

Management Accounting Level 3



International
Qualifications from EDI

Model Answers Series 4 2012 (3024)

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Series 4 2012

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

Hobson Ltd manufactures and sells a single product at a current selling price of £250.00 per unit.

The variable production costs and variable selling costs of the product are currently £150.00 and £12.50 per unit respectively.

In the next period, fixed costs are budgeted at £927,500 and the budgeted production and sales are 16,000 units.

The current selling price and variable costs are budgeted to remain unchanged in the next period.

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) (3 marks)
 - (iii) selling price required to maintain the current contribution/sales ratio if the variable production costs and the variable selling costs increase by 9.5% and 16% per unit respectively. (5 marks)

Hobson Ltd, which has sufficient unused production capacity, is considering reducing the selling price by 5% in the next period in order to generate a forecast 12.5% increase in sales units.

This would result in the following cost increases:

Variable production costs	5.5% per unit
Variable selling costs	£0.25 per unit
Fixed costs	£83,300

REQUIRED

- (b) Assuming that the selling price is reduced by 5% for the next period, calculate the revised budgeted:
- (i) break-even point (in sales revenue) (5 marks)
 - (ii) net profit. (4 marks)

(Total 20 marks)

Model Answer to Question 1**Syllabus Topic 2: Cost/volume/profit (CVP) analysis (2.2), (2.3) & (2.4)****(a) (i) Budgeted break-even point (in sales revenue)**

	£ per unit	£ per unit
Selling price		250.00
Less: Variable costs		
Production	150.00	
Selling	<u>12.50</u>	<u>(162.50)</u>
Contribution		<u>87.50</u>

$$\text{Contribution/sales ratio (C/S)} = \left(\frac{87.50}{250.00} \right) = \mathbf{0.35 \quad 1}$$

$$\text{Break-even point (in sales revenue)} = \frac{FC}{C/S} = \frac{\pounds 927,500}{0.35} = \mathbf{\pounds 2,650,000 \quad 2 \text{ of}}$$

(3 marks)

(ii) Budgeted margin of safety

$$\text{Budgeted sales value} = 16,000 \times \pounds 250 = \pounds 4,000,000$$

$$\text{Budgeted margin of safety} = \left(\frac{4,000,000 - 2,650,000}{4,000,000} \right) \times 100\% = \mathbf{33.8\% \quad 1}$$

(3 marks)

(iii) New selling price with current contribution/sales ratio

		Revised unit cost £
Variable production	(£150.00 × 1.095)	164.25 1
Variable selling	(£12.50 × 1.16)	<u>14.50</u> 1
Total variable cost		<u>178.75</u>

$$\text{Variable cost ratio} = 1 - C/S = 1 - 0.35 = \mathbf{0.65 \quad 1}$$

In order to maintain current C/S ratio of 0.35, the revised variable cost per unit must equal 0.65 of selling price per unit.

$$\text{New selling price} = \frac{\pounds 178.75}{0.65} = \mathbf{\pounds 275.00 \text{ per unit} \quad 2 \text{ of}}$$

(5 marks)

Model Answer to Question 1 continued

(b) (i) **Break-even point (in sales revenue)**

		£ per unit	£ per unit
Selling price	(£250 × 0.95)		237.50 1
Less: Variable costs			
Production	(£150.00 × 1.055)	158.25 1	
Selling	(£12.50 + £0.25)	<u>12.75 1</u>	(171.00)
Contribution			<u>66.50</u>

$$C/S = \left(\frac{66.50}{237.50} \right) = 0.28 \text{ **1of**}$$

$$\text{Break-even point (in sales revenue)} = \frac{FC}{C/S} = \frac{(\pounds 927,500 + \pounds 83,300)}{0.28} = \pounds 3,610,000 \text{ **1 of**}$$

(5 marks)

(ii) **Budgeted net profit**

	£	£
Sales (16,000 × 1.125 = 18,000 × £237.50)		4,275,000 1
Less: Variable costs of sales		
Production (18,000 × £158.25)	2,848,500 1of	
Selling (18,000 × £12.75)	<u>229,500 1of</u>	(3,078,000)
Contribution		1,197,000
Less: Fixed cost (£927,500 + £83,300)		<u>(1,010,800) 1of</u>
Net profit*		<u>186,200</u>

(4 marks)

*Alternative calculation:

	£
Contribution (18,000 × £66.50)	1,197,000 2
Less: Fixed cost (£927,500 + 83,300)	<u>(1,010,800) 2</u>
Net profit	<u>186,200</u>

(Total 20 marks)

Question 2

Jin Yan manufactures and sells four products.

Details of the four products are as follows:

	Product Alpha	Product Beta	Product Delta	Product Gamma
	£ per unit	£ per unit	£ per unit	£ per unit
Selling price	214	178	262	186
Less costs:				
Direct materials (at £24 per kilo)	72	48	60	36
Direct labour (at £16 per hour)	40	32	64	48
Variable overheads	30	24	48	36
Fixed overheads	<u>50</u>	<u>40</u>	<u>80</u>	<u>60</u>
	<u>192</u>	<u>144</u>	<u>252</u>	<u>180</u>
Profit per unit	22	34	10	6
Forecast sales demand in the next period	1,200 units	4,250 units	2,100 units	3,600 units

Fixed overheads are absorbed on the basis of the direct labour hours required to satisfy the sales demand.

The same type of material and grade of labour are used in the manufacture of the four products.

The availability of direct material will be limited to 18,500 kilos and of direct labour to 32,000 hours, for the next period.

No finished goods or direct material stocks are held.

REQUIRED

For the next period:

- (a) Determine which of the resources (direct material or direct labour) is the limiting factor, showing clearly your workings. (5 marks)
- (b) (i) prepare a production schedule that will maximise profit (7 marks)
- (ii) calculate the amount of the profit. (4 marks)
- (c) Briefly explain the meaning of the terms:
- (i) avoidable cost (2 marks)
- (ii) sunk cost. (2 marks)

(Total 20 marks)

Model Answer to Question 2

Syllabus Topic 3: Short-term decision-making (3.4), 3.5) & (3.6)

- (a) The limiting factor is determined by comparing the quantity of direct materials and the number of direct labour hours required with the availability of these resources for production and sales.

	Product Alpha	Product Beta	Product Delta	Product Gamma	Total
Materials requirement					
Production/sales units	1,200	4,250	2,100	3,600	
× kilos per unit [W1]	x <u>3</u>	x <u>2</u>	x <u>2.5</u>	x <u>1.5</u>	
	<u>3,600</u> ½	<u>8,500</u> ½	<u>5,250</u> ½	<u>5,400</u> ½	22,750 kilos
Labour requirement					
Production/sales units	1,200	4,250	2,100	3,600	
× hours per unit [W2]	x <u>2.5</u>	x <u>2</u>	x <u>4</u>	x <u>3</u>	
	<u>3,000</u> ½	<u>8,500</u> ½	<u>8,400</u> ½	<u>10,800</u> ½	30,700 hours

Direct material is the limiting factor since 22,750 kilos are required but only 18,500 kilos are currently available. The direct labour requirement of 30,700 hours is less than the available amount of 32,000 hours. **1**

(5 marks)

(b) (i) Production Schedule

	Product Alpha	Product Beta	Product Delta	Product Gamma
	£ per unit	£ per unit	£ per unit	£ per unit
Selling price	<u>214</u>	<u>178</u>	<u>262</u>	<u>186</u>
Deduct Variable costs:				
Direct material	72	48	60	36
Direct labour	40	32	64	48
Variable overheads	<u>30</u>	<u>24</u>	<u>48</u>	<u>36</u>
	<u>142</u>	<u>104</u>	<u>172</u>	<u>120</u>
Contribution per unit	<u>£72</u> ½	<u>£74</u> ½	<u>£90</u> ½	<u>£66</u> ½
Direct material (kilos per unit)	3	2	2.5	1.5
Contribution per kilo	£24 ½	£37 ½	£36 ½	£44 ½
Ranking	4 th	2 nd	3 rd	1 st 1
Products	NIL	4250 ½	1840 ½	3600 1

(7 marks)

(ii) Optimum product mix and the resulting net profit

	Units		Material (kilos)		Total contribution
					£
Product Gamma	3,600	× 1.5 kilos =	5,400	½ of × £44 =	237,600 ½ of
Product Beta	4,250	× 2 kilos =	8,500	½ of × £37 =	314,500 ½ of
Product Delta (4,600 ÷ 2.5)	1,840	× 2.5 kilos =	<u>4,600</u>	½ of × £36 =	<u>165,600</u> ½ of
			<u>18,500</u>		717,700
				Less Fixed costs	(614,000) [W3] 1
				Net profit	<u>103,700</u>

(4 marks)

Model Answer to Question 2 continued

Workings	Product W	Product X	Product Y	Product Z
W1 – Direct material (kilo/unit)				
Direct material cost per unit	$\frac{£72}{£24} = 3$	$\frac{£48}{£24} = 2$	$\frac{£60}{£24} = 2.5$	$\frac{£36}{£24} = 1.5$
Direct material cost per kilo	£24	£24	£24	£24

W2 – Direct labour hours per unit

Direct labour cost per unit	$\frac{£40}{£16} = 2.5$	$\frac{£32}{£16} = 2$	$\frac{£64}{£16} = 4$	$\frac{£48}{£16} = 3$
Direct labour rate per hour	£16	£16	£16	£16

$$\begin{aligned} \text{W3 – Total fixed costs} &= [(1,200 \times £50) + (4,250 \times £40) + (2,100 \times £80) + (3,600 \times £60)] \\ &= £614,000 \end{aligned}$$

- (c) (i) **Avoidable costs** are the specific costs of a decision that will not be incurred, if a particular decision is not taken. **2**
- (ii) **Sunk costs** are expenditures that have already been incurred, and cannot be recovered from a current or a future decision. **2**

(4 marks)

(Total 20 marks)

Question 3

Coren Evens manufactures a single product, is budgeting to make and sell 150,000 units of the product at £24.00 per unit in the coming year.

The product's unit production costs as a percentage of its selling price are as follows:

	%
Direct materials	33
Direct labour	18
Production overheads	24

The following information is also available:

- (1) Production and sales are expected to occur evenly throughout the year.
- (2) Production is expected to take place with an average cycle of 8 days.
- (3) Direct materials are expected to be held in stock for an average of 5 days before being issued to production.
- (4) Work-in-progress is expected to be 100% complete in terms of direct material input and 60% complete in terms of direct labour and production overheads.
- (5) Finished products are expected to be in stock for an average of 7 days before their sale.
- (6) The company plans to grant its customers an average credit period of 60 days while it expects to take an average of 50 days to pay its suppliers of direct materials.

REQUIRED

- (a) Calculate the company's total working capital requirements for the coming year (to the nearest £1,000). (14 marks)
- (b) Briefly describe **six** benefits that an organisation may obtain from the operation of a budgetary planning and control system. (6 marks)

(Total 20 marks)

Model Answer to Question 3

Syllabus Topic 5: Cash and working capital management (5.5)

(a) Working capital requirements:

Workings:

		£000	
Direct materials	(33% × £3,600,000*)	1,188	½
Direct labour	(18% × £3,600,000)	648	½
Production overheads	(24% × £3,600,000)	<u>864</u>	½
Total production costs		<u>2,700</u>	

*Sales value = 150,000 × £24.00 = £3,600,000 ½

Direct material	(5 ÷ 365) days × £1,188,000	£000	£000	
			16	1½
Work-in-progress				
Direct material	(8 ÷ 365) days × £1,188,000 × 100%	26	2	
Direct labour	(8 ÷ 365) days × £ 648,000 × 60%	9	2	
Production overheads	(8 ÷ 365) days × £864,000 × 60%	<u>11</u>	2	46
Finished goods	(7 ÷ 365) days × £2,700,000		52	1
Trade debtors	(60 ÷ 365) days × £3,600,000		<u>592</u>	1½
			706	
Less: Trade creditors	(50 ÷ 365) days × £1,188,000		(<u>163</u>)	1
Total working capital requirements for the year			<u>543</u>	1

(14 marks)

(b) **Syllabus Topic 4: Budgetary planning and control (4.2)**

- Budgets provide a means of **communicating** management's plans throughout the organisation. **1**
- Budgets force managers to **think** about and **plan** for the future. **1**
- In the absence of the necessity to prepare a budget, managers could spend their time **dealing with daily crises**. **1**
- The budgeting process provides a means of **allocating resources**. **1**
- Budgeting allows for the organisation to **allocate** its resources to be used most **effectively**. **1**
- The budgeting process can uncover **potential bottlenecks** before they occur. **1**
- Budgets **co-ordinate** the activities of the entire organisation. **1**
- Budgets can **integrate plans**, thus helping to ensure that everyone in the organisation is pulling in the same direction. **1**
- Budgets **define goals and objectives**. **1**
- Budget can serve as **benchmarks** for **evaluating** subsequent performance. **1**

Any other acceptable response **1**

Maximum 6 marks

(6 marks)

(Total 20 marks)

Question 4

Messi Ltd operates a standard absorption costing system for its single product.

Budgeted data relating to the product for the period just ended was:

Standard production cost		£ per unit
Direct material	(3 kilos × £38.50 per kilo)	115.50
Direct labour	(2.5 hours × £19.20 per hour)	48.00
Fixed overheads	(2.5 hours × £21.50 per hour)	53.75

Production and sales: 2,500 units

Standard selling price £280 per unit

Actual results for the next period were as follows:

Production: 3,040 units

Sales: 2,880 units sold for £781,200

Direct material (purchased and used): 9,630 kilos costing £360,485

Direct labour: 7,120 hours costing £149,520

Fixed overheads: £138,650

REQUIRED

(a) Calculate the following variances for the period:

- (i) selling price (2 marks)
- (ii) sales volume profit (3 marks)
- (iii) direct material price (2 marks)
- (iv) direct material usage (2 marks)
- (v) direct labour rate (2 marks)
- (vi) direct labour efficiency (2 marks)
- (vii) fixed overheads expenditure (2 marks)
- (viii) fixed overheads volume (2 marks)

(b) Give **three** possible causes of the direct labour rate variance calculated in part (a). (3 marks)

(Total 20 marks)

Model Answer to Question 4

Syllabus Topic 6: Standard costing and variances (6.2), (6.3), (6.5), (6.6) & (6.11)

(a) (i) **Selling price variance:**

(Standard price × Actual units)	–	(Actual price × Actual units)	
(£280.00 × 2,880 units)	–	£781,200	
£806,400	–	£781,200	= £25,200 Adverse

2
(2 marks)

(ii) **Sales volume profit variance:**

(Standard profit* × Actual units)	–	(Standard profit × Budgeted units)	
(£62.75* × 2,880 units)	–	(£62.75 × 2,500 units)	
£180,720	–	£156,875	= £23,845 Favourable

2

*Standard profit = £280.00 – £(115.50 + 48.00 + 53.75) = **£62.75**

1
(3 marks)

(iii) **Direct material price variance:**

(Standard price × Actual usage)	–	(Actual price × Actual usage)	
(£38.50 × 9,630 kilos)	–	£360,485	
£370,755	–	£360,485	= £10,270 Favourable

2
(2 marks)

(iv) **Direct material usage variance:**

(Standard price × Standard usage)	–	(Standard price × Actual usage)	
[£38.50 × (3,040 × 3 kilos)]	–	(£38.50 × 9,630 kilos)	
£351,120	–	£370,755	= £19,635 Adverse

2
(2 marks)

(v) **Direct labour rate variance:**

(Standard rate × Actual hours)	–	(Actual rate × Actual hours)	
(£19.20 × 7,120 hours)	–	£149,520	
£136,704	–	£149,520	= £12,816 Adverse

2
(2 marks)

(vi) **Direct labour efficiency variance:**

(Standard rate × Standard hours)	–	(Standard rate × Actual hours)	
[£19.20 × (3,040 × 2.5 hours)]	–	(£19.20 × 7,120 hours)	
£145,920	–	£136,704	= £9,216 Favourable

2
(2 marks)

(vii) **Fixed overheads expenditure variance:**

Budgeted fixed overheads	–	Actual fixed overheads	
(£53.75 × 2,500 units)	–	£138,650	
£134,375	–	£138,650	= £4,275 Adverse

2

(2 marks)

(viii) **Fixed overheads volume variance:**

(Standard rate × Actual units)	–	(Standard rate × Budgeted units)	
(£53.75 × 3,040 units)	–	(£53.75 × 2,500 units)	
£163,400	–	£134,375	= £29,025 Favourable

2

(2 marks)

(b) Three of the possible causes of the direct labour rate variance are:

- Poor pay bargaining by the personnel department; **1**
- Employment of higher skilled labour than was planned; **1**
- Change in labour-market conditions between the setting of the standard and the actual event. **1**

Any other reasonable answer (3 marks)

(Total 20 marks)

Question 5

Patel Ltd is considering investing in one of two alternative new machines in order to reduce operating costs over the next five years.

The following information has been prepared:

	Machine Exe	Machine Whye
	£000	£000
Initial cost	1,200	1,500
Residual value	150	200

For each machine, the management of the company has estimated the savings at three different levels (high, medium and low) within each level the savings each year are assured to be consistent.

The annual cost savings and the probability of their occurrence are set out below.

Machine Exe			Machine Whye		
Annual cost savings	Probability		Annual cost savings	Probability	
£000			£000		
High	340	0.35	High	308	0.25
Medium	215	0.40	Medium	240	0.45
Low	140	0.25	Low	150	0.30

The above savings have been calculated after deduction of depreciation on a straight-line basis over the five-year life of each machine.

The company's cost of capital is 15% per annum. The relevant discount factors are:

<i>Year</i>	
1	0.870
2	0.756
3	0.658
4	0.572
5	0.497

REQUIRED

- (a) Calculate the expected value of the annual cash flows arising from the cost savings for each of Machine Exe and Machine Whye. (6 marks)
- (b) Evaluate each of Machine Exe and Machine Whye on the basis of the expected value of annual cash flows, using each of the following methods:
- (i) payback period (3 marks)
 - (ii) net present value (8 marks)
- (c) Using your answers in part (b), recommend with reasons, whether Patel Ltd should invest in new machinery, and if so, which machine should be purchased. (3 marks)

(Total 20 marks)

Model Answer to Question 5

Syllabus Topic 7: Long-term decision-making (7.3), (7.7), (7.13) & (7.15)

(a) **Expected value of annual cost savings**

Machine Exe			Machine Whye		
£ per annum		£000	£ per annum		£000
340,000	× 0.35	= 119	308,000	× 0.25	= 77
215,000	× 0.40	= 86	240,000	× 0.45	= 108
140,000	× 0.25	= 35	150,000	× 0.30	= 45
		<u>240</u>			<u>230</u>

Annual depreciation (**Machine Exe**) = (1,200 – 150) ÷ 5 years = £210,000 ½
 Annual depreciation (**Machine Whye**) = (1,500 – 200) ÷ 5 years = £260,000 ½

Expected annual cost savings + annual depreciation = expected annual cash flows (£000)

Machine Exe 240 + 210 = £450 **1** **Machine Whye** 230 + 260 = £490 **1**

(6 marks)

(b) (i) **Payback period**

Initial cost ÷ annual cash inflow = payback period (in years)

Machine exe = (1,200 ÷ 450) = 2.7 years **1½**
Machine whye = (1,500 ÷ 490) = 3.1 years **1½**

(3 marks)

(ii) **Net present value**

Year	Cash flow £000	Machine Exe		Cash flow £000	Machine Whye	
		Factor 15%	Present value £000		Factor 15%	Present value £000
0	(1,200)	1.000	(1,200.00) ½	(1,500)	1.000	(1,500.00) ½
1 – 5	450	3.353	1,508.85 2½	490	3.353	1,642.97 2½
5	150	0.497	74.55 1	200	0.497	99.40 1
			<u>383.40</u>			<u>242.37</u>
			NPV = £383,400.00			NPV = £242,370.00

(8 marks)

(c) Investment in new machinery is worthwhile as both machines have a positive NPV when annual cash flows are discounted at the cost of capital of 15% per annum. **1**

Machine Exe should be purchased as it has a shorter payback period and a higher NPV. **2**

(3 marks)

(Total 20 marks)

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