

# Management Accounting Level 3



## Model Answers

Series 4 2006 (Code 3023)

## **Vision Statement**

Our vision is to contribute to the achievements of learners around the world by providing integrated assessment and learning services, adapted to meet both local market and wider occupational needs and delivered to international standards.



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## Series 4 2006

### How to use this booklet

Model Answers have been developed by Education Development International plc (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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## Management Accounting Level 3 Series 4 2006

### QUESTION 1

- (a) Describe how **each** of the following measures of capital investment viability are calculated:
- (i) Payback (3 marks)
  - (ii) Accounting rate of return (3 marks)
  - (iii) Net present value (4 marks)
  - (iv) Internal rate of return. (4 marks)
- (b) Justify the use of discounted cash flow methods of capital investment appraisal in preference to other methods. (6 marks)

**(Total 20 marks)**

## MODEL ANSWER TO QUESTION 1

### Syllabus Topic 5: Long term decision – making and control (5.2) (9) (5.3) (11)

(a) (i) Payback:

The payback method of capital investment appraisal measures how long it takes for the cash inflows from a project to pay back the original cash investment.

It is calculated by accumulating the cash flows year after year until they become positive. The payback is measured in years and months.

(ii) Accounting rate of return:

The accounting rate of return is a measure of the profit generated by an investment in relation to the capital invested.

It is expressed as a percentage and is calculated by the following formula:

$$\frac{\text{sum of profits after depreciation} \div (\text{life of investment in years})}{[(\text{initial investment} + \text{terminal value of the investment}) \div 2]} \times 100\%$$

(iii) Net present value:

The net present value method measures the current value to a business of the stream of cash flows over the life of a capital investment, taking account of the cost of capital to the business.

Future cash flows are discounted by a factor (reflecting the cost of capital) to reduce them to their present value. The sum of the discounted cash flows (including the original investment sum) is the net present value (NPV). If the net monetary sum is a positive amount then the investment is worthwhile because it indicates that the investment yields a surplus after being charged with the cost of the capital.

(iv) Internal rate of return:

The internal rate of return (IRR) method is also based on discounting cash flows but in comparison with the NPV method the IRR is expressed as a percentage rather than an absolute monetary amount.

The IRR of an investment is that discount rate (found by trial and error) which results in an investment project having an NPV of zero i.e. where the total present value of the stream of cash inflows from an investment is equal to the initial investment sum. An investment is worthwhile if  $\text{IRR}\% > \text{cost of capital}\%$ .

(b) Justification of discounted cash flow methods:

The payback and accounting rate of return methods share a major drawback: they do not take into account the time value of money in their measurement of capital investment project viability. Cash flow expected at some future time is given the same weighting as cash flow now. As a result it is difficult to assess the viability of an investment using these traditional methods.

The timing of cash flows has an important influence on the real value of an investment because capital has a cost, either in the form of interest paid on borrowed funds or because owner's capital has an opportunity cost. The discounted cash flow methods (NPV and IRR) recognise, and reflect, the time value of money providing measures of investment worth in relation to the cost of capital to a business.

## QUESTION 2

(a) Sketch the cost behavioural pattern of **each** of the following clearly on a single graph (with total costs shown in relation to volume/activity):

- (i) a semi-variable cost
- (ii) a stepped-fixed cost.

(5 marks)

(b) A company operates a conference centre. Fixed staff costs total £244,000 per annum. Other fixed operating costs are £166,000 per annum. Variable operating costs are £92 per delegate per week. The capacity of the conference centre is 100 delegates.

### REQUIRED

(i) If the conference centre is open for 40 weeks per annum, and average occupancy is 80% of capacity, calculate the charge per delegate per week (to the nearest £) required to break even.

(5 marks)

(ii) If the conference centre is open for 48 weeks per annum, and delegates are charged £200 per week, calculate the average occupancy (to the nearest percentage of capacity) required to break even.

(5 marks)

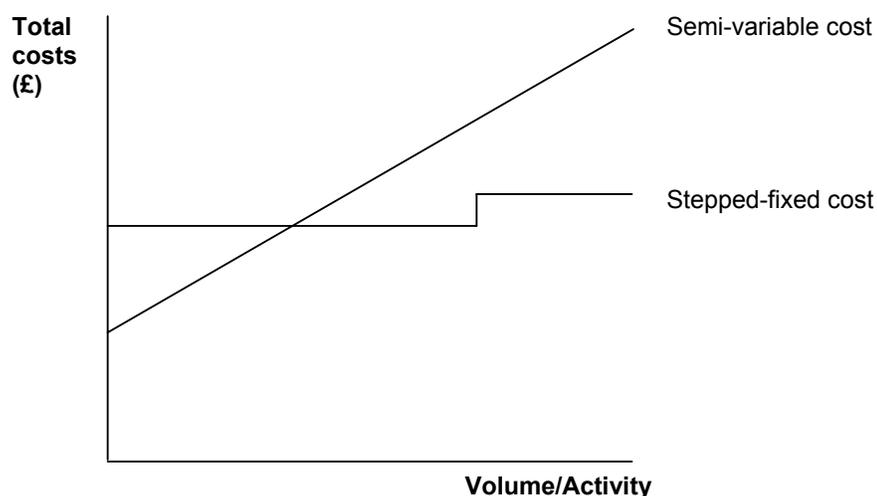
(iii) If the conference centre is open for 50 weeks per year, and delegates are charged £250 per week, calculate the average occupancy (to the nearest percentage of capacity) required to earn an annual profit of £80,000.

(5 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 2**  
**Syllabus Topic 1: Short term cost behaviour (1.2)**

(a) Cost/volume graph:



**Syllabus Topic 2: Short term decision – making (2.5)**

(b) (i) Charge per delegate per week:

$$40 \text{ weeks} \times 80 \text{ delegates per week} = 3,200 \text{ delegates per annum}$$

$$\text{Charge per delegate per week required to break even} = [\text{£}92 + (\text{£}410,000 \div 3,200)] = \underline{\text{£}220}$$

(ii) Average occupancy:

$$\text{Contribution per delegate per week} = \text{£}108 (200 - 92)$$

$$\text{Delegates required per week to break even} = [\text{£}410,000 \div 48 \text{ weeks}] \div \text{£}108 = 79$$

$$\text{Average occupancy} = \underline{79\%}$$

(iii) Average occupancy:

$$\text{Contribution per delegate per week} = \text{£}158 (250 - 92)$$

$$\begin{aligned} \text{Delegates required per week to earn an annual profit of } \text{£}80,000 \\ = \{[(\text{£}410,000 + \text{£}80,000) \div 50 \text{ weeks}] \div \text{£}158\} = 62 \end{aligned}$$

$$\text{Average occupancy} = \underline{62\%}$$

### QUESTION 3

A company manufactures Product A by mixing three raw materials together. The raw material standards for a batch of 100 kg of Product A are:

Material X	25 kg	@ £3.60 per kg
Material Y	40 kg	@ £2.80 per kg
Material Z	<u>60</u> kg	@ £0.90 per kg
	<u>125</u> kg	

Standard wastage in the preparation of each material is 20% of input.

In the period just ended the actual raw material usage and costs, incurred in the manufacture of 24,300 kg of Product A, were:

Material X	5,840 kg	costing £21,215
Material Y	10,140 kg	costing £28,340
Material Z	14,820 kg	costing £13,320

### REQUIRED

- (a) Calculate the standard direct material cost per kg of Product A. (2 marks)
- (b) Calculate the following direct material variances:
- (i) price for Material X only (2 marks)
  - (ii) total usage (4 marks)
  - (iii) total mix (4 marks)
  - (iv) total yield. (4 marks)
- (c) Define the terms:
- (i) ideal standard (2 marks)
  - (ii) attainable standard. (2 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 3**  
**Syllabus Topic 3: Short term profit control (3.3)**

(a) Standard direct material cost per kg:

	£
Material X (25 kg @ £3.60)	90
Material Y (40 kg @ £2.80)	112
Material Z (60 kg @ £0.90)	<u>54</u>
	256

÷ 100 kg = £2.56 per kg

(b) (i) Direct material price variance, Material X:

[£21,215 – (5,840 kg @ £3.60)] = £191 adverse

(ii) Total direct material usage variance:

Actual usage at standard price:	£
Material X ( 5,840 kg @ £3.60)	21,024
Material Y (10,140 kg @ £2.80)	28,392
Material Z (14,820 kg @ £0.90)	<u>13,338</u>
	62,754
Standard usage (24,300 kg of output @ £2.56)	<u>62,208</u>
	<u>546</u> adverse (usage variance)

(iii) Total direct material mix variance:

Total weight of materials used = 30,800 kg (5,840 + 10,140 + 14,820)

Actual usage in standard mix at standard price: £

Material X (6,160 kg @ £3.60)	22,176.0
Material Y (9,856 kg @ £2.80)	27,596.8
Material Z (14,784 kg @ £0.90)	<u>13,305.6</u>
<u>30,800</u> kg	<u>63,078.4</u>

(£62,754 – £63,078.4) = £324.4 favourable (mix variance)

(iv) Total direct material yield variance:

(£63,078.4 – £62,208) = £870.4 adverse (yield variance)

[or 30,800 kg of input × 0.8 = 24,640 kg standard output  
 – 24,300 kg actual output  
 = 340 kg adverse yield × £2.56/kg = £870.4]

(c) (i) Ideal standard:

An ideal standard is a standard that can be attained only under the most efficient operating conditions. It makes no allowance for normal loss, waste or machine downtime.

(ii) Attainable standard:

An attainable standard is a standard that assumes efficient levels of operation but which includes allowance for normal loss, waste and machine downtime.

#### QUESTION 4

A company sells a product which requires two separate processes in the course of manufacture. At the beginning of a month 3,000 units were incomplete in Process 2 with the following costs and stages of completion:

Cost element	£	% completion
Process 1 costs	20,900	100
Material added in Process 2	8,175	80
Conversion costs	6,730	50

19,600 units were transferred to Process 2 from Process 1 during the month at a cost of £141,820. The other costs incurred in Process 2 in the month were:

	£
Material added in Process 2	70,050
Conversion costs	98,750

20,100 units were transferred from Process 2 to the finished goods warehouse in the month. 2,500 units remained incomplete in Process 2 at the end of the month with the following stages of completion:

Cost element	% completion
Process 1 costs	100
Material added in Process 2	90
Conversion costs	75

The weighted average cost method is used. No losses occur in Process 2.

#### REQUIRED

For Process 2 in the month:

- (a) Calculate:
- (i) the weighted average cost per unit for each cost element (7 marks)
  - (ii) the cost of the units transferred to the finished goods warehouse (2 marks)
  - (iii) the cost of the closing work-in-progress. (3 marks)
- (b) Prepare the process account including both units and cost. (5 marks)
- (c) Calculate the equivalent units of actual production during the month for each cost element. (3 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 4**  
**Syllabus Topic 6: Product cost ascertainment (6.1)**

(a) (i) Weighted average cost per unit:

	<b>Process 1 costs</b>	<b>Process 2 materials</b>	<b>Conversion costs</b>	
Equivalent units:				
Output	20,100	20,100	20,100	
Closing work-in-progress	<u>2,500</u>	<u>2,250</u>	<u>1,875</u>	
	22,600	22,350	21,975	
Costs (£):				
Opening work-in-progress	20,900	8,175	6,730	
Period	<u>141,820</u>	<u>70,050</u>	<u>98,750</u>	
	<u>162,720</u>	<u>78,225</u>	<u>105,480</u>	
Cost per unit	<u>162,720</u>	<u>78,225</u>	<u>105,480</u>	
	<u>22,600</u>	<u>22,350</u>	<u>21,975</u>	
	= <u>£7.20/unit</u>	<u>£3.50/unit</u>	<u>£4.80/unit</u>	Total <u>£15.50/unit</u>

(ii) Cost of units transferred to finished goods warehouse:

$$(20,100 \text{ units @ } £15.50) = \underline{£311,550}$$

(iii) Cost of closing work-in-progress:

Process 1 costs	=	£18,000	(2,500 units @ £7.20)
Process 2 materials	=	£7,875	(2,250 equiv units @ £3.50)
Conversion costs	=	<u>£9,000</u>	(1,875 equiv units @ £4.80)
		<u>£34,875</u>	

(b) Process 2 Account:

	<b>units</b>	<b>£</b>		<b>units</b>	<b>£</b>
Opening WIP	3,000 ½	35,805 ½	Output	20,100 ½	311,550 ½
Process 1 costs	19,600 ½	141,820 ½	Closing WIP	2,500 ½	34,875 ½
Materials added		70,050 ½			
Conversion costs		<u>98,750 ½</u>			
	<u>22,600</u>	<u>346,425</u>		<u>22,600</u>	<u>346,425</u>

(c) Equivalent units of production in month:

	<b>Process 1 costs</b>	<b>Process 2 materials</b>	<b>Conversion costs</b>
Output and closing WIP	22,600	22,350	21,975
less opening WIP	<u>3,000</u>	<u>2,400</u>	<u>1,500</u>
	<u>19,600</u>	<u>19,950</u>	<u>20,475</u>

### QUESTION 5

The following product profit budgets have been prepared for a period:

	<b>Product A</b>	<b>Product B</b>	<b>Product C</b>	<b>Product D</b>	<b>Product E</b>
Sales (units)	12,000	4,000	21,000	3,000	8,000
Sales revenue (£)	120,000	36,000	168,000	15,000	96,000
Costs (£):					
Variable	61,200	23,600	84,000	8,400	50,400
Fixed	<u>50,400</u>	<u>16,000</u>	<u>67,200</u>	<u>9,300</u>	<u>36,800</u>
	111,600	39,600	151,200	17,700	87,200
Profit/(loss) (£)	<u>8,400</u>	<u>(3,600)</u>	<u>16,800</u>	<u>(2,700)</u>	<u>8,800</u>

Notes:

- (1) Variable costs include direct labour costs as follows:
  - Product A £23,520
  - Product B £9,920
  - Product C £26,880
  - Product D £3,960
  - Product E £19,200
- (2) The budgeted rate for all direct labour is £8.00 per hour.
- (3) Fixed costs are apportioned to products on an equitable basis.
- (4) No stocks are held.

### REQUIRED

- (a) Calculate the total direct labour hours required to achieve the budgeted sales. (2 marks)
- (b) Determine the order of priority for the manufacture of products (with the objective of maximising total contribution) in the event that direct labour hours become the principal budget factor. (You are to assume that all products are to be manufactured and sold if sufficient resources are available.) (6 marks)
- (c) Calculate the maximum contribution that can be earned if only 9,000 direct labour hours are available in the period. (6 marks)

If a single product were to be discontinued, fixed costs of £9,000 per period would be saved.

- (d) Determine whether it would be worthwhile to discontinue any of the products. (6 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 5****Syllabus Topic 5: Long-term decision-making and control (5.1)****(a) Cash flows:**

Year	£000
0	(840)
1	138 [(470 × 0.4) – 50*]
2-6 (per annum)	262 [(780 × 0.4) – 50]

\*190 – (depreciation: 840 ÷ 6)

NB £76 (000) spent on research and development is a sunk cost and is therefore irrelevant.

**Syllabus Topic 5: Long-term decision-making and control (5.3)****Net present value (NPV):**

Year	Cash flow £000	Disc factor 10%	Present value £000
0	(840)	1.000	(840)
1	138	0.909	125.4
2-6	<u>262</u> pa	3.446*	<u>902.9</u>
	<u>608</u>		<u>188.3</u>

NPV (ie discounted at the required rate of return of 10%) = **£188,300**

\*4.355 (Yrs 1 to 6) – 0.909 (Yr 1)

**Internal rate of return (IRR):**

Approx IRR = 0% + {[10% – 0%] × [608 ÷ (608 – 188.3)]} = **15%**

Discounting at 15%:

Year	Cash flow £000	Disc factor 15%	Present value £000
0	(840)	1.000	(840)
1	138	0.870	120.1
2-6	262 pa	2.914	<u>763.4</u>
			<u>43.5</u>

IRR = 10% + {[15% – 10%] × [188.3 ÷ (188.3 – 43.5)]} = **17%**

**Syllabus Topic 5: Long-term decision-making and control (5.4)****(b) Annual expected values:**

(i) Sales revenue = **£757** (000) [(580 × 0.25) + (780 × 0.6) + (960 × 0.15)]

(ii) Contribution = **£302.8** (000) (757 × 0.4)

(iii) Net cash flow = **£252.8** (000) (302.8 – 50)

## QUESTION 6

A new business is planned to commence operations in January 2007 with £250,000 capital paid into the bank.

Goods costing £60,000 will be purchased in early January with further purchases at the beginning of each subsequent month to replace the goods sold in the previous month. Purchase of goods will be on one month's credit.

Sales will be made on credit at a selling price of £24 per unit. This is a 60% mark-up on cost. 50% of customers by value are expected to pay on the last day of the month of sale for a 1% discount. The remaining 50% of customers are expected to pay on the last day of the month following sale. No bad debts are anticipated.

Sales forecasts for the four months to the end of April are:

January	1,000 units
February	2,000 units
March	2,400 units
April	2,700 units

Variable expenses are forecast at 10% of sales revenue, payable in the month incurred.

Fixed expenses, excluding depreciation, are forecast to be £13,600 per month. This includes rental of premises costing £30,000 in the first year and payable in full in advance. The remainder of the fixed expenses are payable in the month incurred.

Depreciation of fixed assets will be £2,200 per month on capital expenditure of £190,000. The fixed assets will be installed in January with payment spread equally between February and March.

### REQUIRED

- (a) Prepare a cash budget for each month (January, February, March and April). (14 marks)
- (b) Calculate the expected average debtor payment period on the assumption that credit sales are made evenly in each month. (2 marks)
- (c) Calculate the stock turnover ratio that will be expected over the year from April onwards. (You are to assume that sales continue at the rate of 2,700 units per month and that stock replenishment occurs on the first day of each month.) (4 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 6****Syllabus Topic 4: Cash and working capital management (4.1)**

(a) Cash budget (£):

	January	February	March	April
Receipts:				
from sales	11,880	35,760	52,512	60,876 (see below)
Payments:				
for goods	—	60,000	15,000	30,000
variable expenses	2,400	4,800	5,760	6,480
fixed expenses (excl rent & dep)	11,100	11,100	11,100	11,100
rent	30,000	—	—	—
capital expenditure	—	95,000	95,000	—
	43,500	170,900	126,860	47,580
Net cash flow	(31,620)	(135,140)	(74,348)	13,296
Opening cash balance	250,000	218,380	83,240	8,892
Closing cash balance	<u>218,380</u>	<u>83,240</u>	<u>8,892</u>	<u>22,188</u>

**Workings:**

Sales revenue (units × £24)	24,000	48,000	57,600	64,800
Debtor settlement:				
Month of sale (50% – 1%)	11,880	23,760	28,512	32,076
Month after sale (50%)	—	12,000	24,000	28,800
	11,880	35,760	52,512	60,876
Purchases:				
Prior month sales value × 10/16 (payable one month later)	—	15,000	30,000	36,000
<u>or</u> Prior month sales units × £15/unit (£24 selling price ÷ 1.6)				

**Syllabus Topic 4: Cash and working capital management (4.4)**

(b) Debtor payment period:

$$\underline{1 \text{ month}} [(50\% \times \text{average } \frac{1}{2} \text{ month}) + (50\% \times \text{average } 1\frac{1}{2} \text{ months})]$$

(c) Stock turnover:

Each month (from April onwards) -	Opening stock = £60,000	(4,000 units @ £15)
	Cost of sales = <u>£40,500</u>	(2,700 units @ £15)
	Closing stock = <u>£19,500</u>	(1,300 units @ £15)

$$\text{Average stock} = [(4,000 + 1,300 \text{ units}) \div 2] = 2,650 \text{ units}$$

$$\text{Stock turnover} = [(2,700 \times 12) \div 2,650 = \underline{12.2 \text{ times}}]$$