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Management Accounting

Level 3

Model Answers

Series 4 2007 Singapore (Code 3723)

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International House Siskin Parkway East Middlemarch Business Park Coventry CV3 4PE
Telephone: +44 (0) 8707 202909 Facsimile: + 44 (0) 24 7651 6566
Email: customerservice@ediplc.com

Management Accounting Level 3
Series 4 2007

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.

Management Accounting Level 3
Series 4 2007

QUESTION 1

(a) Describe the advantages of **decentralisation** and the objectives of **transfer pricing systems** for sales between divisions of decentralised companies.

(8 marks)

(b) Define, with examples, the term **semi- fixed cost** (also termed semi-variable cost or mixed cost) and state two ways in which the fixed and variable elements of such costs can be segregated.

(6 marks)

(c) Define, giving two examples, the term **service cost centre**. State why service cost centre costs in a factory need to be re-apportioned over production cost centres.

(6 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 1

(a) By being given the responsibility for the performance of their own areas, managers are likely to be more motivated to achieve their own objectives. Such greater motivation is likely to result in greater awareness of the environment in which the company is, or is likely to be, operating in. This is likely to cause more prompt and effective actions being taken.

A transfer pricing system should allow for transfer prices to be set that will allow for divisional management performance to be realistically appraised, and should also allow management to make decisions that are of benefit to the organisation as a whole as opposed to being of benefit to the division only.

(b) Semi-fixed/semi-variable can be defined as "A cost containing both fixed and variable components and which is thus partly affected by fluctuations in the level of activity". Examples would include transport cost when vehicles are owned by a company, (where road tax and insurance are fixed, and fuel costs are variable), also gas and electricity charges (where a standing charge is included), and salaries that include incentive payments.

The respective elements can be separated by using:

(i) the high-low method
(ii) a scattergraph.

(c) A cost centre is defined by CIMA as "a location, function, activity or item of equipment in respect of which costs may be ascertained". "A service cost centre provides services to other cost centres". A service cost centre has no output to the external market but provides support internally.

Examples include;

Stores, Maintenance, Canteen and Personnel.

Costs of service cost centres must be re-apportioned to production cost centres so that the costs become incorporated into product costs. If absorption costing is used failure to do so would especially result in the under absorption of overheads, under valuation of finished goods stock and the understatement of product costs for decision making purposes.

QUESTION 2

A company produces and sells a single product.

The following variances have been calculated for a recent period:

	$
Selling price	21,600 Adverse
Material price	10,730 Adverse
Material usage	5,600 Favourable
Labour rate	4,680 Favourable
Labour efficiency	36,000 Favourable
Fixed overhead:	
Volume	45,000 Favourable
Expenditure	10,000 Favourable

The following information is also available for the period:

Actual sales value	$1,031,400
Standard material cost	$2 per kg of material
Standard labour cost (20 hours x $5 per hour)	$100 per unit of product
Actual material cost	$221,130

The production overhead is all fixed and was budgeted at $360,000, to produce 2,400 units in the period. The production overhead is absorbed on a rate per unit basis.

The company holds no stocks of raw material or finished goods.

REQUIRED

(a) Calculate the following:

(i) Actual sales in units (3 marks)
(ii) Standard selling price per unit (3 marks)
(iii) Standard material usage in kg, per unit of output (3 marks)
(iv) Actual labour cost (2 marks)
(v) Actual labour rate per hour (3 marks)
(vi) Actual fixed overhead cost (2 marks)

(b) Define the terms Ideal standard and Attainable standard. (4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 2

(a)

(i) Fixed overhead per unit: $\$\frac{360,000}{2,400} = \$150$

Fixed overhead volume variance $\$\frac{45,000}{150} = 300$ units

Budgeted units 2,400 +
Variance 300 Favourable
Actual units 2,700

(ii)

Actual sales value	$1,031,400+
Selling price variance	$21,600
Standard price of actual sales	$1,053,000

Standard selling price $\$\frac{1,053,000}{2,700} = \$390$ per unit

(iii)

Actual material cost	$221,130 –
Material cost variance	$5,130 Adverse
Standard price of standard usage	$216,000

Standard material usage $\frac{\$216,000}{(2,700 \times 2)} = 40$ kg per unit

(iv) Standard rate x standard hours (2700 x 20 x 5) = $270,000-
Labour cost variance $40,680 Favourable
Actual labour cost $229,320

(v)

Actual labour cost	$229,320+
Labour rate variance	$ 4,680 Favourable
Actual hours x standard rate	$234,000

Actual hours worked $\frac{\$234,000}{\$5} = 46,800$

Actual labour rate per hour $\$\frac{229,320}{46,800} = \$4.9$

(vi)

Budgeted fixed overhead	$360,000 –
Expenditure variance	$10,000 Favourable
Actual fixed overhead	$350,000

(b) Ideal standards are based on the best possible operating conditions, no wastage, no breakdowns, no stoppages or idle time. Ideal standards are unattainable in practice and are rarely used.

Attainable standards are based on efficient working methods and operating conditions. The standard would include allowances for normal losses and machine breakdowns. Attainable standards must be based on a performance level that has to be worked for, thus can provide motivation for management.

QUESTION 3

A company manufactures and sells a single product. The budgeted unit sales figures for the six months from January 2008 are:

January	700
February	600
March	700
April	800
May	900
June	700

The standard selling price and standard costs for each unit of the product for the period are:

Selling price $80
Material X 3 kg at $5 per kg
Material Y 2 kg at $6 per kg
Labour 2 hours at $12 per hour
Variable overhead $6 per labour hour

The following information is also available:

All sales are on credit
Debtors pay one month after sales
Closing stock of finished goods at each month end are equal to 10% of the next month's sales
Materials are purchased in the month before use, and are paid for two months after purchase
Labour and variable overhead are paid for in the month of production
Fixed production overhead is budgeted to be $4,000 per month (including depreciation of $1000)
Other fixed overhead is budgeted to be $3,000 per month (including depreciation of $800)
The cash balance at the beginning of March is expected to be $10,000 in hand.

REQUIRED

(a) Prepare for **March** only:

(i) The production budget **in units** only
(ii) The material purchase budget for **both** X and Y in **both** kg and $

(8 marks)

(b) Prepare the cash budget **for the months of March and April only**

(12 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 3

(a)

(i) Production budget March

	units
March sales	700
*Less :*Opening stock	70
A*dd:* Closing stock	80
March production	710

(2 marks)

(ii) Material purchases budget March

	units
April sales	800
Less: Opening stock	80
Add: Closing stock	90
April Production	810

Material X 810 x 3 kg = 2,430 kgs
Material Y 810 x 2 kg = 1,620 kgs

Material X 2,430 kg x $5 = $12,150
Material Y 1,620 kg x $6 = $9,720

(b) Cash budget – March and April

	March	**April**
Receipts	**$**	**$**
Debtors	48,000	56,000
Payments		
Purchases X	9,150	10,650
Purchases Y	7,320	8,520
Wages	17,040	19,440
Variable overhead	8,520	9,720
Fixed product overhead	3,000	3,000
Other fixed overhead	2,200	2,200
	47,230	53,530
Net cash inflow	770	2,470
Opening balance	10,000	10,770
Closing balance	10,770	13,240

Workings:

X

February sales	600		
*Less:*Opening stock	60		
Add: Closing stock	70		
February production	610	March production (from ai)	710
Cost per unit X	x 15		15
January purchases	$9,150	**February purchases**	$10,650

Y

February production	610	March production	710
Cost per unit Y	x 12		x 12
January purchases	$7,320	**February purchases**	$8,520

MODEL ANSWER TO QUESTION 3 CONTINUED

March production (from a i)		April production (from aii)	
	710 units		810 units
Wage cost per unit	x $24	Wage cost per unit	x $24
Wages March	$17,040	**Wages April**	$19,440

March production	710 units	April production	810 units
Variable overhead cost	x $12		x $12
Variable overhead March	$8,520	**Variable overhead April**	$9,720

	Fixed production overhead per month	$4,000
Less:	Depreciation	1,000
		$3,000

	Other fixed overhead per month	$3,000
Less:	Depreciation	800
		$2,200

QUESTION 4

A company produces five products. The initial budget for 2008 is:

	Product				
$000	**V**	**W**	**X**	**Y**	**Z**
Sales	200	300	200	400	350
Variable costs:					
Direct material	50	90	70	80	80
Direct labour	60	50	50	100	90
Variable overhead	60	50	50	100	90
Fixed overhead	40	30	50	70	50
Profit/(Loss)	(10)	80	(20)	50	40

The above figures are based on 50% machine capacity usage.
Direct labour is currently fully utilised but additional labour is available if required.
The fixed costs represent a general apportionment. There are no fixed costs specific to any of the products.

Two separate proposals have been put forward with a view to maximising profit:

(i) That both products V and X be discontinued as they are loss-making
(ii) That products be treated with a protective material at an increase of 50% in unit material cost. Sales volume of treated products would be expected to double at the current selling price. The unit labour and variable overhead costs of the treatment would be negligible and should be disregarded. The fixed costs would remain unchanged

REQUIRED

(a) Recommend, with supporting figures, whether products V and X should be discontinued.

(3 marks)

(b) Recommend, with supporting figures, whether any of the products should be treated with the protective material.

(7 marks)

(c) Calculate the profit that will be earned from the optimum mix of treated and untreated products.

(2 marks)

(d) Calculate to the nearest $000 sales:

(i) The break-even point for the initial budget
(ii) The margin of safety for the optimum mix calculated in (c) above.

(8 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 4

(a)

$000	V	X
Sales	200	200
Less: Material	50	70
Labour	60	50
Variable overhead	60	50
Contribution	30	30

OR

Fixed overhead	40	50
Less: Loss	(10)	(20)
Contribution	30	30

Both V and X should be retained as they each make a contribution towards the fixed overhead.

(b)

$000	V	W	X	Y	Z	Total
Sales	400	600	400	800	700	
Material	150	270	210	240	240	
Labour	120	100	100	200	180	
Variable overhead	120	100	100	200	180	
Contribution	10	130	(10)	160	100	390
Present contribution	30	110	30	120	90	380

Products W, Y and Z should be treated as it results in an increase in contribution.

(c) Profit = (30 + 130 + 30 + 160 + 100) = 450 – 240 = 210 ($000)

(d) (i) Budget: Total Contribution = $380,000
Total sales = $1,450,000

Contribution/sales (CS) ratio = $\frac{380,000}{1,450,000} \times \frac{100}{1} = 26.2\ \%$

Break even point ($000) = $\frac{\text{Fixed cost}}{\text{CS Ratio}} = \frac{240}{26.2\%} = 916$

(ii) Optimum mix: Sales ($000) = (200 + 600 +200 + 800 + 700) = 2,500
Contribution ($000) from c) = 450

Contribution /sales (CS) ratio = $\frac{450}{2,500} \times \frac{100}{1} = 18\%$

Margin of safety ($000) = $\frac{\text{Net profit}}{\text{CS ratio}} = \frac{210}{18\%} = 1,167$

OR

Break even ($000) = $\frac{240}{18\%} = 1,333$

Margin of safety = 2,500 – 1,333 = 1,167

QUESTION 5

A company produces two products A and B each of which pass through several activities, (cutting, shaping, drilling and inspection as well as material handling and machine set-up).

A system of Activity Based Costing is in use. The following details apply to the two products:

	Number of operations per unit of product	
Activities	**A**	**B**
Cutting	6	4
Shaping	4	3
Drilling	10	9
Inspection	1	2
Material handling	5	3
	Number of machine set- ups per batch	
Machine set-up	1	3

Budgeted production overhead costs per period for each activity, together with the cost drivers are:

	$	**Driver**
Cutting	3,500	Number of Operations
Shaping	2,450	Number of Operations
Drilling	3,800	Number of Operations
Inspection	1,050	Number of Operations
Material handling	1,200	Number of Operations
Set-up	720	Number of machine set-ups

One batch of each product is produced per period, each batch consisting of 100 units. There is a rejection rate after inspection of 20% for A and 10% for B. The scrap value of reject units is deducted from the direct material cost per good unit.

REQUIRED

(a) Calculate the cost driver rates for production overheads for each of the activities listed above.

(6 marks)

(b) Calculate the production overhead cost per good unit for each product.

(9 marks)

The following direct costs per good unit relate to products A and B:

	A	**B**
	$ per unit	$ per unit
Material (after deduction of scrap value)	54.25	56.00
Labour	41.00	40.00

REQUIRED

(c) If the company requires a gross profit margin of 20% on A and 25% on B, calculate the selling price for one unit of each product.

(5 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 5

(a)

Number of operations:	A	B	Total
Cutting	600	400	1,000
Shaping	400	300	700
Drilling	1,000	900	1,900
Inspection	100	200	300
Material handling	500	300	800
Number of machine set ups	1	3	4

Cost driver rates per activity

	$
Cutting	3,500 / 1,000 = 3.5 per operation
Shaping	2,450 / 700 = 3.5 per operation
Drilling	3,800 / 1,900 = 2 per operation
Inspection	1,050 / 300 = 3.5 per operation
Material handling	1,200 / 800 = 1.5 per operation
Machine set-up	720 / 4 = 180 per machine set up

(b) Production overhead cost per unit

	A $		B $
Cutting (6 x 3.5)	21	(4 x 3.5)	14
Shaping (4 x 3.5)	14	(3 x 3.5)	10.5
Drilling (10 x 2)	20	(9 x 2)	18
Inspection (1 x 3.5)	3.5	(2 x 3.5)	7
Material handling (5 x 1.5)	7.5	(3 x 1.5)	4.5
Machine set-up (180)/(100)	1.8	(180 x 3)/100	5.4
Total cost	67.8		59.4

Cost per unit of good output

67.8 / 80 x 100 = 84.75 **59.4 / 90 x 100 = 66**

(c)

	A $	B $
Material	54.25	56
Labour	41	40
Overhead	84.75	66
Total cost	180.00	162
Gross profit	45	54
Selling price	225.00	216

QUESTION 6

A company is considering investing in a new machine in order to reduce operating costs over the forthcoming five years. The company has spent $80,000 in consultancy fees to assess the viability of two machines, A and B, the details of which are:

	Machine A	Machine B
	$	$
Initial cost	400,000	500,000
Residual value	80,000	50,000

The consultants have estimated the probability of annual cost savings as:

Machine A	**$**	
	100,000	Probability .3
	50,000	Probability .5
	20,000	Probability .2
Machine B	**$**	
	130,000	Probability .2
	80,000	Probability .5
	60,000	Probability .3

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 12% per annum. The relevant discount factors are:

Year 1	0.893
2	0.797
3	0.712
4	0.636
5	0.567

REQUIRED

(a) For each machine, calculate the expected value of the annual cash flows arising from the cost savings.

(4 marks)

(b) Evaluate each machine on the basis of the expected value of annual cash flows, using each of the following methods:

(i) Payback period
(ii) Net present value

(10 marks)

(c) Using information in the question, and your answers in b), advise the company, with reasons, whether to invest in new machinery and if so which machine to purchase.

(6 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 6

(a) Expected value of cost savings

Machine A		**Machine B**	
$ per annum		**$ per annum**	
100,000 x .3 =	30,000	130,000 x .2 =	26,000
50,000 x .5 =	25,000	80,000 x .5 =	40,000
20,000 x .2 =	4,000	60,000 x .3 =	18,000
	59,000		84,000

Depreciation	**Machine A**	**Machine B**
Initial cost	$400,000	$500,000
Residual value	80,000	50,000
	320,000	450,000
Life in years	5	5
Depreciation per year	$64,000	$90,000
Cash flows		
Years 1-5 Savings	59,000	84,000
Depreciation	64,000	90,000
	123,000	174,000

(b) (i) Payback

	A	**B**
Initial investment	$400,000 = 3.25 years	$500,000 = 2.87 years
Annual cash inflow	$123,000	$174,000

(ii) Net present value

	Machine A			**Machine B**		
	Cash flow $000	Discount factor 12%	Present value $000	Cash flow $00	Discount factor 12%	Present value $000
Year 0	(400)	1	(400)	(500)	1	(500)
1	123	.893	109.8	174	.893	155.4
2	123	.797	98.0	174	.797	138.7
3	123	.712	87.6	174	.712	123.9
4	123	.636	78.2	174	.636	110.7
5	203	.567	115. 1	224	.567	127.0
			88.7			155.7

OR Machine A {(123 x 3.038) + (203 x .567) – 400} = 88.7

Machine B {(174 x 3.038) + (224 x .567) –500} = 155.7

MODEL ANSWER TO QUESTION 6 CONTINUED

(c) Investment in new machinery is worthwhile as both machines have a positive NPV when cash flows are discounted at the cost of capital.

The company should purchase machine B as it has a shorter payback period and a higher net present value.

Moreover, the worst case scenario for Machine A will give a 20% likelihood of a negative net present value ie {20,000 + 64,000) x 3.038 = 255.19 +
(20,000 + 144,000) x 0.567 = 92.99
348.18-
400.00
(51.82)

The worst case scenario for Machine B will give a 30% likelihood of a positive net present value ie (60,000 + 90,000) x 3.038 = 455.70 +
(60,000 + 140,000) x 0 567 = 113.40
569.10 -
500.00
69.10

