

MANAGEMENT ACCOUNTING

Certificate stage examination

7 June 2007

MARKING SCHEME



Question 1

(a)

	£	
Variable production cost per unit	98.00	
Variable non production cost (20% of sales value)	<u>56.00</u>	
	154.00	1
	£	
Production absorption cost per unit	118.00	
Fixed costs for the period (£20.00 x 32,000 units)	640,000	1

Marginal costing profit statements

	April – Sept 07 £000		Oct – Mar 08 £000	
Opening stock			294	
Variable production cost (17 x 98)	1,666	(14 x 98)	1,372	
Less closing stock (3 x 98)	<u>(294)</u>	(1 x 98)	<u>(98)</u>	
	1,372		1,568	1
Variable non production cost (14 x 56)	<u>784</u>	(16 x 56)	<u>896</u>	
	2,156		2,464	1
Sales (14 x 280)	<u>3,920</u>	(16 x 280)	<u>4,480</u>	
Contribution	1,764		2,016	1
Fixed costs (640 + 360)/2	<u>500</u>		<u>500</u>	
Profit	1,264		1,516	1

Absorption costing profit statements

	April – Sept 07 £000		Oct – Mar 08 £000	
Opening stock			354	
Production cost (17 x 118)	2,006	(14 x 118)	1,652	
Less closing stock (3 x 118)	<u>(354)</u>	(1 x 118)	<u>(118)</u>	1
	1,652		1,888	
Under (over) recovery of Fixed overheads (1 x 20)	<u>(20)</u>	(2 x 20)	<u>40</u>	1
	1,632		1,928	
Variable non production cost (14 x 56)	784	(16 x 56)	896	
Fixed non manufacturing costs	<u>180</u>		<u>180</u>	
	2,596		3,004	1
Sales (14 x 280)	<u>3,920</u>	(16 x 280)	<u>4,480</u>	
Profit	1,324		1,476	1

(10)

Alternative presentations are allowed

(b) Statement to reconcile marginal and absorption cost statements

	Period end 30/09/07 £		Period end 31/03/08 £	
Marginal cost profits	1,264		1,516	
Fixed production overheads included in changes in stock (3 x 20)	<u>60</u>	(2 x 20)	<u>(40)</u>	2
Absorption costing profit	1,324		1,476	

In a marginal costing system all of the fixed production overheads that are incurred in the period are charged as an expense against profit. In an absorption costing system, the fixed production overheads are included in the stock valuations. Changes in stock levels during a period will therefore have the effect of charging the period in question with more or less overhead than has been incurred.

2

(4)

(c)

- Make or buy decisions – In deciding whether to make or buy in a service or a product, a company could use the concept of relevant costing. This involves the comparison of the incremental or marginal cost of one option over the other.
- Deleting a business segment – The decision of whether to delete a segment of a business depends on whether that segment is making a positive contribution. If the segment is not producing a profit, but is however, contributing to the fixed costs of the business, the overall business will benefit. This means that in the short term the segment should not be deleted.
- Product mix decisions where there is a limiting factor – Here, the production schedule should be such that the products are ranked in the order of those that produce the most contribution per unit of limiting factor. This will ensure that the maximum profit is made, given the limitations that exist.
- Pricing decisions on special orders – Where there is an opportunity to produce a special order, only the relevant or incremental costs should be taken into account. In the short term the fixed costs will be incurred regardless.

2 marks per situation, 1 mark for the identification and 1 for development up to a maximum of (6)

(20)

Question 2

(a) Workings:

Labour £178,125/2500 = £71.25 variable cost 1

Centre utility overheads - using high/low method:

$$\frac{£42,200 - £34,500}{3,200 - 2,500} = \frac{£7,700}{700} = £11 \text{ variable}$$

$$£11 \times 2,500 = £27,500 - £34,500 = £7,000 \text{ fixed.} \quad 1$$

Administration overheads – using high/low method:

$$\frac{£15,750 - £13,125}{3,200 - 2,500} = \frac{£2,625}{700} = £3.75 \text{ variable}$$

$$£3.75 \times 2,500 = £9,375 - £13,125 = £3,750 \text{ fixed} \quad 1$$

Consumables £139,375/2,500 = £55.75 variable 1

Insurances £22,500 per quarter fixed ½

Advertising £7,800 per quarter fixed ½

Schedule of costs:

Number of clients 2,900 x 1.06 = 3,074 ½

		£	
Labour	3,074 x £71.25	219,022.50	
Centre utility overheads	3,074 x £11.00	33,814	
Fixed element		7,000	
Admin overheads	3,074 x £3.75	11,527.50	
Fixed element		3,750	
Consumables	3,074 x £55.75	171,375.50	
Insurances		22,500	
Advertising		7,800	
Total costs		476,789.50	1 ½

(7)

(b) Outdoor Experience
Statement to show centre performance during 2007

	Quarter 1 £	Quarter 2 £	Quarter 3 £	Quarter 4 £	Total £
Total clients	2,500	3,200	2,900	3,074	11,674
Paying clients	1,500	2,240	1,305	1,537	6,582
Income @ £250	375,000	560,000	326,250	384,250	1,645,500
Total costs	395,425	494,650	452,125	476,789.5	1,818,989.5
Surplus/deficit	-20,425	65,350	-125,875	-92,539.5	-173,489.5
Council subsidy	93,750	93,750	93,750	93,750	375,000
Surplus/deficit	73,325	159,100	-32,125	1,210.5	201,510.5

3

Without the income paid by the council, the centre is not viable. However, part of this income is to cover the costs incurred by the council employees. The centre made an overall surplus with the council income. However, in quarter 3, there were insufficient fee paying clients to secure a surplus even with the additional income.

1

(4)

(c)

Fixed costs: Insurance 22,500
Advertising 7,800
Fixed overheads - utility 7,000
- admin 3,750
41,050 x 4 = £164,200 per annum

1

Variable costs per weekend:
Labour 71.25
Overheads - utility 11.00
- admin 3.75
Consumables 55.75
141.75

1

Contribution from council clients £150.00 – £141.75 = £8.25 per weekend

½

Contribution from other clients £250.00 – £141.75 = £108.25

½

Expected number of council employee client weekends:

2,500 x 40% = 1000
3,200 x 30% = 960
2,900 x 55% = 1,595
3,074 x 50% = 1,537
5,092

1

Fixed costs to be covered by non council employees:

£164,200 – (5,092 x 8.25) = £122,191

1

Breakeven number of non council client weekends:

$$\frac{\pounds 122,191}{\pounds 108.25} = 1,129 \text{ client weekends}$$

1

(6)

(d) Assumptions:

- The income function is linear
- Total cost function is linear
- Fixed costs remain fixed throughout the relevant range.
- Fixed and variable costs can be separated into fixed and variable elements.
- Only quantitative effects are included, non financial considerations are not included in the decision making process.
- A static environment exists.
- Single product mix

½ marks per point up to a maximum of (3)

(20)

Question 3

(a)

Material price	£		
Standard cost of materials used 95,420 litres x £17.00 =	1,622,140		
Actual cost of materials used	1,479,010		
Variance	143,130 F	1	
Material usage			
Standard quantity for actual production 13,200 units x 7 litres =	92,400		
Actual quantity used	95,420		
	3,020		
at standard cost per unit x £17.00	51,340 A	1	
Labour rate			
Standard cost of labour used 141,550 hours x £13.40 =	1,896,770		
Actual cost of labour used	1,898,035		
Variance	1,265 A	1	
Labour efficiency			
Standard hours for actual production 13,200 units x 11	145,200		
Actual quantity used	141,550		
	3,650		
at standard cost per unit x £13.40	48,910 F	1	
Fixed overhead expenditure variance			
Budgeted volume 5,184,900/370.35 = 14,000			
Budgeted fixed overhead (14,000 x 11 x £9.45)	1,455,300		
Actual fixed overhead	1,400,000		
	55,300 F	1	
Fixed overhead volume variance			
Budgeted volume	14,000		
Actual volume	13,200		
	800		
At standard overhead absorption rate per unit x 103.95	83,160 A	1	
Fixed overhead capacity variance			
Actual hours of input	141,550		
Budgeted hours of input	154,000		
	12,450		
at standard rate per hour x £9.45	117,652.5 A	1	

Fixed overhead efficiency variance

Standard hours to produce actual output	145,200	
Actual hours to produce output	141,550	
	<u>3,650</u>	
at standard rate per hour x £9.45	34,492.5 F	1

Statement to reconcile the standard cost of production to actual cost of production for the period ended 30 April 2007

	£	
Standard cost of production 13,200 x 370.35	4,888,620	
Material variances:		
Materials price	143,130 F	
Materials usage	51,340 A	
Labour variances:		
Labour rate	1,265 A	
Labour efficiency	48,910 F	
Overhead variances		
Overhead expenditure	55,300 F	
Overhead capacity	117,652.5 A	
Overhead efficiency	34,492.5 F	
Actual cost of production	4,777,045	2

Alternative presentations are acceptable

Explanation of variances:

- Materials were obtained more cheaply than standard, however, more were required than standard. This may indicate that they were of an inferior quality which is reflected in the price.
- The labour cost more than the standard, indicating that maybe more skilled labour was used. However, the work was completed in a faster time than the standard time.
- The overheads were less than budgeted, shown by the expenditure variance. In addition, less was absorbed because the production was not as high as budgeted. However, this was partly disguised by the fact that the labour force was more efficient.

1 mark per valid point to maximum 3

(13)

(b) The behaviour of an individual manager may be affected in the following ways:

- A manager who is held responsible for labour variances may encourage their employees to work faster, but in doing so, affect the quality of the product or service.
- A manager who is responsible for the materials variances may encourage employees to use less. This may affect the quality of the product.
- If managers are involved in the standard setting process, they may deliberately set the standard at too low level, in order that they can achieve it more easily.
- If standards are set too high, a manager may come to expect adverse variances and this may discourage them to take corrective action in respect of smaller variances. They may instead focus efforts on the large variances only.
- If an attainable standard is set (ie one which requires a slight improvement on current performance), this should be achievable and therefore motivate managers.
- If an ideal standard is set (ie one based on ideal operating conditions) this is not likely to be achievable and may therefore demotivate managers.

2 marks per relevant point up to a maximum of (4)

(c) Characteristics to make standard costing effective in the public sector:

- There must be an identifiable unit of service.
- The standard service needs to be produced in sufficient quantity in order to make the approach worthwhile.
- The service should be capable of being standardised in terms of inputs.

1 mark per valid point up to a total of 2

Examples of services that may be suitable:

- Financial services
- Catering services
- Laundry services

½ mark per service identified up to a total of 1

(3)

(20)

Question 4

(a)

Component	A £	B £	C £	
Direct material	25	60	45	
Variable overhead	6	3.5	8	
Direct labour:				
Department X	70	40	75	
Department Y	24	18	30	
Department Z	32	16	60	
Total variable cost	157	137.5	218	
Sales price	180	240	260	
Unit contribution	23	102.5	42	2
Volume	3,750	3,100	2,950	
Total contribution	86,250	317,750	123,900	
			527,900	
Fixed costs			280,000	
Profit			247,900	1

(3)

(b) Total number of labour hours available in department Y:

Component A	3,750 x 2	7,500
Component B	3,100 x 1.5	4,650
Component C	2,950 x 2.5	<u>7,375</u>
		19,525

Maximum sales:

Component A	3,750 x 1.36	5,100
Component B	3,100 x 1.25	3,875
Component C	2,950 x 1.3	<u>3,835</u>
		12,810

For this, the number of required labour hours in department Y would be:

Component A	5,100 x 2	10,200.0
Component B	3,875 x 1.5	5,812.5
Component C	3,835 x 2.5	<u>9,587.5</u>
		25,600.0

There is clearly a shortage of labour hours to make all of the potential sales.

2

Ranking of components:

	A £	B £	C £
Unit contribution	23	102.5	42
Department Y hours	2	1.5	2.5
Contribution per limiting:			
Factor	11.5	68.33	16.8
Ranking	3	1	2

2

Based on the ranking the production should be:

	No of components	Dept Y hrs	Contribution
Component B	3,875	5,812.5	397,187.5
Component C	3,835	9,587.5	161,070
Component A (5812.5 + 9587.5 – 19,525)	2,062 (4125/2)	4,124	47,426
Total contribution			605,683.5
Less fixed costs			280,000
			325,683.5

2

Percentage increase:

$$325,683.5 - 247,900 = 77,783.5$$

$$77,783.5 / 247,900 \times 100 = 31.38 \%$$

1

(7)

(c) Non-financial factors:

- The effect on customers should be considered. There may be some customers that buy all three products (it does not state in the question whether the component parts are complementary to each other). If the supply of product A is restricted, some customers may choose to purchase all of the products elsewhere.
- Competitors may exploit the situation by providing the full demand for component A.

1 mark per valid point up to a total of (2)

(d)

- Objective function – the objective or target that a decision maker is hoping to achieve. The quantification of this is called the objective function. In linear programming this is expressed in an equation. It normally involves maximising contribution or minimising costs.
- Feasible area – The feasible area involves the graphical method of solving linear programming problems. This area involves all solution ranges that are possible taking into account all resource constraints. The final solution is on the boundary of this area.
- Slack variables – Slack variables account for any constraint that is unused at the point of optimality
- Shadow price – The shadow price represents the maximum premium that would be paid for one more unit of limiting factor. This would be equal to the amount of contribution that could be generated by this extra unit. Shadow prices only exist for resources that are constrained.

2 marks per point up to a maximum of (8)

(20)

Question 5

(a) Last year number of units sold:

	A	B	C	Total	
	30,000	120,000	60,000	210,000	
less 16 2/3				35,000	
Budgeted production				<u>175,000</u>	2

Contribution per unit:

	A	B	C	
Number of units	30,000	120,000	60,000	
	£000	£000	£000	
Sales	9,000	36,000	18,000	
Variable costs:				
Direct materials	2,400	9,600	4,800	
Direct labour	1,200	6,000	2,880	
Variable overhead	300	1,680	720	
Selling overhead	<u>600</u>	<u>2,880</u>	<u>960</u>	
Contribution	4,500	15,840	8,640	2
Contribution per unit	£150	£132	£144	1

It would therefore be preferable to close factory B as the contribution per unit is lowest.

Factory A should make the maximum amount of units (30,000 x 2 = 60,000 units). This would mean that 30,000 from Factory B would be allocated to factory A.

The remainder (55,000 units) would be transferred to factory C. 1

Evaluation of Closing factory B and transfer of 30,000 units to factory A and 55,000 to factory C

		£000	
Lost contribution from factory B		-15,840	
Costs avoided (5280+3600+3120)		<u>12,000</u>	
Net loss		-3,840	
Contribution gain	30,000 x 150	4,500	
	55,000 x 144	7,920	
Extra supervision			
Factory A		-1,000	
Factory C		-1,400	
Extra transport	100,000 x £30	<u>-3,000</u>	
		3,180	3

**Evaluation of closing factory A and reducing factory B
(reduce B by 5000)**

		£000
Lost contribution from factory A		-4,500
Costs avoided	(1500+600+900)	<u>3,000</u>
Net loss		-1,500
Contribution change	5,000 x 132	-660
Extra transport	25,000 x £20	<u>-500</u>
Profit change		-2,660

3

**Evaluation of closing factory C and increasing factory A
(increase A by 25000)**

		£000
Lost contribution from factory C		-8,640
Costs avoided	(2400+1680+2160)	<u>6,240</u>
Net loss		-2,400
Contribution change	25,000 x 150	3,750
Extra supervision costs		-1,000
Extra transport	50,000 x £24	<u>-1,200</u>
Profit change		-850

3

It can be seen that the first option is the most profitable.

(15)

(b)

- Lowering of morale throughout the company.
- Lack of motivation.
- Redundancies will probably be necessary. This may involve industrial relations and possible action.
- Loss of goodwill from customers that may have an increased lead time for their purchases.
- Lack of goal congruence.
- Lower efficiencies of scale.

1 mark per point to a maximum of (5)

(20)

Question 6

Key characteristics (C)

Advantages (A)

Disadvantages (D)

(a) Incremental Budgeting

- (C) Current level of activity and budgeted allowances taken as a base.
- (C) Base is adjusted for changes that are expected to occur.
- (D) May perpetuate past inefficiencies.
- (D) Does not challenge the status quo. Different methods of achieving objectives are not considered.
- (A) Easy and simple to operate.
- (A) Appropriate where there is a large number of cost centres/budgets to calculate and budgets do not change significantly from one year to the next.

Maximum 2 marks for key characteristics, 2 marks for advantages, 2 marks for disadvantages, up to an overall maximum of (5)

(b) Zero based budgeting

- (C) All activities are justified and prioritised before resources are allocated.
- (C) All budgets start from a zero base.
- (C) Activities are grouped into decision packages. Each is justified in terms of the organisational objectives.
- (C) Packages are ranked in order of priority.
- (A) Resources are allocated to higher ranking packages first.
- (D) Time consuming and therefore costly
- (A) Can be applied to different sections of the organisation in turn.

Maximum 2 marks for key characteristics, 2 marks for advantages, 2 marks for disadvantages, up to an overall maximum of (5)

(c) Activity based budgets

- (C) Budgets are set for activities not departments
- (C) Budgets are also set for cost drivers (as these cause the activities)
- (C) Current level of activity is used as a base and then budgeted production is converted to the level of cost driver activity
- (A) Can highlight excess resources
- (D) Can be time consuming

Maximum 2 marks for key characteristics, 2 marks for advantages, 2 marks for disadvantages, up to an overall maximum of (5)

(d) Rolling budgets

- (C) Budgets are continually updated in relation to revised/changing information.
- (A) A twelve month basis is always available.
- (A) Enforces continual planning within the organisation.
- (A) Budgets are constantly reviewed and updated.
- (D) May cause review of previous period budget to be overlooked as staff know that budget can easily be changed for the next budget period. Important variances may therefore be overlooked.

Maximum 2 marks for key characteristics, 2 marks for advantages, 2 marks for disadvantages, up to an overall maximum of (5)

(20)