

Certificate in Management Accounting Level 3



International
Qualifications from EDI

Model Answers Series 3 2009 (3024)

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Series 3 2009

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

	Period 6	Period 7	Period 8	Period 9
Production and sales (units)	14,500	12,400	16,800	15,250
Total operating costs	£196,350	£187,500	£241,500	£251,850
General price-level index	110	125	138	146

REQUIRED

(a) Use the high-low method to:

- (i) analyse the total operating costs into a variable cost per unit and total fixed costs per period at the Period 6 general price-level index.
(5 marks)
- (ii) estimate the total operating costs expected in Period 10 if 18,120 units are produced and sold and the general price-level index is 155.
(3 marks)

Company B has prepared a budget for the coming period when it plans to make and sell two types of products. The following details are provided:

	Product X	Product Y
	£ per unit	£ per unit
Selling price	20	45
Variable operating costs	15	20
Estimated fixed costs per period	£468,000	

The company expects to sell 3 units of Product X for every unit of Product Y in the coming period.

REQUIRED

- (b) Calculate the number of units of Product X and Product Y that are required to be sold by the company in order to earn a profit of £260,000 in the coming period.
(7 marks)
- (c) Discuss the usefulness of cost-profit-volume (CVP) analysis.
(5 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 1

- (a) (i) Calculation of variable cost per unit and total fixed cost per period at the Period 6 price-level

	Units	Total costs £	Index adjustment	£
High level	16,800	241,500	x 110/138	192,500
Low level	<u>12,400</u>	187,500	x 110/125	<u>165,000</u>
	<u>4,400</u>			<u>27,500</u>

$$\text{Variable cost per unit} = \frac{\text{£}27,500}{4,400} = \text{£}6.25 \text{ per unit}$$

$$\text{Fixed costs per period} = \text{£}192,500 - (16,800 \times \text{£}6.25) = \text{£}87,500$$

- (a) (ii) Estimation of total operating costs of 18,120 units at price-level index = 155

Total operating costs at price-level index = 110

	£
Variable operating costs – 18,120 units x £6.25	113,250
Add: Fixed costs	<u>87,500</u>
Total operating costs	<u>200,750</u>

$$\text{Adjusted operating costs} = \text{£}200,750 \times 155/110 = \text{£}282,875$$

- (b)

	Product X £ per unit	Product Y £ per unit
Selling price	20	45
Less: Variable cost	<u>15</u>	<u>20</u>
Contribution	<u>5</u>	<u>25</u>

$$\text{Sales mix} \quad 3 = 0.75 \quad : \quad 1 = 0.25$$

$$\text{Weighted average contribution per unit} = 0.75 \times \text{£}5 + 0.25 \times \text{£}25 = \text{£}10 \text{ per unit}$$

$$\text{Sales units} = \frac{\text{Fixed costs} + \text{Required profit}}{\text{WAVG contribution/unit}} = \frac{\text{£}468,000 + \text{£}260,000}{\text{£}10} = 72,800 \text{ units}$$

$$\begin{aligned} \text{Required sales units:} \quad X &: 0.75 \times 72,800 = 54,600 \text{ units} \\ Y &: 0.25 \times 72,800 = 18,200 \text{ units} \end{aligned}$$

MODEL ANSWER TO QUESTION 1 CONTINUED

- (c) The objective of cost-volume-profit (CVP) analysis is to establish the likely effect on the budgeted profit of a business if the level of activity or volume fluctuates.

Apart from changes in unit selling price, it is necessary to analyse costs into variable costs that will change and fixed costs that will not change in total in the short term. This enables various types of break-even charts to be prepared which forecast profits at different levels of output.

A major use and benefit derived from CVP analysis is its focus on the contribution (sales less variable costs) of individual products or factories/departments or special orders. This is very useful in making the best short-term decisions on matters such as product mix, use of scarce resources, make-or-buy, product abandonment, factory or departmental closure, etc.

QUESTION 2

A company is considering whether to accept a contract to manufacture 4,000 units of a special type of product at a selling price of £250 per unit. The following information is provided:

	Direct material	
	Contract Requirement	Current Stockholding
Material W	7,500 kg	2,500 kg at a cost of £30 per kg
Material X	3,200 kg	4,000 kg at a cost of £40.25 per kg
Material Y	6,000 kg	6,000 kg at a cost of £25.50 per kg
Material Z	5,000 kg	5,000 kg at a cost of £37.40 per kg

Material W can only be used to manufacture the special type of product and, if the contract is not accepted, the current stock would be sold immediately at a price of £22 per kg. The current replacement cost is £35 per kg.

Material X, which currently costs £45 per kg, is regularly used in the manufacture of other products.

The current stock of Material Y was purchased two years ago. If not used on the contract, it can either be sold now for £12 per kg or be reworked at a cost of £15.75 per kg and then used as a substitute for Material F which presently costs £32 per kg.

Material Z is specifically used for the special type of product and the company has purchased the quantity required in anticipation of the contract. If the contract is not accepted, then the material would be sold back to the suppliers at half of its original cost.

Direct labour

	Contract Requirement
Skilled labour	12,000 hours at £16 (basic rate) per hour
Semi-skilled labour	6,000 hours at £10 (basic rate) per hour

Additional skilled labour cannot be recruited and the existing skilled workers are currently working at full capacity. If the contract is accepted, skilled workers would be willing to work 4,000 hours of overtime at one and a quarter times their hourly basic rate. The remainder of the skilled labour hours required would be obtained by reducing the production of another product which currently earns a contribution of £9 per skilled labour hour.

Semi-skilled labour is currently under-utilised and is being paid for sufficient hours to be able to complete the contract. However, the company expects to have to spend £30,000 on training semi-skilled workers to manufacture the special type of product. If the contract is not accepted, semi-skilled workers would be made redundant immediately at a cost of £45,000.

Overhead expenses

The current overhead expenses budgets include the following:

1. Additional variable overhead costs of £180,000 for carrying out the contract.
2. Depreciation charge of £80,000 per annum for the special machine to be used on the contract. This machine was purchased three years ago for £400,000 with an estimated life of 5 years. There is now no other use for the machine if it is not used on the contract. It would either be sold immediately for £15,000 or, after completion of the contract, for £5,000.

REQUIRED

- (a) Prepare suitable calculations, using a relevant cost basis, to advise the company whether or not to accept the contract. (15 marks)

- (b) Briefly explain the meaning of the terms: **avoidable cost** and **sunk cost**. Give one example of each from the above information. (5 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 2

	£000	£000	£000	£000
Contract revenue – 4,000 units @ £250 per unit				1,000
<u>Deduct: Relevant costs</u>				
Direct material				
Material W [5,000 kg x £35.00 per kg]		175		
		<u>55</u>	230	
Material X [3,200 kg x £45.00 per kg]			144	
Material Y [6,000 kg x £16.25 (£32 – £15.75) per kg]			97.5	
Material Z [5,000 kg x £18.70 per kg]			<u>93.5</u>	
			565	
Direct labour				
Skilled labour [4,000 hours x £16 per hour x 1¼]		80		
		<u>200</u>		
		280		
Semi-skilled labour – Training cost	30			
– Redundancy savings	<u>(45)</u>			
		(15)		
			265	
Overhead expenses				
Additional variable overhead costs		180		
Lost revenue from not selling machine (15,000 – 5,000)		<u>10</u>		
			190	
Total relevant costs				(1,020)
Loss on contract				<u>(20)</u>

The company should not accept the contract since it will result in a loss of £20,000.

- (b) **Avoidable costs** are the specific costs of a decision that will not be incurred if the particular decision is not taken.

Examples of avoidable costs include the £30,000 cost of training semi-skilled workers and the £180,000 incremental variable costs of carrying out the contract.

Sunk costs are expenditures that have already been incurred and cannot be recovered from a current or a future decision.

Examples of sunk costs include the original purchase costs of any of the four types of materials and the depreciation charge of £80,000.

QUESTION 3

Universal Retail Stores Ltd is budgeting for its operations for the coming months. Details are provided as follows:

1. Sales for May 2009 were £80,000 and these are expected to increase by 10% each month from June 2009 onwards. All sales are made on credit terms. Customers are expected to pay for 60% of sales in the month of sale, 35% in the month following sale and the balance is considered to be bad debts.
2. Gross profit is budgeted at 30% of sales.
3. Since April 2009, it has been the policy with goods for resale to have a stock level at the end of each month sufficient to cover 25% of the following month's sales. This policy will be maintained during the budget period and purchases will be made as required during each month. All purchases will be made on credit and paid for in the month following purchase.
4. Administrative expenses are budgeted at £11,000 per month, including £2,500 for depreciation. Payments are to be made in the month in which the expenses are incurred.
5. Selling and distribution expenses are estimated to be 7½% of monthly sales value. Payments for these expenses are to be made one month in arrears.
6. The budgeted bank balance on 1 June 2009 is £15,750 overdrawn. Other than the balance in its bank account, the company does not intend to hold any cash balances on 1 June 2009.

REQUIRED

Prepare a cash budget for the company for each of the three months June 2009, July 2009 and August 2009.

(Total 20 marks)

MODEL ANSWER TO QUESTION 3

Cash Budget for June, July and August 2009

	June 2009	July 2009	August 2009
Receipts	£	£	£
Credit sales (W1)	<u>80,800</u>	<u>88,880</u>	<u>97,768</u>
Payments			
Credit purchases (W2)	57,400	63,140	69,454
Administrative expenses	8,500	8,500	8,500
Selling & distribution expenses (W3)	<u>6,000</u>	<u>6,600</u>	<u>7,260</u>
	<u>71,900</u>	<u>78,240</u>	<u>85,214</u>
Net cash flow	8,900	10,640	12,554
Opening cash balance	- 15,750	- 6,850	3,790
Closing cash balance	- 6,850	3,790	16,344

Workings

		£
W1	June sales collections	
	Current month (60% x £80,000 x 1.1)	52,800
	Previous month (35% x £80,000)	<u>28,000</u>
		<u>80,800</u>

	July sales collections	
	Current month (60% x £80,000 x 1.1 ²)	58,080
	Previous month (35% x £80,000 x 1.1)	<u>30,800</u>
		<u>88,880</u>

	August sales collections	
	Current month (60% x £80,000 x 1.1 ³)	63,888
	Previous month (35% x £80,000 x 1.1 ²)	<u>33,880</u>
		<u>97,768</u>

W2	Credit purchases	May	June	July	August	September
		£	£	£	£	£
	Sales	80,000	88,000	96,800	106,480	117,128
	Add: Closing stock	<u>22,000</u>	<u>24,200</u>	<u>26,620</u>	<u>29,282</u>	
		102,000	112,200	123,420	135,762	
	Less: Opening stock	<u>20,000</u>	<u>22,000</u>	<u>24,200</u>	<u>26,620</u>	
	Sales value	<u>82,000</u>	<u>90,200</u>	<u>99,220</u>	<u>109,142</u>	
	Cost of Sales (x 70%)	57,400	63,140	69,454	76,399	

W3 Selling and distribution expenses

	May	June	July	August
	£	£	£	£
Sales	80,000	88,000	96,800	106,480
S & D expenses (x 7½%)	6,000	6,600	7,260	7,986

QUESTION 4

REQUIRED

- (a) Explain the difference between an **investment centre** and a **profit centre**. (5 marks)

Company M is comprised of two divisions. Division R manufactures a single product which it sells to Division T and, also, to external customers.

The following information relates to the budgeted operations of Division R for the coming period:

Divisional investment	£1,500,000
Sales	20,000 units at a selling price of £80 per unit
Variable costs	£57.50 per unit
Fixed costs	£210,000

The cost of capital for Company M is 12½% per annum.

REQUIRED

- (b) Calculate for Division R for the coming period, the expected:
- (i) return on capital employed (ROCE) (5 marks)
 - (ii) residual income (RI). (3 marks)

Division R's budgeted sales volume includes 5,000 units which it expects to sell to Division T. However, Division T has received an offer from an external company to supply the 5,000 units at a price of £72.50 per unit. If Division R does not meet the £72.50 price, Division T will buy from the external company. Division R expects to save £60,000 in fixed costs if it does not sell the 5,000 units to Division T.

REQUIRED

- (c) If Division R fails to meet the £72.50 price and loses the sales to Division T, calculate:
- (i) The effect on Division R's budgeted profit. (3 marks)
 - (ii) The effect on Company M's total profit. (4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 4

- (a) An **investment centre** is a responsibility centre (i.e. a part of a business that is the direct responsibility of a specific manager) in which the manager takes decisions regarding fixed asset investment.

Managers of investment centres are responsible for long-term capital investment as well as the day-to-day revenues and costs.

An investment centre's long-term financial performance will be measured by relating its profit to the amount invested.

In contrast to an investment centre, a **profit centre** is a responsibility centre where the manager has responsibility for the profit generated from the use of assets, but not for the investment decisions.

Managers of profit centres are responsible for revenues and for costs but not for fixed assets.

- (b) **Syllabus Topic 8: Performance evaluation and transfer pricing (8.3) & (8.9)**

- (i) Expected return on capital employed (ROCE)

	£
Budgeted total contribution – 20,000 units x £22.50*	450,000
<u>Less: Fixed costs</u>	<u>– 210,000</u>
Budgeted divisional profit	<u>240,000</u>

* (Selling price – variable costs) per unit = £80.00 – £57.50 = £22.50

$$\text{ROCE} = \frac{\text{Budgeted profit}}{\text{Budgeted investment}} \times 100\% = \frac{\text{£240,000}}{\text{£1,500,000}} \times 100\% = 16\%$$

- (ii) Expected residual income (RI)

	£
Budgeted divisional profit	240,000
<u>Less: Cost of capital charge – 12½% x £1,500,000</u>	<u>– 187,500</u>
Budgeted residual income (RI)	<u>52,500</u>

- (c) (i) Effect on Division R's budgeted profit

If Division R does not accept the lower price of £72.50, the full contribution from sales to Division T will be lost. However, the avoidable fixed costs will be saved.

	£
Contribution lost – 5,000 units x £22.50	112,500
<u>Less: Savings in avoidable fixed costs</u>	<u>– 60,000</u>
Decrease in Division R's budgeted profit	<u>52,500</u>

MODEL ANSWER TO QUESTION 4 CONTINUED

(c) (ii) Effect on Company M's total profit

From Company M's point of view, this represents a make-or-buy decision.

Make product in-house

	£
Division R's variable production costs (5,000 units x £57.50)	287,500
<u>Add: Avoidable fixed costs</u>	<u>60,000</u>
Production costs of making product in-house	<u>347,500</u>

Buy product from external supplier

Purchase costs of product (5,000 units x £72.50)	<u>362,500</u>
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The effect on Company M's total profit = £362,500 – £347,500 = £15,000 **loss**

Alternative answer

	£
Reduced profit in Division R [as calculated in c (i)]	– 52,500
<u>Less: Savings in Division T (5,000 x £7.50)</u>	<u>37,500</u>
Loss in Company M's total profit	– <u>15,000</u>

QUESTION 5

A company has completed the evaluation of four investment projects by using a 15% discount rate to calculate their net present values. The following partial information about the projects is provided:

	Project A £000	Project B £000	Project C £000	Project D £000
Initial cost	1,100	Missing figure	1,440	960
Net present value	Missing figure	129.4	154.6	136.6
Annual net cash flows:				
Year 1	500	400	550	480
Year 2	600	400	700	550
Year 3	506	400	772	350
Disposal values at end of Year 3	44	100	120	50

The company's depreciation policy is to write off the initial cost of investment using the straight-line method. It is assumed that net cash flows occur at the end of the years to which they relate.

Discount factors:	Year	10%	15%	20%	25%
	1	0.909	0.870	0.833	0.800
	2	0.826	0.756	0.694	0.640
	3	<u>0.751</u>	<u>0.658</u>	<u>0.579</u>	<u>0.512</u>
		<u>2.486</u>	<u>2.284</u>	<u>2.106</u>	<u>1.952</u>

REQUIRED

(a) Calculate for **Project A**, the:

- (i) net present value (4 marks)
- (ii) internal rate of return. (3 marks)

(b) Calculate the:

- (i) initial cost of **Project B** (4 marks)
- (ii) accounting rate of return for **Project C** (using average capital investment) (5 marks)
- (iii) discounted payback period for **Project D**. (4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 5

(a) (i) NPV of Project A:

Discounting @ 15%			
Year	Cash flow £000	Factor	Present value £000
0	(1,100)	1.000	(1,100.0)
1	500	0.870	435.0
2	600	0.756	453.6
3	550 *	0.658	<u>361.9</u>
NPV			= <u>150.5</u> = £150,500

* Includes residual value of £44,000

(ii) IRR of Project A:

Discounting @ 25%			
Year	Cash flow £000	Factor	Present value £000
0	(1,100)	1.000	(1,100.0)
1	500	0.800	400.0
2	600	0.640	384.0
3	550	0.512	<u>281.6</u>
			<u>(34.4)</u>

IRR = 15% + {10% × [150.5 ÷ (150.5 + 34.4)]} = 23.14%

(b) (i) Initial cost of Project B:

	£000
Present values @ 15%:	
Net cash flows for Years 1 – 3	400 x 2.284 913.6
Disposal value at end of Year 3	100 x 0.658 <u>65.8</u>
	979.4
Less: Net present value	– 129.4
Initial cost	<u>850.0</u> = £850,000

(ii) Accounting rate of return for Project C:

Annual depreciation = (1,440 – 120) ÷ 3 = £440,000

$$\text{ARR} = \frac{[550 + 700 + 772 - (3 \times 440)] \div 3}{[(1,440 + 120) \div 2]} = \frac{234}{780} \times 100\% = \underline{30\%}$$

(iii) Discounted payback period for Project D:

Discounting @ 15%				
Year	Cash flow £000	Factor	Present value £000	Cumulative cash flows £000
0	(960)	1.000	(960.0)	(960.0)
1	480	0.870	417.6	(542.4)
2	550	0.756	415.8	(126.6)
3	400	0.658	263.2	136.6

Discounted payback period = 2 + (126.6 ÷ 263.2) = 2.48 years

EDI

International House
Siskin Parkway East
Middlemarch Business Park
Coventry CV3 4PE
UK

Tel. +44 (0) 8707 202909

Fax. +44 (0) 2476 516505

Email. enquiries@ediplc.com

www.ediplc.com



International
Qualifications from EDI