Management Accounting
Level 3

International Qualifications from EDI

Model Answers
Series 4 2011 (3024)

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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.

QUESTION 1

A company's budgeted profit statement for the production and sale of 25,000 units of its single product, for the next period, is as follows:

	Per unit		Total	
	£	£	£	£
Sales		42.00		1,050,000
Less: Operating costs:				
Direct material	14.40		360,000	
Direct labour	10.00		250,000	
Variable overhead	5.00		125,000	
Fixed overhead	8.19	37.59	204,750	939,750
Net profit		4.41		110,250

REQUIRED

(a) Calculate for the next period, the:

(i) budgeted break-even point (in sales revenue)

(3 marks)

(ii) budgeted margin of safety (expressed as a percentage)

(2 marks)

(iii) total sales revenue required to earn a net profit of £217,350.

(3 marks)

The company has revised its current budgets and now estimates the following cost increases for the next period:

Direct material	8.75%
Direct labour	4%
Variable overhead	6%
Fixed overhead	12%

REQUIRED

(b) Calculate for the next period, the:

(i) revised selling price per unit if the current contribution/sales ratio is maintained.

(5 marks)

(ii) total sales (in units) required to earn the budgeted net profit of £110,250 if the budgeted selling price of £42.00 per unit is maintained.

(4 marks)

(c) Describe how the break-even sales revenue can be calculated for a business with a range of products.

(3 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 1
Syllabus Topic 2: Cost/volume/profit (CVP) analysis (2.1), (2.2), (2.3) & (2.4)

(a) (i) **Budgeted break-even point (in sales revenue)**

	£ per unit	£ per unit
Selling price		42.00
Less: Variable costs		
Direct material	14.40	
Direct labour	10.00	
Variable overhead	5.00	(29.40)
Contribution		12.60

Contribution/sales ratio (C/S) = $\frac{12.60}{42.00}$ = 0.30 **1**

Break-even point (in sales revenue)

= $\frac{\text{Fixed cost}}{\text{C/S}}$ = $\frac{£204,750}{0.30}$ **1** = **£682,500** **1**

(3 marks)

(ii) **Budgeted margin of safety (%)**

Margin of safety = $\frac{£1,050,000 - £682,500}{£1,050,000} \times 100\%$ = **35%** **2**

(2 marks)

(iii) **Total sales required to earn a net profit of £217,350**

Required sales revenue = $\frac{\text{Fixed cost + Required profit}}{\text{C/S}}$

= $\frac{£204,750 \text{ (1)} + £217,350 \text{ (1)}}{0.30 \text{ (1)}}$ = £1,407,000

(3 marks)

(b) (i) **Revised selling price per unit if current contribution/sales ratio maintained**

	Revised variable cost per unit			£	
Direct material	£14.40	×	1.0875	15.66	**1**
Direct Labour	£10.00	×	1.04	10.40	**1**
Variable overhead	£5.00	×	1.06	5.30	**1**
				31.36	

In order to maintain the current contribution/sales ratio of 0.30, the revised variable cost per unit must be equal to 0.70 of unit selling price.

Revised selling price per unit = $\frac{\text{Revised unit cost}}{\text{Current C/S ratio}}$ = $\frac{£31.36}{0.70}$ **1** = **£44.80** **1**

(5 marks)

QUESTION 1 CONTINUED

(ii) **Sales units required to earn budgeted net profit of £110,250 if selling price is £42.00**

		£	
Budgeted profit		110,250	½
Revised fixed cost	(£204,750 × 1.12)	229,320	1
Required contribution		339,570	

Revised contribution per unit = £42.00 – £31.36 = £10.64 **1**

$$\text{Sales units required} = \frac{\text{Required contribution}}{\text{Revised unit contribution}} = \frac{\text{£339,570}}{\text{£10.64}} \quad \begin{matrix}\textbf{1} \\ \text{½}\end{matrix} = \textbf{31,914 units}$$

(4 marks)

(c) The break-even point for a multi-product business is measured in terms of sales revenue. using the following formula:

$$\frac{\text{Total fixed costs for a period}}{\text{Overall contribution/sales ratio}}$$

where contribution/sales ratio is expressed as a decimal. **1**

The contribution/sales ratio needs to reflect the weighting of each product in the overall sales mix and the weighting of each product's respective contribution/sales ratio. This is established by calculating the total sales revenue in the period and dividing it by the total profit contribution. **2**

(3 marks)

(Total 20 marks)

QUESTION 2

A company manufactures a single product which is sold for £21 per unit. Details of the costs for the product are as follows:

Variable costs per unit:	
production	£10
selling and administration	£ 2
Annual fixed costs:	
production	£600,000
selling and administration	£156,000

Fixed production costs are absorbed on the basis of 150,000 units of production per year. All fixed costs (including selling and administration) are incurred evenly throughout the year.

Units produced, sold and in stock for Month 5 and Month 6 were:

	Month 5	**Period 6**
	Units	Units
Stock at start	–	3,000
Production	14,000	12,000
Sales	11,000	13,000
Stock at end	3,000	2,000

REQUIRED

(a) Prepare profit statements for each of Month 5 and Month 6 using:

(i) absorption costing

(9 marks)

(ii) marginal costing

(7 marks)

(b) Prepare a statement that reconciles absorption costing profit and marginal costing profit for each month as calculated in part (a).

(4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 2
Syllabus Topic 3: Short-term decision-making (3.2)

(a) Total production cost per unit = £10 + £4* = £14
*Fixed production costs per unit = £600,000 ÷ 150,000 = £4 ½

(i) **Absorption costing statement**

		Month 5			Month 6	
		£000	£000		£000	£000
Sales	11,000 × £21		231 ½	13,000 × £21		273 ½
Production costs						
Opening stock	–	–		3,000 × £14	42 ½	
Add: Production	14,000 × £14	196 ½		12,000 × £14	168 ½	
	14,000	196		15,000	210	
Less: Closing stock	3,000 × £14	(42) ½		2,000 × £14	(28) ½	
Production cost of sales	11,000	154		13,000	182	
(Over)/under absorption of fixed production costs	1,500 × £4	(6) 1	148	500 × £4	2 1	184
Gross profit			83			89
Less: Selling and administration costs:						
variable	11,000 × £2	22 1		13,000 × £2	26 1	
fixed (£156,000 ÷ 12)		13 ½	35		13 ½	39
Profit for period			48			50

(9 marks)

(ii) **Marginal costing statement**

		Month 5			Month 6	
		£000	£000		£000	£000
Sales	11,000 × £21		231 ½	13,000 × £21		273 ½
Production costs						
Opening stock	–	–		3,000 × £10	30 ½	
Add: Production	14,000 × £10	140 ½		12,000 × £10	120 ½	
	14,000	140		15,000	150	
Less: Closing stock	3,000 × £10	(30) ½		2,000 × £10	(20) ½	
Variable production cost of sales	11,000 × £10	110		13,000	130	
Variable selling and administration costs	11,000 × £2	22 1	132	13,000 × £2	26 ½	156
Contribution			99			117
Less: Fixed costs						
Production (£600,000 ÷ 12)		50 ½			50 ½	
Selling & admin. (£156,000 ÷ 12)		13 ½	63		13 ½	63
Profit for period			36			54

(7 marks)

(b) Reconciliation of absorption costing profits with marginal costing profits

Month 5

	£000	
Absorption costing profit	48	
Less: Fixed production costs absorbed in closing stock (3,000 × £4)	(12)	**1**
Marginal costing profit	36	½

Month 6

	£000	
Absorption costing profit	50	
Add: Fixed production costs absorbed in opening stock (3,000 × £4)	12	**1**
	62	
Less: Fixed production costs absorbed in closing stock (2,000 × £4)	(8)	**1**
Marginal costing profit	54	½

(4 marks)

(Total 20 marks)

QUESTION 3

A company manufactures two products, **X** and **Y**, which it sells for £218 and £236 per unit, respectively. The company's budget data for the next period are as follows:

	Product X	**Product Y**
Sales (units)	5,800	8,400
Material A (kilos per unit)	3	4
Material B (kilos per unit)	2.5	1.75
Direct labour (hours per unit)	1.5	2

The standard direct material prices and the standard direct labour rate are:

Material A	£20.62 per kilo
Material B	£13.84 per kilo
Direct labour	£18.76 per hour

Production overheads are budgeted at £430,500 and are absorbed into products on the basis of direct labour hours.

The stocks of finished goods and raw materials are budgeted to be:

	Start of period	**End of period**
Product X	650 units	930 units
Product Y	1,680 units	1,020 units
Material A	9,500 kilos	6,750 units
Material B	3,360 kilos	4,640 units

REQUIRED

(a) Prepare the following budgets for the next period:

(i) production (units of each product)

(3 marks)

(ii) purchases (quantity in kilos and cost for Material B)

(4 marks)

(iii) direct labour (total hours and cost)

(3 marks)

(b) Calculate the gross profit per unit of Product X.

(4 marks)

(c) Explain each of the following budgeted methods:

(i) rolling/continuous budget
(ii) zero based budget

(6 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 3
Syllabus Topic 4: Budgetary planning and control (4.5) & (4.9)

(a) (i) **Production budget (units)**

	Product X (units)		Product Y (units)	
Budgeted sales units	5,800	½	8,400	½
Add Closing stock	930	½	1,020	½
	6,730		9,420	
Less: Opening stock	650	½	1,680	½
Budgeted production units	6,080		7,740	

(3 marks)

(ii) **Purchases budget (quantity in kilos and cost for Material B)**

	Product X		Product Y		Total	
Budgeted production units	6,080	½	7,740	½		
Material required per unit	× 2.5	½	× 1.75	½		
Kilos required for production	15,200		13,545		28,745	
Add Closing stock					4,640	½
					33,385	
Less Opening stock					3,360	½
Budgeted purchases (quantity, kilos)					30,025	
× Cost of material per kilo					× £13.84	1
Budgeted purchases (costs)					£415,546	

(4 marks)

(iii) **Direct labour budget (quantity in hours and cost)**

	Product X		Product Y		Total	
Budgeted production units	6,080	½	7,740	½		
Hours required per unit	× 1.5	½	× 2	½		
Budgeted labour hours	9,120		15,480		24,600	
× Cost of labour per hour					× £18.76	1
Budgeted labour costs					£461,496	

(3 marks)

(b) **Gross profit per unit of Product X**

		£	£	£	
Selling price				218.00	½
Less: Cost of sales					
Direct materials:					
A	(3 × £20.62)	61.86	½		
B	(2.5 × £13.84)	34.60	½	96.46	
Direct labour	(1.5 × £18.76)			28.14	½
Production overheads	(1.5 × £17.50*)			26.25	1
				150.85	
Gross profit per unit of Product X				67.15	

*Overhead absorption rate = $\frac{\text{Production overheads}}{\text{Direct labour hours}} = \frac{£430,500}{24,600} = £17.50$ 1

(4 marks)

(c)

A **rolling/continuous budget** is a 12-month budget which involves continuous amendment and updating by adding, for example, a further quarter (or month) and deducting the earliest quarter (or month) from the current budget. **1½**
1 mark for Definition ½ mark for Example

Rolling budgets allow management to update budgets as more definitive information becomes available. They are particularly useful where demand for a service or costs cannot be accurately forecast at the time of preparing the budgets. **1½**
1 mark Definition ½ mark for Example

A **zero-based budget** (ZBB) is a method of budgeting, whereby managers are required to justify all costs as if the spending programs were being proposed for the first time. **1½**

ZBB requires a fundamental review of all items to be included in a budget on the assumption that all services start at a zero cost level. This is in contrast with the usual incremental approach which accepts the previous year's budget figures and concentrates on marginal changes. **1½**

(6 marks)

(Total 20 marks)

QUESTION 4

A company had budgeted to produce and sell 3,000 units of its single product at a selling price of £210 per unit in a period. Details of the standard cost per unit are as follows:

			£
Direct material	3 kilos	× £22.60 per kilo	67.80
Direct labour	2.4 hours	× £15.75 per hour	37.80
Fixed production overhead	2.4 hours	× £17.25 per hour	41.40

The following is a reconciliation of the budgeted gross profit with the actual gross profit for the period:

			£	
Budgeted gross profit			189,000	
Sales and cost variances:	**Favourable**	**Adverse**		
	£	£		
Sales price	17,504			
Sales volume profit		16,695		
Direct material price	11,253			
Direct material usage		7,232		
Direct labour rate		4,707		
Direct labour efficiency	4,536			
Fixed overhead expenditure	8,815			
Fixed overhead volume		10,971		
	42,108	39,605	2,503	Favourable
Actual gross profit			191,503	

There were no stocks of raw materials, work-in-progress or finished units.

REQUIRED

(a) Calculate the following **actual figures** for the period:

(i) production and sales units

(2 marks)

(ii) selling price per unit

(2 marks)

(iii) direct materials purchased

(2 marks)

(iv) direct material cost per kilo

(2 marks)

(v) direct labour hours worked

(2 marks)

(vi) direct labour rate per hour

(2 marks)

(vii) fixed production overheads.

(2 marks)

(b) Prepare a profit statement showing the actual sales, cost of sales and gross profit for the period.

(3 marks)

(c) Explain the meaning of the **standard hour** of production.

(3 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 4
Syllabus Topic 6: Standard costing and variances (6.4) & (6.9)

(a) (i) **Actual production and sales units**

Budgeted production and sales units	3,000	½
Less Sales volume profit variance = £16,695 **1** =	265	
Standard gross profit per unit £63* ½		
Actual production and sales units (units)	2,735	

* Standard gross profit per unit = £210 – (£67.80 + £37.80 + £41.40) = £63

OR

Budgeted production and sales units	3,000	½
Less Fixed overhead volume variance = £10,971 **1** =	265	
Fixed overhead rate per unit £41.40 ½		
Actual production and sales units	2,735	

(2 marks)

(ii) **Actual selling price per unit**

Standard selling price per unit (£)	210.00	½
Add Sales price variance = £17,504 **1** =	6.40	
Actual sales units 2,735 ½		
Actual selling price per unit (£)	216.40	

(2 marks)

(iii) **Actual quantity of direct materials purchased**

Standard quantity of actual production (2,735 units × 3 kilos)	8,205	**1**
Add Direct material usage variance (£7,232 ÷ £22.60)	320	**1**
Actual quantity of direct materials purchased (Kilos)	8,525	

(2 marks)

(iv) **Actual direct material cost per kilo**

Standard direct material cost per kilo (£)	22.60	½
Less Direct material price variance = £11,253 **1** =	1.32	
Actual direct materials used 8,525 ½		
Actual direct material cost per kilo (£)	21.28	

(2 marks)

(v) **Actual direct labour hours worked**

Standard hours of actual production (2,735 units × 2.4 hours)	6,564	**1**
Less Direct labour efficiency variance (£4,536 ÷ £15.75)	288	**1**
Actual direct labour hours worked (hours)	6,276	

(2 marks)

QUESTION 4 CONTINUED

(vi) **Actual average direct labour rate per hour**

		£	
Standard direct labour rate per hour		15.75	½
Add Direct labour rate variance	= £4,707 **1** =	0.75	
Actual direct labour hours worked	6,276 ½		
Actual direct labour rate per hour		16.50	

(2 marks)

(vii) **Actual fixed production overheads**

		£	
Budgeted fixed production overheads	(3,000 × £41.40)	124,200	**1**
Less Fixed overhead expenditure variance		8,815	**1**
Actual fixed production overheads		115,385	

(2 marks)

(b) **Profit statement for the period**

		£	£	
Sales (2,735 units × £216.40)			591,854	½
Less Cost of sales:				
Direct materials	(8,525 kilos × £21.28)	181,412 **1**		
Direct labour	(6,276 hours ×£16.50)	103,554 **1**		
Fixed overheads		115,385 ½	400,351	
Gross profit			191,503	

(3 marks)

(c) The **standard hour** is defined as the quantity of work achievable at standard efficiency levels in an hour. It is a measure of work performed and not time. For example, if it takes 5 hours to produce 50 units, this would be expressed as 10 units of production per standard hour. **3**

2 marks for definition

1 mark for expansion/example

(3 marks)

(Total 20 marks)

QUESTION 5

A company is considering investing in a new machine to increase its capacity in order to manufacture a new product. The machine would cost £1,600,000 with a residual value of £120,000 after its expected useful life of five years.

The forecast for net operating cash inflows, for the product is as follows:

Year	£000
1	600
2	840
3	1,220
4	900
5	330

The operation of the new machine will require an immediate additional investment in working capital of £360,000. The working capital will be released at the end of the useful life of the machine.

If the new product is manufactured, the company will have to discontinue an existing product which makes an annual contribution of £250,000.

The company's cost of capital is 12% per annum.

Discount factors:

Year	10%	12%	15%	18%	20%
1	0.909	0.893	0.870	0.847	0.833
2	0.826	0.797	0.756	0.718	0.694
3	0.751	0.712	0.658	0.609	0.579
4	0.683	0.636	0.572	0.516	0.482
5	0.621	0.567	0.497	0.437	0.402

REQUIRED

(a) Calculate in relation to the investment in the new machine, the:

(i) net present value (10 marks)

(ii) internal rate of return (3 marks)

(iii) discounted payback period. (4 marks)

(b) Describe how a company's weighted average cost of capital is calculated. (3 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 5
Syllabus Topic 7: Long-term decision-making (7.2), (7.3), (7.7), (7.8) & (7.12)

(a) (i) **Calculation of net present value (NPV)**

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
	£000	£000	£000	£000	£000	£000
Machine cost	(1,600)					
Operating cash flows		600	840	1,220	900	330
Lost contribution		(250)	(250)	(250)	(250)	(250)
Working capital	(360)					360
Residual value						120
Net cash flow	(1,960) ½	350 ½	590 ½	970 ½	650 ½	560 1½

Year	Net cash flow £000	Disc. Factor @ 12%	Present values £000
0	(1,960)	1.000	(1,960.00) 1
1	350	0.893	312.55 1
2	590	0.797	470.23 1
3	970	0.712	690.64 1
4	650	0.636	413.40 1
5	560	0.567	317.52 1
		NPV =	244.34

(10 marks)

(ii) **Calculation of internal rate of return (IRR)**

Year	Net cash flow £000	Disc. Factor @ 18%	Present values £000
0	(1,960)	1.000	(1,960.00)
1	350	0.847	296.45
2	590	0.718	423.62
3	970	0.609	590.73
4	650	0.516	335.40
5	560	0.437	244.72
		NPV =	(69.08) 1

IRR = 12% + {6% × [244.34 ÷ (244.34 + 69.08)]} = 16.7% 2

(3 marks)

(iii) **Calculation of discounted payback period**

	Discounting @ 12%		
Year	Present value £000	Cumulative cash flows £000	
0	(1,960.00)	(1,960.00)	
1	312.55	(1,647.45)	½
2	470.23	(1,177.22)	½
3	690.64	(486.58)	½
4	413.40	(73.18)	½
5	317.52	244.34	½

Discounted payback period = 4 + (73.18 ÷317.52) = 4.23 years 2

(4 marks)

(b)

The returns expected by shareholders together with the interest paid to long-term providers is weighted according to the proportions between equity capital and debt capital, to arrive at a weighted average cost of capital.

(3 marks)

(Total 20 marks)

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