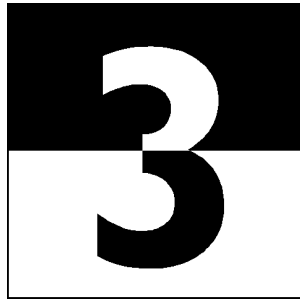


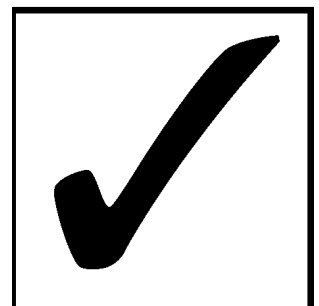
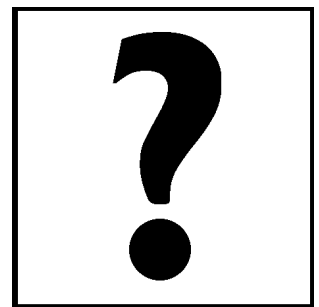
# Model Answers for Management Accounting



THIRD LEVEL

Series 4 2001

(Code 3023)





# Management Accounting Third Level

## Series 4 2001

### How to use this booklet

Model Answers have been developed by LCCIEB to offer additional information and guidance to Centres, teachers and candidates as they prepare for LCCIEB examinations. 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.

The London Chamber of Commerce and Industry Examinations Board provides Model Answers to help candidates gain a general understanding of the standard required. The Board accepts that candidates may offer other answers that could be equally valid.

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# Management Accounting Third Level

## Series 4 20001

### QUESTION 1

#### REQUIRED

- (a) Contrast Return on Capital Employed (ROCE) with Residual Income (RI) and describe briefly the merits of each of these performance measures. (7 marks)
- (b) Describe how risk may be incorporated into the capital investment decision-making process. (7 marks)
- (c) Explain why a company may calculate a weighted-average cost of capital for use in capital investment project appraisal. (6 marks)

**(Total 20 marks)**

#### Model Answer to Question 1

- (a) Both Return on Capital Employed and Residual Income are measures of the investment performance of a business, or major sections of a business (eg divisions) where management have investment responsibility.

The Return on Capital Employed is a relative measure, establishing the relationship between net profit and funds invested expressed as a percentage. As such it is easy to understand and to compare.

In contrast, Residual Income is an absolute measure reflecting the surplus profit net of a charge for the cost of the funds invested in the business/division. The main advantage of the measure is that it encourages management to invest whenever returns exceed the cost of capital.

- (b) Risk may be incorporated into the capital investment decision-making process in several ways:
- (i) Sensitivity analysis – the effect on project viability, of a change in assumption regarding each of the key variables in a project, can be assessed
  - (ii) Range of estimates – a range of values ('high', 'low' as well as 'best estimate') can be estimated for each key variable in a project, enabling a more informed decision to be taken
  - (iii) Probability – probabilities can be attached to each range of values, enabling the 'expected value' of a project to be established
  - (iv) Adjustments to required return – the cost of capital can be adjusted according to the perceived risk of a project.
- (c) The investment finance available to many companies is made up of a mixture of shareholders' funds (ie equity) and long-term borrowing (ie debt).

The return on investment required to satisfy shareholders will not be the same as the interest payable on debt due to the differential risks involved.

As a result the cost of capital of a company is a weighted average, the weightings being based upon the proportion that each part of the capital employed bears to the whole.

For capital investment decisions to be value creating, the return on investment must exceed the weighted-average cost of capital.

## QUESTION 2

A company has a single product with a selling price of £15.00 per unit. The company is currently operating at full production capacity of 120,000 units per annum. Annual costs are as follows:

Direct materials	£510,000
Direct labour	£370,000
Variable overheads	£140,000
Fixed overheads	£620,000

The company is proposing to increase production capacity by 30,000 units per annum by changing its shift working arrangements. All direct workers would receive a premium of 10% on the existing labour rate and hourly production output would be expected to increase by 5%. The quantity of direct material required per unit of output would remain unchanged, but a price reduction of 2% would be received on all direct materials if annual quantities purchased increase by more than 20%. Fixed overheads would increase by £70,000 per annum whilst variable overheads per unit of output would remain unchanged. Additional sales of 30,000 units per annum would be expected without a reduction in the selling price.

### REQUIRED

- (a) Prepare a statement of the annual sales, costs (by element) and profit under each of the following headings:
- (i) the existing situation (3 marks)
  - (ii) the **changes** (+ or -) to (i) above as a consequence of producing and selling 30,000 additional units by revised shift working (show clear workings for **each** change calculation) (9 marks)
  - (iii) the introduction of revised shift working. (3 marks)
- (b) Demonstrate on a graph the total expenditure on direct materials for output ranging from 0 to 150,000 units per annum. (5 marks)

**(Total 20 marks)**

## Model Answer to Question 2

### (a) (i) Existing situation:

	<b>£000</b>	
Sales	1,800	(120,000 units at £15.00 per unit)
Costs:		
Direct materials	510	
Direct labour	370	
Variable overheads	140	
Fixed overheads	<u>620</u>	
Profit	<u>160</u>	

### (ii) Additional 30,000 units:

	<b>£000</b>	
Additional sales	450	(30,000 units at £15.00 per unit)
Additional costs:		
Direct materials - volume	127.5	(£510,000 × 0.25)
- discount	<u>(12.75)</u>	[(£510,000 + £127,500) × 0.02]
- total	114.75	
Direct labour - volume	92.5	(£370,000 × 0.25)
- premium	46.25	[(£370,000 + £92,500) × 0.1]
- productivity	<u>(24.226)</u>	[£508,750 – (£508,750 ÷ 1.05)]
- total	114.524	
Variable overheads - volume	35.0	(£140,000 × 0.25)
Fixed overheads	<u>70.0</u>	
Total	334.274	
Additional profit	<u>115.726</u>	

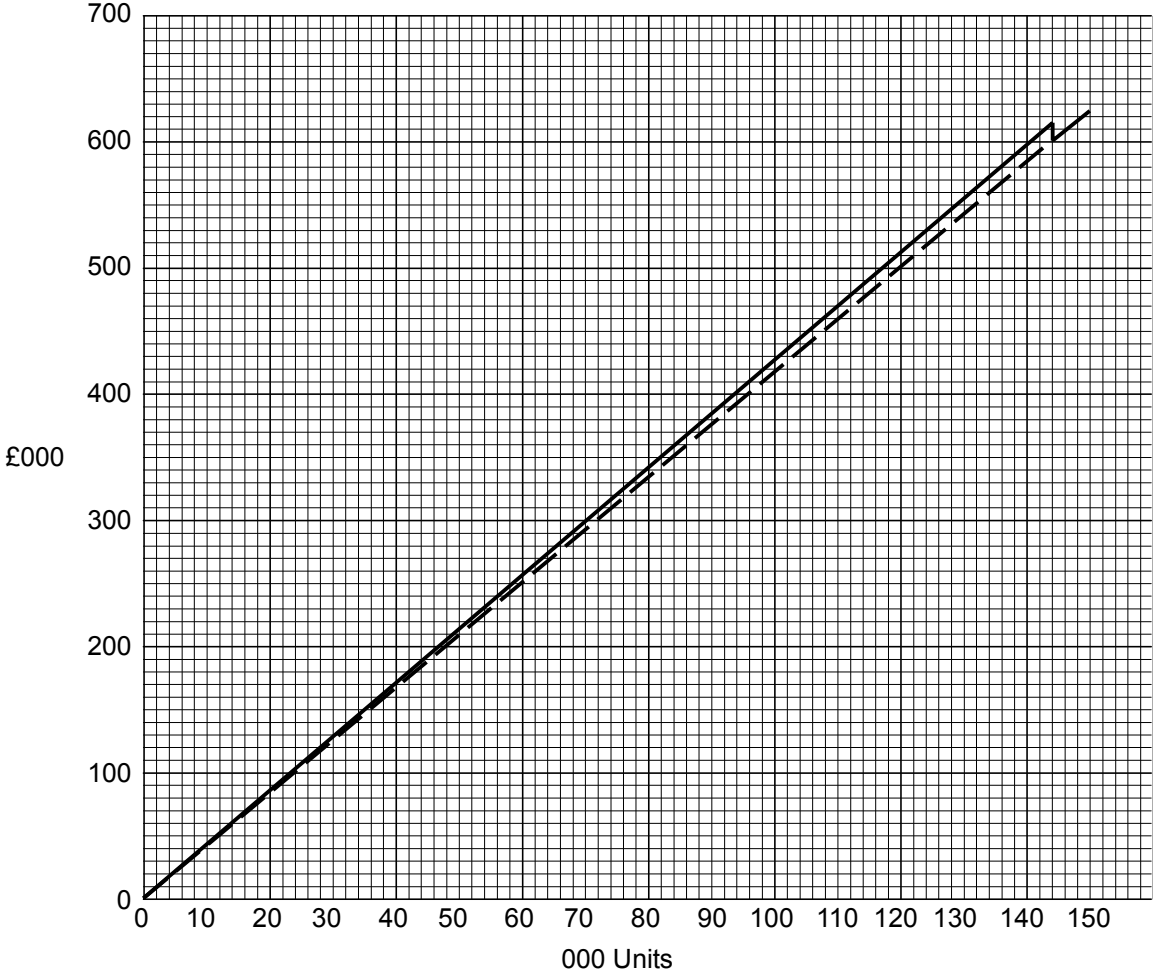
### (iii) Revised shift working:

	<b>£000</b>	
Sales	2,250	(£1,800,000 + £450,000)
Costs:		
Direct materials	624.75	(£510,000 + £114,750)
Direct labour	484.524	(£370,000 + £114,524)
Variable overheads	175.0	(£140,000 + £35,000)
Fixed overheads	<u>690.0</u>	(£620,000 + £70,000)
Total	<u>1,974.274</u>	(£1,640,000 + £334,274)
Profit	<u>275.726</u>	(£160,000 + £115,726)

Model Answer to Question 2 continued

(b)

Cost of Direct Materials





### QUESTION 3

The following production costs (allocated and apportioned), for a typical period, relate to four components manufactured by a company for use in final product assembly:

	Component			
	A	B	C	D
Variable costs (£000):				
Materials	5	48	60	62
Labour	5	32	50	46
Overheads	1	5	10	12
Fixed costs (£000)	6	40	60	60

The following additional information is available:

(1) Production (units) per period:

Component A	5,000
Component B	30,000
Component C	46,000
Component D	22,000

(2) Fixed production costs per period directly incurred by individual components:

Component A	£2,000
Component B	£15,000
Component C	£22,000
Component D	£20,000

(3) General fixed production costs, apportioned to the four components, are £107,000 per period.

(4) Components of comparable quality are available from an outside source at the following prices per unit:

Component A	£3.00
Component B	£3.20
Component C	£3.60
Component D	£7.10

General fixed production costs could be reduced by £33,000 per period if all four components are bought-in.

### REQUIRED

- (a) Determine whether any, and if so which, of the components should be bought-in. (14 marks)
- (b) Calculate the additional costs that would be incurred per period if all of the components were bought-in. (2 marks)
- (c) State **two** other factors that might influence the decision whether to continue to manufacture the components or to buy them in instead. (4 marks)

**(Total 20 marks)**

**Model Answer to Question 3**

(a)

	<b>A</b>	<b>Component</b>		<b>D</b>
	<b>£000</b>	<b>B</b>	<b>C</b>	<b>£000</b>
		<b>£000</b>	<b>£000</b>	<b>£000</b>
Variable costs	11	85	120	120
Avoidable fixed costs	<u>2</u>	<u>15</u>	<u>22</u>	<u>20</u>
	13	100	142	140
Bought-in cost (production units × unit price)	<u>15</u>	<u>96</u>	<u>165.6</u>	<u>156.2</u>
Saving/(extra cost) from buying-in	<u>(2)</u>	<u>4</u>	<u>(23.6)</u>	<u>(16.2)</u>
Extra cost of buying-in all components	£37,800	(before 'general' fixed cost saving)		
Less saving in 'general' fixed costs	<u>£33,000</u>			
Net extra cost	<u>£4,800</u>			

Component B only should be bought-in.

(b) Additional costs per period if all components were bought-in is £4,800.

(c) Other factors to consider:

- (i) delivery reliability
- (ii) continuity of supply
- (iii) commitment on prices
- (iv) impact on existing labour force
- (v) financial stability of supplier.

#### QUESTION 4

A company incurred the following variable production costs for a period:

	<b>£</b>
Direct materials	26,570
Direct labour	21,820
Variable overheads	3,135

No stocks of raw materials or work-in-progress are held. 12,600 units of the company's single product were produced in the period. The standard price of the single raw material is £5.20 per kg and the standard direct labour rate is £7.00 per hour. Variable production overheads are absorbed on the basis of standard direct labour hours.

The following variances have been calculated for the period:

Direct material price variance	£466	Adverse
Direct material usage variance	£104	Favourable
Direct labour rate variance	£85	Adverse
Direct labour efficiency variance	£315	Favourable
Variable overhead expenditure variance	£30	Adverse
Variable overhead efficiency variance	£45	Favourable

#### REQUIRED

- (a) Determine the total standard variable production cost per unit of the product, analysed in as much detail as possible. (10 marks)
- (b) Calculate the:
- (i) actual direct labour hours worked
  - (ii) actual direct materials used. (6 marks)
- (c) Identify **two** possible causes of the direct labour efficiency variance in the period. (4 marks)

**(Total 20 marks)**

#### Model Answer to Question 4

(a) Standard variable production cost:

	£ per unit
Direct materials: 0.4 kg at £5.20 per kg	2.08
Direct labour: 0.25 hours at £7.00 per hour	1.75
Variable overhead: 0.25 direct labour hours at £1.00 per hour	<u>0.25</u>
	<u>4.08</u>

**Workings:**

$$\begin{aligned}\text{Standard direct material usage} &= (26,570 - 466 + 104) \div 12,600 \\ &= £2.08 \text{ per unit} \\ &\div £5.20 \text{ per kg} \\ &= 0.4 \text{ kg per unit}\end{aligned}$$

$$\begin{aligned}\text{Standard direct labour hours} &= (21,820 - 85 + 315) \div 12,600 \\ &= £1.75 \text{ per unit} \\ &\div £7.00 \text{ per hour} \\ &= 0.25 \text{ hours per unit}\end{aligned}$$

$$\begin{aligned}\text{Variable overhead absorption rate} &= (3,135 - 30 + 45) \div 12,600 \\ &= £0.25 \text{ per unit} \\ &\div 0.25 \text{ direct labour hours per unit} \\ &= £1.00 \text{ per direct labour hour}\end{aligned}$$

$$\begin{aligned}\text{(b) (i) Actual direct labour hours worked} &= (21,820 - 85) \div 7.00 \\ &= \underline{3,105 \text{ hours}}\end{aligned}$$

$$\begin{aligned}\text{(ii) Actual direct materials used} &= (26,570 - 466) \div 5.20 \\ &= \underline{5,020 \text{ kg}}\end{aligned}$$

(c) Higher grade staff  
Reduced downtime  
Favourable material usage.

## QUESTION 5

A company is considering investment in a project to expand its production capacity. Capital expenditure of £1.6 million (Year 0) would be required to complete the capacity expansion. The expenditure would be followed by gradual utilisation of the increased capacity. Estimates of incremental profit/loss (net of depreciation of the capital expenditure on a straight-line basis over 8 years) following the investment are:

	<b>£000</b>
Year 1	(60)
Year 2	80
Year 3	160
Year 4	200
Years 5 – 8	250 per annum

No residual value is expected after 8 years. The cost of capital is 12% per annum. Discount factors at 12% are as follows:

Year 1	0.893
Year 2	0.797
Year 3	0.712
Year 4	0.636
Year 5	0.567
Year 6	0.507
Year 7	0.452
Year 8	0.404

### REQUIRED

- (a) Calculate the average annual Accounting Rate of Return (%) of the project. (4 marks)
- (b) Calculate the payback period of the project. (5 marks)
- (c) Outline the limitations of the methods used in (a) and (b) above to evaluate the project. (4 marks)
- (d) Use a discounted cash flow method to evaluate the project. (5 marks)
- (e) State whether the investment is financially worthwhile. Explain your reasoning. (2 marks)

**(Total 20 marks)**

### Model Answer to Question 5

(a) Average annual Accounting Rate of Return:

$$\begin{aligned}\text{Average annual profit (£000)} &= \frac{(60) + 80 + 160 + 200 + 250 + 250 + 250 + 250}{8} \\ &= 172.5\end{aligned}$$

$$\text{Average capital (£000)} = \frac{1,600}{2} = 800$$

$$\begin{aligned}\text{Accounting Rate of Return} &= \frac{172.5}{800} \div 100\% \\ &= \underline{21.6\%}\end{aligned}$$

(b) Payback period:

$$\text{Annual depreciation (£000)} = \frac{1,600}{8} = 200$$

Therefore annual cash flows (£000) are:

Year 1	(60) + 200	= 140
Year 2	80 + 200	= 280
Year 3	160 + 200	= 360
Year 4	200 + 200	= 400
Years 5 – 8	250 + 200	= 450

Cumulative cash flows (£000):

Year 0	(1,600)
Year 1	(1,460)
Year 2	(1,180)
Year 3	(820)
Year 4	(420)
Year 5	30

$$\text{Payback period} = 4 \text{ years} + \frac{420}{450}$$

$$= \underline{4.9 \text{ years}}$$

(c) Limitations:

Both methods fail to take account of the time value of money

In addition, the payback method ignores cash flows after the payback period is reached.

**Model Answer to Question 5 continued**

(d) Net present value:

<b>Year(s)</b>	<b>Cash flow £000</b>	<b>Discount factor 12%</b>	<b>Net present value £000</b>
0	(1,600)	1.000	(1,600)
1	140	0.893	125.0
2	280	0.797	223.2
3	360	0.712	256.3
4	400	0.636	254.4
5 – 8	450	1.930	<u>868.5</u>
			<u>127.4</u>

Net present value of the project is £127,400.

(alternatively, the internal rate of return or discounted payback could be calculated)

(e) The investment is worthwhile because the net present value is positive (ie when the cash flows are discounted at the cost of capital).

## QUESTION 6

Summary figures from the first draft of a company's budgets for the year ahead include:

<b>Profit &amp; Loss Account</b>	<b>£000</b>
Sales (on credit)	2,880
Cost of goods sold	<u>1,800</u>
Gross profit	1,080
Expenses (including depreciation £58,000)	<u>972</u>
Net profit	<u>108</u>

### List of Balance Sheet items (year end)

Shareholders funds	513
Bank overdraft	106
Creditors	248
Fixed assets (net book value)	287
Stock	340
Debtors	240

The following **separate** changes to the draft budget assumptions are being considered:

- (1) Increase budgeted sales to £2,976,000 on the assumption of higher selling prices, with sales volume unchanged
- (2) Reduce the cost of goods sold to 60% of sales (assume year-end stock valuation unchanged)
- (3) Increase depreciation to £67,000
- (4) Increase the period of credit granted to debtors by one month.

### REQUIRED

- (a) Determine the budgeted working capital (£000) before any of the above changes to budget assumptions. (2 marks)
- (b) Determine the revised balance sheet items (£000) as a result of **each separate** changed assumption (1 to 4 above).  
NB Ignore all items that do not change in each case. (13 marks)
- (c) Calculate the revised budgeted gross profit margin (%), and the revised budgeted net profit (£000), if **all four** changed assumptions are incorporated in the budget. (5 marks)

**(Total 20 marks)**



### Model Answer to Question 6

(a) Working capital:

	<b>£000</b>
Stock	340
Debtors	<u>240</u>
	580
Creditors	<u>(248)</u>
	<u>332</u>

(or less bank overdraft = £226)

(b) Revised balance sheet items (all £ figures below are in 000's):

(1) Shareholders funds	£609	(+ £96 profit) ie £2,976 - £2,880
Debtors	£248	(+ £8) ie (£2,976 ÷ £2,880) × £240
Bank overdraft	£18	(reduced by £96 - £8)
(2) Shareholders funds	£585	(+ £72 profit) ie £1,800 - (£2,880 × 0.6)
Bank overdraft	£34	(reduced by £72)
(3) Shareholders funds	£504	(- £9) ie £67 - £58
Fixed assets	£278	(- £9)
(4) Debtors	£480	(+ £240) ie £2,880 ÷ 12
Bank overdraft	£346	(+ £240)

(c) Revised budgeted gross profit (£000) = 1,080 + 96 + 72 = £1,248

Revised budgeted gross profit margin =  $\frac{1,248}{2,976} \times 100\% = \underline{41.9\%}$

Revised budgeted net profit (£000) = 108 + 96 + 72 - 9 = £267

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