

Management Accounting Level 3



International
Qualifications from EDI

Model Answers Series 3 2010 (3024)

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Series 3 2010

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

Company M, which makes a single product, has the following data for the past four operating periods:

	Period 4 £000	Period 5 £000	Period 6 £000	Period 7 £000
Sales revenues	342	368	405	462
Total operating costs	288	302	324	363

Total fixed costs and unit variable costs, as well as the selling price per unit, have remained constant in the past four periods.

REQUIRED

- (a) Using the high-low method determine the periodic:
- (i) fixed costs (5 marks)
 - (ii) break-even point (in sales revenue). (2 marks)
- (b) **Calculate** for Period 8, using your answer to part (a), the:
- (i) budgeted margin of safety (expressed as a percentage to one decimal place), if the total sales revenue is budgeted at £500,000 (2 marks)
 - (ii) total sales revenue required in order to earn a net profit of £120,000, if fixed costs increase by 8% without any change to unit variable costs or selling price. (4 marks)
- (c) Discuss the limitations of cost-profit-volume (CVP) analysis. (7 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 1

(a) (i)

	<u>Sales revenue</u>	<u>Operating costs</u>
	£000	£000
High level (Period 7)	462	363
Low level (Period 4)	<u>342</u>	<u>288</u>
	<u>120</u>	<u>75</u>

$$\text{Variable costs/sales ratio} = \frac{\text{£75,000}}{\text{£120,000}} = 0.625 = \text{£0.625 per £ of sales}$$

$$\text{Using high sales revenue, total variable costs} = \text{£462,000} \times 0.625 = \text{£288,750}$$

$$\text{Fixed costs per period} = \text{£363,000} - \text{£288,750} = \text{£74,250}$$

(ii) Contribution/sales ratio = $1 - 0.625 = 0.375$

$$\text{Break-even (sales revenue)} = \frac{\text{£74,250}}{0.375} = \text{£198,000}$$

(b)

(i) **Margin of safety** = $\left(\frac{500,000 - 198,000}{500,000} \right) \times 100\% = 60.4\%$

(ii) Increased fixed costs = $\text{£74,250} \times 1.08 = \text{£80,190}$

$$\text{Sales revenue required} = \frac{\text{£80,190} + \text{£120,000}}{0.375} = \text{£533,840}$$

QUESTION 1 CONTINUED

(c) The main limitations of CVP analysis lie in its following assumptions:

Only a single product is deemed to be produced or, if multi-products are being made, the sales mix is deemed to be constant. However, businesses usually produce more than one product and changes in sales mix are often made in reaction to market conditions.

Production volume is deemed to be the only factor that affects costs. This assumption ignores other factors, such as inflation and production efficiency, that may equally have an effect on costs.

Total fixed costs are assumed to remain constant. This assumption is valid in the short-term, but there is the likelihood that fixed costs would change beyond certain ranges of output, resulting, for example, in stepped fixed costs.

Selling price per unit is assumed to be constant. However, it is likely that the selling price would be reduced in order to achieve increased sales volume.

Variable costs are assumed to be a linear function of output. This assumption may not be valid as changes in unit costs may, for example, result from economy of scale.

Costs are deemed to be clearly divisible into fixed and variable elements through the use of techniques such as linear regression and the high-low method. However, in reality, the division of costs into the two distinct components may be quite difficult to achieve.

QUESTION 2

A company manufactures and sells four products.

	Product D £ per unit	Product E £ per unit	Product F £ per unit	Product G £ per unit
Selling price	354	223	296	280
Direct material costs (at £36 per kilo)	108	63	90	117
Direct labour costs (at £16 per hour)	64	40	56	32
Variable overheads	80	50	70	40
Fixed overheads	40	25	35	20
Production and sales per period	1,800 units	2,400 units	1,500 units	2,000 units

Fixed overheads are absorbed on the basis of direct labour hours.

The company has sufficient resources to meet its production and sales requirements, except the supply of direct materials which is limited to 14,000 kg for the coming period.

REQUIRED

- (a) Prepare a production schedule that will maximise profit for the coming period and calculate the amount of the profit. (14 marks)
- (b) Explain, with an example, the meaning of the following terms used in the context of decision-making:
- (i) sunk cost (3 marks)
- (ii) differential (or incremental) cost. (3 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 2

(a)

	Product D	Product E	Product F	Product G
	£ per unit	£ per unit	£ per unit	£ per unit
Selling price	<u>354</u>	<u>223</u>	<u>296</u>	<u>280</u>
<u>Deduct</u> Variable costs				
Direct material	108	63	90	117
Direct labour	64	40	56	32
Variable overheads	<u>80</u>	<u>50</u>	<u>70</u>	<u>40</u>
	<u>252</u>	<u>153</u>	<u>216</u>	<u>189</u>
Contribution per unit	<u>£102</u>	<u>£ 70</u>	<u>£ 80</u>	<u>£ 91</u>
Kilos of material per unit	3	1.75	2.5	3.25
Contribution per kilo	£34	£40	£32	£28
Ranking	2 nd	1 st	3 rd	4 th

Production schedule and the resulting net profit

	<u>Units</u>		<u>kilos</u>		<u>Total contribution</u>
					£
Product E	2,400	×	1.75 kilos	=	4,200
					×
					£40
					=
					168,000
Product D	1,800	×	3 kilos	=	5,400
					×
					£34
					=
					183,600
Product F	1,500	×	2.5 kilos	=	3,750
					£32
					=
					120,000
Product G (650 ÷ 3.25)	200		3.25 kilos	=	<u>650</u>
					×
					£28
					=
					<u>18,200</u>
					<u>489,800</u>
					<u>14,000</u>
					<u>265,300</u>
					<u>(224,500)</u>
					<u>Net profit</u>
					<u>265,300</u>

(14 marks)

Workings

W1– Direct material (kilo per unit)	D		E		F		G
<u>Direct material cost per unit</u>	<u>£108</u>	=	3		<u>£63</u>	=	1.75
<u>Direct material cost per kilo</u>	<u>£36</u>				<u>£90</u>	=	2.5
					<u>£36</u>		
							<u>£117</u> = 3.25
							<u>£36</u>

$$\begin{aligned}
 \text{W2 – Total fixed costs} &= [(1,800 \times £40) + (2,400 \times £25) + (1,500 \times £35) + (2,000 \times £20)] \\
 &= £224,500
 \end{aligned}$$

(b)

- (i) **Sunk costs** (or **past costs**) are the costs of resources that have already been incurred or committed and cannot be changed by a current or future decision. For example, an expenditure on conducting a feasibility study prior to embarking on a project cannot be recovered from a current or a future decision on whether to undertake the project.
- (ii) **Differential** (or **incremental costs**) are future costs that will differ according to the alternatives being considered for decision-making. For example, where a decision is being considered either to complete or to abandon a project, the costs associated with the decision to complete the project rather than abandon it, are differential costs.

QUESTION 3

A company budgeted to produce 5,000 units of its single product in Period 5 and operates a standard costing system. The following information has been extracted from the product's standard cost card:

		£ per unit
Direct labour	(2½ hours × £12.60 per hour)	31.50
Fixed production overheads	(2½ hours × £18.00 per hour)	45.00

The fixed production overheads are absorbed on the basis of direct labour hours.

The actual results for Period 5 were as follows:

Production	4,850 units
Direct labour (13,080 hours)	£160,230
Fixed production overheads	£241,650

REQUIRED

(a) **Calculate** the following variances for Period 5:

- (i) direct labour rate (2 marks)
- (ii) direct labour efficiency (2 marks)
- (iii) fixed production overhead expenditure (2 marks)
- (iv) fixed production overhead volume (2 marks)
- (v) fixed production overhead capacity (2 marks)
- (vi) fixed production overhead efficiency . (2 marks)

(b) **Calculate** the following production control ratios for Period 5:

- (i) capacity usage (2 marks)
- (ii) production efficiency (2 marks)
- (iii) production volume. (2 marks)

(c) Demonstrate the link between the three control ratios calculated in part (b) above.

(2 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 3

(a)

(ii) **Direct labour rate variance**

$$\begin{aligned} & (\text{Standard rate} \times \text{Actual hours}) - (\text{Actual rate} \times \text{Actual hours}) \\ & (£12.60 \times 13,080 \text{ hours}) - £160,230 \\ & £164,808 - £160,230 = \mathbf{£4,578 \text{ Favourable}} \end{aligned}$$

(ii) **Direct labour efficiency variance**

$$\begin{aligned} & (\text{Standard rate} \times \text{Standard hours}) - (\text{Standard rate} \times \text{Actual hours}) \\ & (£12.60 \times 2.5 \text{ hours} \times 4,850 \text{ units}) - [£12.60 \times 13,080 \text{ hours}] \\ & £152,775 - £164,808 = \mathbf{£12,033 \text{ Adverse}} \end{aligned}$$

(iii) **Fixed production overhead expenditure variance**

$$\begin{aligned} & \text{Budgeted fixed production overheads} - \text{Actual fixed production overheads} \\ & (£18.00 \times 2.5 \text{ hours} \times 5,000 \text{ units}) - £241,650 \\ & £225,000 - £241,650 = \mathbf{£16,650 \text{ Adverse}} \end{aligned}$$

(iv) **Fixed production overhead volume variance**

$$\begin{aligned} & (\text{Standard rate} \times \text{Standard hours}) - (\text{Standard rate} \times \text{Budgeted hours}) \\ & (£18.00 \times 2.5 \text{ hours} \times 4,850 \text{ units}) - (£18.00 \times 2.5 \times 5,000 \text{ hours}) \\ & £218,250 - £225,000 = \mathbf{£6,750 \text{ Adverse}} \end{aligned}$$

(v) **Fixed production overhead capacity variance**

$$\begin{aligned} & (\text{Standard rate} \times \text{Budgeted hours}) - (\text{Standard rate} \times \text{Actual hours}) \\ & (£18.00 \times 2.5 \text{ hours} \times 5,000 \text{ units}) - (£18.00 \times 13,080 \text{ hours}) \\ & £225,000 - £235,440 = \mathbf{£10,440 \text{ Favourable}} \end{aligned}$$

(vi) **Fixed production overhead efficiency variance**

$$\begin{aligned} & (\text{Standard rate} \times \text{Standard hours}) - (\text{Standard rate} \times \text{Actual hours}) \\ & (£18.00 \times 2.5 \text{ hours} \times 4,850 \text{ units}) - (£18.00 \times 13,080 \text{ hours}) \\ & £218,250 - £235,440 = \mathbf{£17,190 \text{ Adverse}} \end{aligned}$$

(b)

(i) **Capacity usage ratio**

$$\frac{\text{Actual hours of production}}{\text{Budgeted hours of production}} \times 100\% = \frac{13,080}{12,500} \times 100\% = 104.64\%$$

(ii) **Production efficiency ratio**

$$\frac{\text{Standard hours of actual production}}{\text{Actual hours of production}} \times 100\% = \frac{12,125}{13,080} \times 100\% = 92.7\%$$

QUESTION 3 CONTINUED

(iii) **Production volume ratio**

$$\frac{\text{Standard hours of actual production}}{\text{Budgeted hours of production}} \times 100\% = \frac{12,125}{12,500} \times 100\% = 97.0\%$$

(c)

$$\begin{aligned} \text{Production volume ratio} &= \text{Capacity usage ratio} \times \text{Production efficiency ratio} \\ 97.0\% &= 104.64\% \times 92.7\% \end{aligned}$$

QUESTION 4

Axis Limited is preparing the financial budgets of its retail business for the next financial year (year 6). The company's summarised Balance Sheet at the end of Year 5 is as follows:

	£000	£000
Fixed assets (at cost)	2,200	
Accumulated depreciation	<u>1,220</u>	980
Current assets		
Stock	445	
Trade debtors	<u>360</u>	<u>805</u>
		1,785
Current liabilities		
Trade creditors	230	
Bank overdraft	<u>15</u>	<u>245</u>
		<u>1,540</u>
Capital and reserves		
Share capital		800
Reserves		<u>340</u>
		1,140
Long-term liability		
12% Loan stock		<u>400</u>
		<u>1,540</u>

The following information on the budgeted activities of the company for Year 6 is available:

1. Sales (all on credit) are estimated at £2,400,000 on which a gross profit of 40% will be earned. The average collection period for customers is two months.
2. Purchases will be made on credit. 20% of purchases are budgeted to be unpaid at the end of the year. The value of unsold stock at the end of the year is expected to be £565,000 at cost price.
3. Fixed assets costing £300,000 are expected to be purchased for cash, but none will be sold during the year. It is company policy to charge depreciation at the rate of 15% on the net book value of fixed assets (including those purchased during the year).
4. Fixed overhead expenses (excluding depreciation charges) are estimated to be £240,000. All fixed overhead expenses are expected to be paid as they are incurred.
5. Variable overhead expenses are estimated to be 12½% of the total sales value. £45,000 of the variable overhead expenses will be unpaid at the end of the year.
6. The interest charges on the loan stock are to be paid in the last month of the year.
7. The company does not intend to declare or pay any dividends for Year 6.

REQUIRED

Prepare the following for the company:

- (a) budgeted profit statement for Year 6. (7 marks)
- (b) budgeted balance sheet at the end of Year 6. (13 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 4

(a) Budgeted profit statement for Year 6

	£000	£000
Sales		2,400
<u>Less: Cost of sales:</u>		
Opening stock	445	
<u>Add Purchases</u>	<u>1,560</u>	
	2,005	
<u>Less: Closing stock</u>	<u>565</u>	1,440
Gross profit (0.40 × 2,400)		960
<u>Less: Expenses</u>		
Depreciation [0.15 × (980 + 300)]	192	
Fixed overhead expenses	240	
Variable overhead expenses (0.125 × 2,400)	300	
Loan interest (0.12 × 400)	<u>48</u>	780
Budgeted net profit		<u>180</u>

(b) Budgeted balance sheet at end of Year 6

	£000	£000
Fixed assets (at cost) (2,200 + 300)	2,500	
<u>Less: Accumulated depreciation</u> (1,220 + 192)	<u>1,412</u>	1,088
Current assets:		
Stock	565	
Trade debtors (0.167 × 2,400)	400	
Cash at bank*	<u>24</u>	989
		2,077
Less: Current liabilities:		
Trade creditors (0.20 × 1,560)	312	
Expense creditors (accruals)	<u>45</u>	357
		<u>1,720</u>
Capital and reserves		
Share capital		800
Reserves (340 + 180)		<u>520</u>
		1,320
Long-term liability		
12% Loan stock		<u>400</u>
		<u>1,720</u>

* W1 – Budgeted cash balance

	£000	£000
Balance at start of Year 6		(15)
<u>Add: Receipts from debtors</u> (360 + 2,400 – 400)		<u>2,360</u>
		2,345
<u>Less: Payments</u>		
Suppliers (230 + 1,560 – 312)	1,478	
Purchase of fixed assets	300	
Fixed overhead expenses	240	
Variable overhead expenses (300 – 45)	255	
Loan interest (0.12 × 400)	<u>48</u>	2,321
Balance at end of Year 6		<u>24</u>

QUESTION 5

A company considers investing in either Project X or Project Y for a period of four years. The net cash flows for the two projects is as follows:

	Project X	Project Y
	£000	£000
Year 0	(600)	(900)
Year 1	160	250
Year 2	350	440
Year 3	210	320
Year 4	120	180

Assume that net cash inflows occur at the end of the years to which they relate.

Cost of capital is 10% per annum.

Discount factors:	Year	5%	10%	15%	20%
	1	0.952	0.909	0.870	0.833
	2	0.907	0.826	0.756	0.694
	3	0.864	0.751	0.658	0.579
	4	0.823	0.683	0.572	0.482

REQUIRED

(a) **Calculate** for each of **Project X** and **Project Y** the:

- (i) net present value (5 marks)
- (ii) internal rate of return (6 marks)
- (iii) profitability index (3 marks)

(b) Recommend, with reasons, which project should be undertaken based on the calculations of the net present values and internal rates of return in part (a).

(2 marks)

(c) Describe how risk may be incorporated into the capital investment project appraisal process.

(4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 5

(a)

(i)

Net present value

Year	Project X			Project Y		
	Cash flow £000	Factor 10%	Present value £000	Cash flow £000	Factor 10%	Present value £000
0	(600)	1.000	(600.00)	(900)	1.000	(900.00)
1	160	0.909	145.44	250	0.909	227.25
2	350	0.826	289.10	440	0.826	363.44
3	210	0.751	157.71	320	0.751	240.32
4	120	0.683	<u>81.96</u>	180	0.683	<u>122.94</u>
			<u>74.21</u>			<u>53.95</u>
		NPV	= £74,210		NPV	= £53,950

(ii)

Internal rate of return

Year	Project X			Project Y		
	Cash flow £000	Factor 20%	Present value £000	Cash flow £000	Factor 15%	Present value £000
0	(600)	1.000	(600.00)	(900)	1.000	(900.00)
1	160	0.833	133.28	250	0.870	217.50
2	350	0.694	242.90	440	0.756	332.64
3	210	0.579	121.59	320	0.658	210.56
4	120	0.482	<u>57.84</u>	180	0.572	<u>102.96</u>
			<u>(44.39)</u>			<u>(36.34)</u>

$$\text{IRR for Project X} = 10\% + \{10\% \times [74.21 \div (74.21 + 44.39)]\} = \underline{16.3\%}$$

$$\text{IRR for Project Y} = 10\% + \{5\% \times [53.95 \div (53.95 + 36.34)]\} = \underline{13.0\%}$$

(iii) Profitability index = $\frac{\text{Net present value}}{\text{Capital cost}}$

$$\text{PI for Project X} = \frac{74.21}{600} = 0.12 \quad \text{PI for Project Y} = \frac{53.95}{900} = 0.06$$

(b) Project X should be selected over Project Y as it generates a higher NPV and earns a higher IRR.

(c) Risk may be incorporated into the capital investment project appraisal process as follows:

Sensitivity analysis – the effect on project viability of a change in assumption regarding each of the key variables can be assessed;

Range of estimates – a range of values ('high', 'low' as well as 'best estimate') can be estimated for each key variable and the return assessed at each level;

Probability – probabilities can be attached to each range of values, enabling the 'expected value' of a project to be established;

Adjustments to required return – the cost of capital can be varied according to the perceived risk of a project.

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