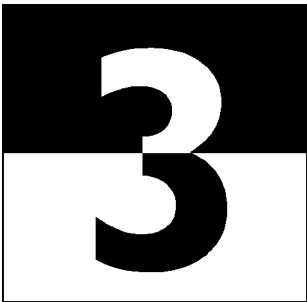


# Management Accounting



*Level 3*

*Series 2 2004*

*(Code 3023)*

**Model Answers**



# Management Accounting Level 3

## Series 2 2004

### 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 Level 3

### Series 2 2004

#### QUESTION 1

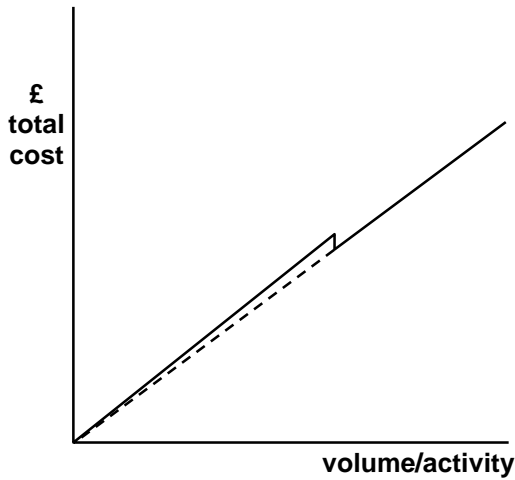
- (a) Sketch a separate graph, showing clearly the general pattern of total cost against volume/activity, for each of the following situations:
- (i) Raw materials where a discount is received on all purchases once a certain quantity is reached. (4 marks)
  - (ii) Raw materials where a discount is received on the additional purchases over and above a certain quantity. (4 marks)
- (b) State whether the profit for a period using an absorption costing system would be higher than, equal to, or lower than the profit for the same period using marginal costing, in each of the following situations:
- (i) Where a greater number of units are manufactured than sold. (4 marks)
  - (ii) Where a lesser number of units are manufactured than sold. (4 marks)
  - (iii) Where the same number of units are both manufactured and sold. (4 marks)

For each of the situations, explain the reasoning behind your answers to (i), (ii) and (iii) above.

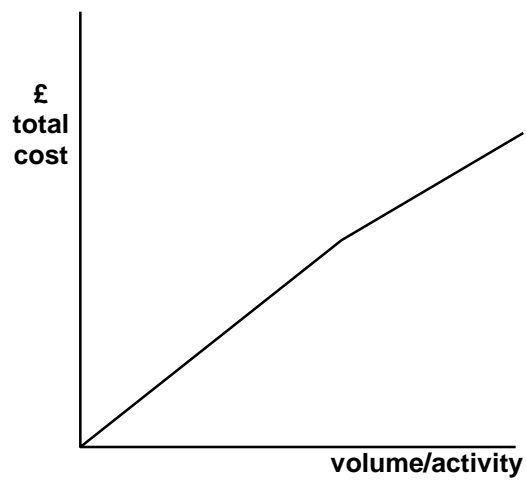
**(Total 20 marks)**

**Model Answer to Question 1**

(a) (i)



(ii)



(b) (i) Absorption costing profit > marginal costing profit.

The increase in stock (production > sales) results, using absorption costing, in fixed production overhead in closing stock (delayed to following period) > fixed production overhead in opening stock (brought forward from previous period). Less fixed production overhead is charged against profit in the period using absorption costing compared with marginal costing, where fixed production overhead incurred is charged against profit in the period.

(ii) Absorption costing profit < marginal costing profit.

The reduction in stock (sales > production) results, using absorption costing, in fixed production overhead in closing stock (delayed to following period) < fixed production overhead in opening stock (brought forward from previous period). More fixed production overhead is charged against profit in the period using absorption costing compared with marginal costing, where fixed production overhead incurred is charged against profit in the period.

(iii) Absorption costing profit = marginal costing profit.

No change in stock (production = sales) means no change in fixed production overheads in stock (unless there is a change in the fixed production overhead rate). Fixed production overhead charged against profit is thus the same under the two costing methods.

## QUESTION 2

A company manufactures four components (Components A, B, C and D). Direct labour hours in normal working time are insufficient to meet in full the requirements for the four components. The total cost of direct labour in normal working time is £61,900 per period. All direct labour operatives are paid at the same rate per hour. No overtime is currently worked. Any shortfall of components are purchased from an outside supplier in order to fully satisfy demand.

The following data relates to the components:

	Component A	Component B	Component C	Component D
Production costs (£/unit):				
Direct materials	2.18	3.26	0.74	1.63
Direct labour	3.38	3.54	2.06	2.72
Variable overhead	0.56	0.60	0.38	0.45
Fixed overhead	<u>2.91</u>	<u>3.76</u>	<u>1.84</u>	<u>2.49</u>
	9.03	11.16	5.02	7.29
Units required per period	2,600	5,300	10,100	7,100
Outside supplier price (£/unit)	8.20	11.20	4.30	6.05

### REQUIRED

- (a) Determine which components, and in what quantities per period, should be manufactured in normal working time so as to minimise total costs. (14 marks)
- (b) Determine which components, and in what quantities per period, should be bought-in so as to fully satisfy demand. (2 marks)

It has now been decided that overtime working will be considered if it would lead to reduced costs. Overtime hours could be worked as required to fulfil production requirements and would be paid at a premium of 50% over the normal time rate.

### REQUIRED

- (c) Determine whether overtime working is preferable to purchase from the outside supplier in order to make up the shortfall of components in normal time. (4 marks)

**(Total 20 marks)**

## Model Answer to Question 2

(a) Extra cost of buying-in:

	Component			
	A	B	C	D
Variable cost of manufacture (£/unit)	6.12	7.40	3.18	4.80
Outside supplier price (£/unit)	<u>8.20</u>	<u>11.20</u>	<u>4.30</u>	<u>6.05</u>
Extra cost of buying-in (£/unit)	2.08	3.80	1.12	1.25
Extra cost of buying-in per £ of direct labour saved	<u>2.08</u> 3.38	<u>3.80</u> 3.54	<u>1.12</u> 2.06	<u>1.25</u> 2.72
=	0.615	1.073	0.544	0.460
Priority for manufacture (to minimise costs)	2	1	3	4

Manufacture:

	Labour cost (£)	Units
Component B	18,762	5,300
Component A	8,788	2,600
Component C	<u>20,806</u> 48,356	10,100
Component D	<u>13,544</u> <u>61,900</u>	4,979 [7,100 × <u>13,544</u> (7,100 × 2.72)]

(b) Buy-in 2,121 units of Component D (7,100 - 4,979)

(c) Increased cost of overtime working on Component D = £1.36 per unit (2.72 × 0.5).

It is therefore preferable to continue buying-in Component D at an on-cost of £1.25 per unit.

or Total variable cost of manufacture of Component D (with overtime) = £6.16 per unit (4.80 + 1.36) which is £0.11 per unit more than the buying-in price of £6.05.

### QUESTION 3

(a) Contrast the use of fixed and flexible budgets in planning and control systems.

(5 marks)

A company's sales budget for the next period is:

Product X	16,200 units
Product Y	4,700 units
Product Z	9,800 units

Raw material requirements, in kg per unit of product, are:

	Product X	Product Y	Product Z
Material A	0.20	0.20	0.20
Material B	0.16	0.20	0.30
Material C	0.16	0.20	0.30

The above quantities are those required in the final product. A preparation loss, of 20% of materials input, occurs on Material C.

Stocks of finished products (units) and raw materials (kg) are budgeted to be:

	Start of period	End of period
Product X	2,320	2,320
Product Y	1,200	1,320
Product Z	1,940	1,860
Material A	372	404
Material B	556	294
Material C	326	326

Raw material prices (£ per kg) are budgeted to be:

Material A	5.60
Material B	7.40
Material C	9.20

### REQUIRED

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

(i) Production (units of each product) (4 marks)

(ii) Purchases of raw materials (kg and £ of each material). (11 marks)

**(Total 20 marks)**

### Model Answer to Question 3

(a) Fixed and flexible budgets:

A **fixed budget** indicates the expected costs for a single level of activity. It is set prior to the start of an accounting period and is especially useful for planning purposes ie it enables performance expectations and targets to be clearly established, and resource requirements to be anticipated. It is of limited use for control purposes, however, because the budgeted costs are not adjusted when the actual activity level is different to that budgeted.

A **flexible budget** changes in response to changes in activity by recognising different cost behaviour patterns. It is especially useful for control purposes as it enables variances arising from activity change to be separated from those due to other causes (ie expenditure/efficiency).

(b) (i) Production Budget (units):

	Product X	Product Y	Product Z
Sales	16,200	4,700	9,800
Increase in finished goods stock	----	120	----
Decrease in finished goods stock	----	----	(80)
Production	<u>16,200</u>	<u>4,820</u>	<u>9,720</u>

(ii) Raw Material Purchases Budget (kg and £)

	Material A	Material B	Material C
Output of Product X <sup>1</sup>	3,240	2,592	2,592
Output of Product Y	964	964	964
Output of Product Z	<u>1,944</u>	<u>2,916</u>	<u>2,916</u>
	<u>6,148</u>	<u>6,472</u>	<u>6,472</u>
Allowance for 20% loss on Material C input (6,472 × 0.25)			<u>1,618</u>
Usage	6,148	6,472	8,090 (6,472 ÷ 0.8)
Increase in raw material stock	32	----	----
Decrease in raw material stock	----	(262)	----
Purchases	<u>6,180</u> kg	<u>6,210</u> kg	<u>8,090</u> kg
	× £5.60	× £7.40	× £9.20
	= <u>£34,608</u>	= <u>£45,954</u>	= <u>£74,428</u>

<sup>1</sup> eg Material A required for Product X = 16,200 units × 0.2 kg per unit = 3,240 kg

#### QUESTION 4

A company has two Investment Centres (A and B). The following three primary ratios are used to assess the profit performance of each of the investment centres:

- (i) Return on capital employed (%)
- (ii) Net profit margin (%)
- (iii) Net asset turnover (number of times).

Extracts from the accounts of each investment centre for a period are as follows:

	<b>Centre A</b>	<b>Centre B</b>
	<b>£000</b>	<b>£000</b>
Sales	9,060	6,130
Net profit	734	409
Fixed assets (net book value)	3,348	2,632
Current assets	886	750
Current liabilities	329	282

#### REQUIRED

- (a) Calculate the three primary ratios for each investment centre. (8 marks)
  
- (b) Comment on the profit performance of each investment centre as revealed by the ratios calculated in (a) above. (4 marks)

The current assets of Investment Centre A consist of:

	<b>£000</b>
Stock	369
Debtors	492
Bank	25

No stocks of raw materials or of work-in-progress are held. The production cost of sales was £5,436,000 in the period.

#### REQUIRED

- (c) Analyse, by means of appropriate ratios, the liquidity and working capital management of Investment Centre A, as far as is possible from the information provided. (8 marks)
- (Total 20 marks)**

#### Model Answer to Question 4

(a) Primary ratios:

	<b>Investment Centre A</b>	<b>Investment Centre B</b>
(i) Return on capital employed	$(734 \div 3,905) \times 100\%$ = <u>18.8%</u>	$(409 \div 3,100) \times 100\%$ = <u>13.2%</u>
(ii) Net profit margin	$(734 \div 9,060) \times 100\%$ = <u>8.1%</u>	$(409 \div 6,130) \times 100\%$ = <u>6.7%</u>
(iii) Net asset turnover	$9,060 \div 3,905$ = <u>2.32 times</u>	$6,130 \div 3,100$ = <u>1.98 times</u>

(b) Investment Centre A is significantly more profitable than Investment Centre B. Both the net profit margin and the net asset turnover of Investment Centre A is better than that achieved by Investment Centre B, resulting in the higher return on capital employed ie

Investment Centre A  $8.1\% \times 2.32 \text{ times} = 18.8\% \text{ return}$   
Investment Centre B  $6.7\% \times 1.98 \text{ times} = 13.2\% \text{ return.}$

(c) Investment Centre A: liquidity and working capital management

Liquidity:

Current ratio 2.69 : 1  $(886 \div 329)$

Quick ratio 1.57 : 1  $(517 \div 329)$

Working capital:

Debtor collection 19.8 days  $[(492 \div 9,060) \times 365]$

Stock turnover 14.7 times  $(5,436 \div 369)$   
- equivalent to 24.8 days  $[(369 \div 5,436) \times 365]$

## QUESTION 5

The standard prime costs, **per 100 units**, of a product are based on:

Material A	10 kg @ £9.40 per kg
Material B	25 litres @ £7.20 per litre
Labour Grade 1	8 hours @ £8.00 per hour
Labour Grade 2	20 hours @ £7.50 per hour

9,600 units of the product were manufactured in the period just ended, compared with a budget of 10,000 units.

Actual results for the period include:

Materials purchased:

Material A	976 kg, £9,252
Material B	2,360 litres, £16,803

Materials used in production:

Material A	947 kg
Material B	2,436 litres

Labour:

Grade 1	792 hours, £6,408
Grade 2	1,943 hours, £14,721

The material price variances are calculated at time of purchase.

### REQUIRED

For the period:

- (a) Calculate the prime cost variances in as much detail as possible. (9 marks)
- (b) Calculate the following control ratios (based on total labour hours):
- (i) efficiency
  - (ii) production volume (activity). (6 marks)
- (c) Summarise the performance as far as is possible from your answers to (a) and (b) above. (5 marks)

**(Total 20 marks)**

### Model Answer to Question 5

(a) Prime cost variances:

Material price variances:

Material A	£77.60	Adv	[9,252 - (976 × 9.40)]
Material B	<u>£189.00</u>	Fav	[16,803 - (2,360 × 7.20)]
	<u>£111.40</u>	Fav	

Material usage variances:

Material A	£122.20	Fav	[947 - (9,600 × 0.1)] × 9.40
Material B	<u>£259.20</u>	Adv	[2,436 - (9,600 × 0.25)] × 7.20
	<u>£137.00</u>	Adv	

Labour rate variances:

Grade 1	£72.00	Adv	[6,408 - (792 × 8.00)]
Grade 2	<u>£148.50</u>	Adv	[14,721 - (1,943 × 7.50)]
	<u>£220.50</u>	Adv	

Labour efficiency variances:

Grade 1	£192.00	Adv	[792 - (9,600 × 0.08)] × 8.00
Grade 2	<u>£172.50</u>	Adv	[1,943 - (9,600 × 0.2)] × 7.50
	<u>£364.50</u>	Adv	

(b) Control ratios:

(i) Efficiency ratio = (standard hours of output ÷ actual hours worked) × 100%

$$= [(9,600 \times 0.28) \div (792 + 1,943)] \times 100\% = \underline{98.3\%}$$

(ii) Production volume (activity) ratio = (std hours of output ÷ budgeted hours) × 100%

$$= [(9,600 \times 0.28) \div (10,000 \times 0.28)] \times 100\%$$

$$\text{or simply } (9,600 \div 10,000) \times 100\% = 96.0\%$$

(c) Apart from the total material price variance, the other prime cost variances are adverse (net £722 for the period).

Production, measured in terms of standard hours of output, was 4% below budget which would also have resulted in an adverse fixed production overhead volume variance (and perhaps also an adverse sales volume profit variance).

Despite wage rates in excess of standard, labour efficiency overall was 1.7% below standard, with adverse variances on both grades of labour.

Material usage was also above standard overall (ie adverse), although a favourable variance was achieved on Material A.

## QUESTION 6

A company is considering an expansion of production capacity in order to satisfy the increased sales demand that would be expected to arise from a proposed change to a more aggressive pricing strategy.

Market research expenditure of £45,000 has already been incurred. Annual sales revenue is currently £10.5 million at a contribution/sales ratio of 45%. An increase in sales revenue of 40% is believed to be achievable if selling prices are reduced. As a consequence of the selling price reduction, the contribution/sales ratio would fall by 6 percentage points.

Capital investment of £3.6 million would be required in additional facilities leading to an increase of £276,000 in annual fixed overheads (excluding depreciation of the capital investment at 12½% per annum on a straight-line basis assuming an 8-year life). The investment would have a zero residual value after 8 years.

### REQUIRED

(a) Advise management whether the investment in additional facilities is worthwhile. To support your advice, calculate:

(i) the net present value at the company's cost of capital of 10% per annum. Discount factors at 10% per annum are:

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Years 1-8
0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.468	5.335

(ii) the accounting rate of return (based on average investment).

(15 marks)

The company has evaluated another investment project, using high, low and best estimates, with the following results:

	NPV at 10%	Probability
High estimate	£0.9 million	0.2
Best estimate	£0.3 million	0.5
Low estimate	(£0.5) million	0.3

### REQUIRED

(b) Calculate the expected value of the NPV for the other investment project and advise management.

(5 marks)

**(Total 20 marks)**

### Model Answer to Question 6

(a) Current contribution = £10.5m × 0.45 = £4.725m per annum

New contribution = £10.5m × 1.4 × 0.39 = £5.733m per annum

Increase in contribution = £1.008m per annum (5.733 – 4.725)

Less incremental fixed overheads of £0.276m per annum

= £0.732m per annum incremental profit (cash inflow)

(i) Net present value:

£0.732 × 5.335 (cumulative discount factor over 8 years at 10%) – £3.6m capital investment  
= NPV £0.305m

(ii) Accounting rate of return (based on average investment):

$$\frac{[\text{£}0.732 - (\text{£}3.6\text{m} \times 0.125)]}{(\text{£}3.6\text{m} \div 2)} \times 100\%$$

= ARR 15.7%

The key criteria is NPV so positive figure (of £0.305m) means that investment is worthwhile.

(b) Expected value:

£0.9m × 0.2	=	£0.18
£0.3m × 0.5	=	£0.15
(£0.5m) × 0.3	=	(£0.15)
		<u>£0.18</u>

The expected value of the NPV, when discounted at the cost of capital, is positive (at £0.18m) and so investment is worthwhile. However it should be noted that there is a 30% chance of a negative NPV of £0.5m and so risk taking attitude may need to be considered.



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