		less investment	<u>440.0</u>
		net present value	<u>8.3 negative</u>

MODEL ANSWER TO QUESTION 5 CONTINUED

$$\begin{aligned}\text{Internal rate of return} &= 15\% + 5\% \left[\frac{\text{£}51.4\text{k}}{51.4\text{k} + \text{£}8.3\text{k}} \right] \\ &= \underline{19.3\%}\end{aligned}$$

- (b) Whether, and why, the capital investment project is, or is not, worthwhile
- (i) On the basis of net present value the project is worthwhile because there is a positive net present value when the cash flows in 'money' terms are discounted at the cost of capital in 'money' terms.
 - (ii) On the basis of internal rate of return the project is worthwhile because the internal rate (using 'money' cash flows) of 19.3% is above the cost of capital in 'money' terms of 15%.

QUESTION 6

A company has two divisions, Division DA and Division DB. Division DA manufactures a component (Component C3) which is used by Division DB in the manufacture of one of its products (Product P9).

14,000 units of Component C3 are used by Division DB per period. One unit of Component C3 is required for each unit of Product P9. Variable costs are as follows:

	Component C3	Product P9
Division DA	£15.20 per unit	-----
Division DB (excluding Component C3)	-----	£24.70 per unit

Fixed costs of Division DA apportioned to Component C3 per period are £154,000. The transfer price is established as total cost + 30%.

The selling price of Product P9 is £90.00 per unit.

REQUIRED

(a) Calculate:

- (i) the transfer price of Component C3 (2 marks)
- (ii) the contribution per unit of:
 - Component C3 to Division DA
 - Product P9 to Division DB
 - Product P9 to the company (6 marks)
- (b) Determine the effect on the contribution per unit of Product P9 to the company in each of the following circumstances:
 - (i) if the basis for the transfer price is changed to total cost + 40% (2 marks)
 - (ii) if the volume per period increases to 15,000 units (2 marks)
 - (iii) if the fixed costs of Division DA apportioned to Component C3 reduced to £147,000 per period. (2 marks)

Component C3 is also available to Division DB from an outside supplier for £30.00 per unit.

REQUIRED

- (c) Calculate the effect on the total profit per period, of each division and of the company, if:
- Division DB was to purchase Component C3 from the outside supplier, **and**
 - volume is 14,000 units per period, **and**
 - fixed costs of Division DA are unchanged, **and**
 - the basis for the transfer price would have been total cost + 30%, **and**
 - Division DA would be unable to replace the sales.
- (6 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 6

(a)

(i) Transfer price of Component C3

$$\{[\pounds 15.20 + (\pounds 154,000 \div 14,000 \text{ units})] \times 1.3\} = \underline{\pounds 34.06} \text{ per unit}$$

(ii) Contribution per unit

$$\text{Component C3 to Division DA} = (\pounds 34.06 - \pounds 15.20) = \underline{\pounds 18.86}$$

$$\text{Product P9 to Division DB} = [\pounds 90.00 - (\pounds 34.06 + \pounds 24.70)] = \underline{\pounds 31.24}$$

$$\text{Product P9 to the company} = [\pounds 90.00 - (\pounds 15.20 + \pounds 24.70)] = \underline{\pounds 50.10} \text{ (or } \pounds 18.86 + \pounds 31.24)$$

(b) Effect on unit contribution

(i) If transfer price is cost + 40% - NO EFFECT

(ii) If volume is 15,000 units – NO EFFECT

(iii) If fixed costs are $\pounds 147,000$ – NO EFFECT

(c) Effect on profit

$$\text{Division DA: } (14,000 \text{ units} \times \pounds 18.86 \text{ per unit}) = \underline{\pounds 264,040 \text{ less profit}}$$

$$\text{Division DB: } [14,000 \text{ units} \times (\pounds 34.06 - \pounds 30.00 \text{ per unit})] = \underline{\pounds 56,840 \text{ more profit}}$$

$$\text{Company: } [14,000 \text{ units} \times (\pounds 30.00 - \pounds 15.20 \text{ per unit})] = \underline{\pounds 207,200 \text{ less profit}} \\ \text{(or } \pounds 264,040 - \pounds 56,840)$$