

# **MANAGEMENT ACCOUNTING**

**June 2004  
Certificate stage**

## **MARKING SCHEME**



(Copyright)

<b>Question 1</b>
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(a)

Birchville Housing Association  
Cash budget for the six months ending 31 March 2005.

	Oct £000	Nov £000	Dec £000	Jan £000	Feb £000	March £000	
<b>Cash receipts:</b>							
Rental income:							
Rent due in month (W1)	208.8	208.8	208.8	208.8	208.8	208.8	
1 month in arrears (W2)	80.5	87.0	87.0	87.0	87.0	87.0	
2 months in arrears (W3)	48.3	48.3	52.2	52.2	52.2	52.2	
Interest at 2%	0.97	0.97	1.04	1.04	1.04	1.04	
Grant (2,400,000/12)	200.0	200.0	200.0	200.0	200.0	200.0	½
Receipt					96.0		½
<b>Total income</b>	<b>538.57</b>	<b>545.07</b>	<b>549.04</b>	<b>549.04</b>	<b>645.04</b>	<b>549.04</b>	
<b>Cash payments</b>							
Salaries	230.0	230.0	230.0	230.0	230.0	230.0	½
Pay award					41.4	6.9	½
Purchases (W4)							
Cash	25.0	25.0	25.0	25.0	25.0	25.0	½
Credit	150.0	225.0	225.0	225.0	225.0	225.0	½
Capital expenditure		270.0					½
Other expenses	54.0	54.0	54.0	54.0	54.0	54.0	½
<b>Total payments</b>	<b>459.0</b>	<b>804.0</b>	<b>534.0</b>	<b>534.0</b>	<b>575.4</b>	<b>540.9</b>	
Net cash flow in month	79.6	(258.9)	15.0	15.0	69.6	8.1	
Balance b/f	100.0	179.6	(79.3)	(64.3)	(49.3)	20.3	
Balance c/f	179.6	(79.3)	(64.3)	(49.3)	20.3	28.4	

*½ mark for opening and closing balances correct*

W1	£350 x 600 = £210,000	
	£250 x 400 = £100,000	
	£190 x 200 = <u>£38,000</u>	
	£348,000 x 60% = £208,800	1
W2	£320 x 600 = £192,000	
	£235 x 400 = £94,000	
	£180 x 200 = <u>£36,000</u>	
	£322,000 x 25% = £80,500 for October	1
	£348,000 x 25% = £87,000 Nov – March	1

W3	October and November	$£322,000 \times 15\% = £48,300$	$\frac{1}{2}$
	December – March	$£348,000 \times 15\% = £52,200$	$\frac{1}{2}$
	Interest calculated at 2%		$\frac{1}{2}$

W4	April – September	$2,500,000 \times 40\% = £1,000,000 = £166,667$ per month.
	October – March	$2,500,000 \times 60\% = £1,500,000 = £250,000$ per month.

Cash purchases  $250,000 \times 10\% = £25,000$ .

Credit purchases  $250,000 \times 90\% = £225,000$  for November – March.

$£166,667 \times 90\% = £150,000$  for October.

Valid comments in report highlighting significant areas:

- Overdraft facility will be required for the period November to January.
- In November an additional overdraft facility will need to be negotiated with the bank as the requirement exceeds the £70,000 limit.
- The capital expenditure could be managed more effectively in order to prevent exceeding the overdraft limit. For example, staged over a number of months, or alternatively funded in a different way (eg leasing).
- The rental income collection facility could be improved so that rents were paid more promptly. This could be done by an agency or by setting up a direct debit facility.
- The association could negotiate a longer credit facility from its creditors.

*1 mark per valid point to a maximum of 4 marks*

*1 mark for presentation*

*(14)*

**(b)** Interest earned:

$$£179,566 + £20,364 + £28,508 = £228,438 \times 3.4\% = £7,766.89/12 = £647.24$$

Total interest earned in the period: £647.24

1

Interest charged:

$$£79,368 + £64,324 + £49,280 = £192,972 \times 6.7\% = £12,929/12 = £1,077.43$$

Net charge =  $£1,077.43 - £647.24 = £430.19$

1  
(2)

**(c)** Contents of a capital budget:

- Title of scheme, description and reasons for it.
- Priority ranking.
- Estimated start time, period of implementation and estimated completion date.
- Capital cost of scheme, detailed for each year.
- Revenue costs throughout the life of the scheme.

*$\frac{1}{2}$  mark per point up to a maximum of 2*

Possible constraints:

- Financial.
- Government and EU controls.
- Revenue consequences.
- Legal constraints.

*½ mark per point up to a maximum of 2*  
(4)

**(20)**

<b>Question 2</b>
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**(a) Statement to show contract costs and revenues**

	£	
Materials purchased	400,000	1
Contribution lost on roofing materials	90,300	1
Grade 1 labour (15 x £320 x 9)	43,200	1
Agency grade 2 labour (3 x £400 x 20)	24,000	1
Penalty clause	1,750	1
Salary of foreman	0	1
Overtime costs incurred	700	1
Machine contribution lost (£25 x 50)	1,250	1
Alternative accommodation (£275 x 8)	2,200	1
Depreciation	0	1
Fixed overheads	0	1
Total relevant costs	563,400	
Price of contract	600,000	
Increase in contribution	36,600	1
Therefore the contract should go ahead		1 (13)

**(b)**

- In job costing it is necessary to charge full cost to the customer. The above technique uses relevant costing.
- Relevant costing only considers costs and revenues that are incremental. That is only those costs and revenues that will change as a result of the decision made.
- Job costing will consider all costs including apportioned central overheads and depreciation.
- Job costing requires that all costs are recovered and can be used to price contracts.
- Relevant costing techniques are used for internal management.

*1 mark per relevant point, up to a maximum of 4*

**(c)**

- The effect on the quality of work to existing customers.
- If contracts are cancelled then will customers return in the future?
- Local firms that use the machinery may be dissatisfied if they cannot use the facility for 50 hours.
- Will agency staff have the sufficient expertise to carry out the tasks?
- Will the training of the current trainees suffer because of the disruption to the facilities?

*1 mark per relevant point, up to a maximum of 3*

**(20)**

<b>Question 3</b>
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**(a)** Calculation of standard cost and selling price

Direct materials:

	£	
Plastic (5kg x £3.00)	15.00	
Aluminium (2.5kg x £15)	37.50	
Labour (2.5hrs x £9)	22.50	
Fixed overhead	45.00	2
Standard cost	120.00	
Profit $25/(100-25) \times 120$	40.00	
Selling price	160.00	1 (3)

**(b)** Actual profit is calculated as:

	£	£	
Sales 28,500 X £176		5,016,000	½
Direct materials			
Plastic (148,000 x £3.60)	532,800		½
Aluminium (74,000 x £14.10)	1,043,400		½
Wages (74,000 x £9.60)	710,400		½
Fixed production overhead	1,500,000	3,786,600	½
Actual profit		1,229,400	½ (3)

**(c)** Calculation of sales and cost variances:

	£	£	£	
Materials price variances				
Plastic (£3.00 – £3.60) x 148,000	88,800A			1
Aluminium (£15 – £14.10) x 74,000	66,600F	22,200A		1
Materials usage variances				
Plastic (142,500 – 148,000) x 3	16,500A			1
Aluminium (71,250 – 74,000) x £15	41,250A	57,750A		1
Labour rate variance (£9.00 – £9.60) x 74,000	44,400A			1
Labour efficiency variance (71,250 – 74,000) x £9	24,750A	69,150A		1
Fixed overhead expenditure variance (30,000 x £45) – £1,500,000		150,000A		1
Volume efficiency variance (71,250 – 74,000) x £18	49,500A			1

Volume capacity variance (74,000 – 75,000) x £18	18,000A		1
Fixed overhead volume variance (28,500 x £45) - £1,350,000		67,500A	
Fixed overhead variance 1,500,000 – (28,500 x £45)		217,500A	
Sales margin price variance (56 – 40) x 28,500	456,000F		1
Sales margin volume variance (28,500 – 30,000) x £40	60,000A	396,000F	1
Total variances		29,400F	
Add			
Budgeted profit (30,000 x £40)		1,200,000	
Actual profit		1,229,400	1 (12)

- (d) The management of the company should be concerned, as although the overall position is favourable, this is due to the increased selling price. There are some significant cost variances that give cause for concern. If the market changes and the selling price has to be reduced, the company will find it has serious financial problems.

*1 mark per valid point up to a maximum of 2*

**(20)**

**Question 4**

- (a) Let B = number units of Bi-worker produced and sold.  
Let T = number of units of Tri-worker produced and sold

The linear programming model is:

$$\text{Maximise } Z = 80B + 100T$$

1

Subject to constraints:

$$2B + 4T \leq 1,400 \quad \text{Processing capacity} \quad \frac{1}{2}$$

$$5B + 4T \leq 2,000 \quad \text{Finishing capacity} \quad \frac{1}{2}$$

$$B \leq 800 \quad \text{Maximum output of Bi-worker} \quad \frac{1}{2}$$

$$T \leq 800 \quad \text{Maximum output of Tri-worker} \quad \frac{1}{2}$$

$$B \leq 0 \quad \frac{1}{2}$$

$$T \leq 0 \quad \frac{1}{2}$$

(4)

Processing and finishing are binding constraints because there is no restriction on demand. A graph is not required as binding constraints can be determined from the question. Output is not a restriction as not enough capacity in processing and finishing to meet maximum levels.

- (b) Optimum production plan

Using simultaneous equations:

$$(1) \quad 2B + 4T = 1,400$$

$$(2) \quad 5B + 4T = 2,000$$

Subtracting (1) from (2)

$$3B = 600$$

$$B = 200$$

1

Substituting in (1)

$$400 + 4T = 1,400$$

$$1,000 = 4T$$

$$T = 250$$

1

Therefore the optimum production is 200 units of the Bi-worker and 250 units of the Tri-worker.

Profit at this level:

	£
200 units of Bi-worker at £80 contribution	16,000
250 units of Tri-worker at £100 contribution	<u>25,000</u>



	41,000	1
Less fixed costs	34,000	1
Profit	7,000	(4)

(c) (i) One additional hour in the processing department:

Equations become:

$$(1) \quad 2B + 4T = 1,401$$

$$(2) \quad 5B + 4T = 2,000$$

Subtracting (1) from (2)

$$3B = 599$$

$$B = 199.67$$

Substituting in (1)

$$399.34 + 4T = 1,401$$

$$1001.66 = 4T$$

$$T = 250.42$$

If the Tri-worker is increased by 0.42 units and the Bi-worker is reduced by 0.33 units then the change in contribution is

$$\text{Tri-worker} \quad 0.42 \times \text{£}100 = \text{£}42.00$$

$$\text{Bi-worker} \quad 0.33 \times \text{£}80 = \underline{(\text{£}26.40)}$$

$$\text{Shadow price of processing} \quad \text{£}15.60$$

One additional hour in the finishing department:

Equations become:

$$(1) \quad 2B + 4T = 1,400$$

$$(2) \quad 5B + 4T = 2,001$$

Subtracting (1) from (2)

$$3B = 601$$

$$B = 200.33$$

Substituting in (1)

$$400.66 + 4T = 1,400$$

$$999.34 = 4T$$

$$T = 249.84$$

If the Bi-worker is increased by 0.33 units and the Tri-worker is reduced by 0.16 units then the change in contribution is

	£	
Tri-worker 0.16 x £100 =	(16.00)	
Bi-worker 0.33 x £80 =	<u>26.40</u>	
Shadow price of finishing	10.40	1
		(6)

- (c) (ii) The shadow price of processing is £15.60. This means that Muscle Pro would be willing to pay an additional £15.60 per hour for processing. 1

The shadow price of finishing is £10.40. This means that Muscle Pro would be willing to pay an additional £10.40 per hour for finishing. 1

Shadow prices only exist for binding constraints. It is the amount by which the contribution will increase if one unit more or less of a resource were made available. It is the premium worth paying to get an extra unit of that resource. It is opportunity cost of the scarce resource. 1

(3)

(d)

- It is assumed that products can be produced in units of less than one.
- Costs and revenues are linear.
- It is assumed that the only objective is to maximise contribution.
- It is assumed that resources can be supplied in any quantity.
- Fixed costs are constant.

*1 mark per valid point up to a maximum of 3*

(20)

<b>Question 5</b>
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**Contract North**

Materials on site b/fwd	30	Wages accrued b/fwd	7	
Plant on site b/fwd	116	Plant on site c/fwd	30	
Materials control	330	Cost of sales – current		
Wages control	150	period (balance) c/fwd	<u>747</u>	
Salaries	60		784	
Plant control	53			
Apportioned central expenses	30			
Wages accrued c/fwd	<u>15</u>			
	784			3
Cost of sales b/fwd	747	Attributable sales revenue	663	
		- current period		
		(627 + 747) – 1,290		2
		Loss taken	<u>84</u>	
	<u>747</u>		747	
Plant on site b/fwd	30	Wages accrued b/fwd	15	1

**Contract South**

Materials control	132	Materials on site c/fwd	30	
Wages control	68	Plant on site c/fwd	225	
Salaries	23	Cost of sales – current		
Plant control	285	period (balance) c/fwd	<u>276</u>	
Apportioned central expenses	15		531	
Wages accrued c/fwd	<u>8</u>			
	531			3
Cost of sales b/fwd	276	Attributable sales revenue	276	
		- current period		
	<u>276</u>		<u>276</u>	2
Materials on site b/fwd	30	Wages accrued b/fwd	8	1
Plant on site b/fwd	225			

**Contract Central**

Materials on site b/fwd	45	Wages accrued b/fwd	15	
Plant on site b/fwd	561	Plant on site c/fwd	345	
		Cost of work not certified	83	
Materials control	594	Cost of sales – current		
Wages control	330	Period (balance) c/fwd	<u>1,255</u>	
Salaries	75		1,698	
Apportioned central expenses	75			
Wages accrued c/fwd	<u>18</u>			
	1,698			3
Cost of sales b/fwd	1,255	Attributable sales revenue		
		- current period	<u>1,681</u>	
Profit taken this period (W1)	<u>426</u>		1,681	
	1,681			
Cost of work not certified	83	Wages accrued b/fwd	18	1
Plant on site b/fwd	345			
W1	£000			
Cost of work certified 1,255 + 1,221	2,476			
Cost of work not certified	83			
Costs to complete	<u>458</u>			
Estimated cost of contract	3,017			
Contract price	<u>3,630</u>			
Anticipated profit	613			2
Profit taken:				
	$\frac{0.9 \times 3,150}{3,630} \times 613 = 479$			1
Profit to date 479 – Profit already taken 53 = 426				1
				<b>(20)</b>

**Question 6**

(a) Overheads may be classified according to activity:

- Production
- Administration
- Selling and distribution

1

*Give mark for appropriate answer*

They may also be classified according to cost behaviour:

- Fixed
- Semi-fixed
- Stepped

1

*Give mark for appropriate answer*

They differ from variable costs as they are fixed in nature. Alternatively variable costs can be classified as direct costs and overheads indirect.

In general, fixed costs do not change with activity whereas variable costs do.

1

*Give mark for appropriate answer*

(3)

(b) The process could be as follows, but would normally be based on historical data:

- Allocate overhead costs to all departments where possible. Apportion any general overheads between departments using appropriate bases. For example, rates on the basis of floor area.
- Calculate the cost of each of the support services and identify methods for recharging these costs to front line services. These costs will include direct and overhead costs. The total cost will be recharged.
- Apportion any non-medical support costs to front line and medical support departments. Where possible recognise the work done by each support service for other support services.
- Apportion medical support services to front line services on the basis of usage, or some appropriate basis.  
Eg Radiography on the basis of number of X rays, physiotherapy on time.
- Compile final overheads costs of front line departments and set overhead departmental absorption rate based on a fair basis of absorption.
- Set prices based on direct cost plus overhead charged at the OAR based on consumption of that particular activity.

*1 mark per valid point, up to a maximum of 8*

- (c) Over or under absorption of overheads occurs when either the budgeted expenditure on overheads or the budgeted activity level, upon which the overhead absorption rate has been set, differs from the actual level.

In the above example, the historical data used to set budgeted overhead absorption rates may not provide an accurate reflection or forecast of what will necessarily happen in the future, so actual costs and activity levels may vary.

Activity level is higher or lower than expected so more or less overhead is recovered from contract prices. This must be adjusted in the profit and loss account to reflect the actual levels that occurred.

(4)

- (d) Activity based costing operates as follows:

- Major activities are identified.
- Costs are pooled based on activity.
- Cost drivers are identified for each cost pool.
- Cost driver rates are calculated for all cost drivers.
- Costs are allocated to services based on the usage they make of the each activity. They are charged as a rate per cost driver.
- Can provide more accurate prices as a large proportion of cost may be driven by overheads. By using ABC, rates are charged according to services of the actual activities they use.

*1 mark per relevant point, up to a maximum of 5*

(20)