

# MANAGEMENT ACCOUNTING

**Professional 1**  
**December 2001**

## MARKING SCHEME

The logo for CIPFA, consisting of the letters 'CIPFA' in a serif font. The letter 'I' is stylized with a curved line above it that loops around the top of the 'P'.

**Question 1**

(a) Production budget

	January	February	March	April	
	Units	Units	Units	Units	
Sales	210,000	180,000	210,000	220,000	
Less opening stock	22,000	27,000	31,500	33,000	1
Add closing stock	27,000	31,500	33,000	30,000	2
Production	215,000	184,500	211,500	217,000	1

(April is not required as part of the answer) (4)

(b) Materials Purchases budget

	January	February	March	April	
	Kg	Kg	Kg	Kg	
Material Usage	430,000	369,000	423,000	434,000	1
Less opening stock	104,000	92,250	105,750		1
Add closing stock	92,250	105,750	108,500		1
Purchases	418,250	382,500	425,750		

X Price	X £3.50	X £3.50	X £3.50	
Purchases value	£1,463,875	£1,338,750	£1,490,125	1

(April is not required as part of the answer) (4)

(c) Cash budget

	January	February	March	
	£	£	£	
<b>CASH INFLOWS</b>				
Sales receipts (W.1)	3,600,000	3,285,000	3,456,000	2
<b>CASH OUTFLOWS</b>				
Purchases	1,463,875	1,338,750	1,490,125	½
Labour (W.2)	1,290,000	1,107,000	1,269,000	1
Variable O/H (W.3)	350,000	393,400	401,400	1 ½
Fixed O/H	150,000	175,000	175,000	½
Net cash flow	346,125	270,850	120,475	
Opening balance	31,000	377,125	647,975	
Closing balance	377,125	647,975	768,450	

Format ½

(6)

W.1

	Sales	January	February	March
	£	£	£	£
November	3,420,000	342,000		
December	3,960,000	990,000	396,000	
January	3,780,000	2,268,000	945,000	378,000
February	3,240,000		1,944,000	810,000
March	3,780,000			2,268,000
<b>Total</b>		<b>3,600,000</b>	<b>3,285,000</b>	<b>3,456,000</b>

W.2

Labour

January	(215,000 x £6) = £1,290,000
February	(184,500 x £6) = £1,107,000
March	(211,500 x £6) = £1,269,000

W.3

Variable Overheads

	January	February	March
	£	£	£
December	92,000		
January	258,000	172,000	
February		221,400	147,600
March			253,800
<b>Total</b>	<b>350,000</b>	<b>393,400</b>	<b>401,400</b>

(d) Budgeted profit and loss account

	January	February	March	Total
	£	£	£	£
Sales	3,780,000	3,240,000	3,780,000	10,800,000
Less bad debts	189,000	162,000	189,000	540,000
	3,591,000	3,078,000	3,591,000	10,260,000
Materials used W.1	1,505,000	1,291,500	1,480,500	4,277,000
Direct labour W.2	1,290,000	1,107,000	1,269,000	3,666,000
Variable O/H W.3	430,000	369,000	423,000	1,222,000
Fixed O/H	200,000	200,000	200,000	600,000
<b>Total manufacturing cost</b>	<b>3,425,000</b>	<b>2,967,500</b>	<b>3,372,500</b>	<b>9,765,000</b>
Add opening stock W.4				330,000
Less closing stock W.5				495,000
<b>Cost of sales</b>				<b>9,600,000</b>
<b>Profit</b>				<b>660,000</b>

1

1

1

1

½

1

½

(6)

W.1

Materials used

January	430,000 x £3.50	1,505,000
February	369,000 x £3.50	1,291,500
March	423,000 x £3.50	1,480,500

W.2

Direct labour

January	215,000 x £6	1,290,000
February	184,500 x £6	1,107,000
March	211,500 x £6	1,269,000

W.3

January	215,000 x £2	430,000
February	184,500 x £2	369,000
March	211,500 x £2	423,000

W.4

Opening stock

22,000 units x (£7(mat) + £6(lab) + £2(var o/h)) = £330,000

W.5

Closing stock

33,000 units x £15 = £495,000

(20)

**Question 2**

(a)

(i)

		Machine X	Machine Y
		£	£
Total net cash inflows before depn.		700,000	600,000
Less depn.	For X & Y £500,000-£100,000	400,000	400,000
Profit after depn.		300,000	200,000
Average profit		75,000	50,000
Average capital	$\frac{(\pounds 500,000 + \pounds 100,000)}{2}$	300,000	300,000
ARR	(Profit after depn/Average capital invested) X 100	25%	16.7%

2

1

1

(ii)

Machine X = 2 years and 4 months or 2.33 years payback

Machine Y = 3 years 225 days or 3.62 years payback

2

(iii)

Year	10%	Machine X	DCF	Machine Y	DCF
		£	£	£	£
0	1	(500,000)	(500,000)	(500,000)	(500,000)
1	0.909	250,000	227,250	100,000	90,900
2	0.826	200,000	165,200	100,000	82,600
3	0.751	150,000	112,650	140,000	105,140
4	0.683	200,000	136,600	360,000	245,880
<b>Total</b>			<b>141,700</b>		<b>24,520</b>

2

2

(10)

(b) **ARR**

Advantages

- It is quick and easy to calculate.
- The percentage return is a familiar concept.
- It looks at the entire life of the project.

Disadvantages

- It ignores the time value of money.
- Accounting profits are subject to different accounting treatments.
- It takes no account of the size of the investment.
- It ignores the length of the project.

### **Payback**

#### Advantages

- It is quick and simple to calculate.
- The concept is easily understood by all levels of management.
- Some account is taken of risk, as long as payback means that capital is tied up for longer and thus a high risk investment.
- Cash flows and therefore liquidity is taken into account: this is important, where there are cash constraints.

#### Disadvantages

- Projects which have the same payback period are not distinguished.
- Any payback period is largely arbitrary.
- The method may lead to excessive investment in short-term projects.
- It ignores profitability of the project.
- It ignores the time value of money.

### **NPV**

#### Advantages

- Takes account of the time value of money.
- It uses all cash flows relating to the project.
- It takes account of the size of the investment.

#### Disadvantages

- There is a need to estimate the cost of capital, which can be complex.
- The NPV concept is not easily understood.
- Certain simplifying assumptions required eg that cash flows occur at end of each year.

*(1 mark per point up to a maximum of 3 for each investment appraisal method)*

9

- (c) Machine X on all three bases would be the preferred choice.

1

(20)

**Question 3**

(a) Budgeted output =  $19,200 \text{ hrs} / 4 \text{ hrs} = 4,800 \text{ units}$

Budgeted fixed overhead rate per unit of output =  $\text{£}240,000 / 4,800 \text{ units} = \text{£}50$

Budgeted fixed overhead rate per standard hour =  $\text{£}50 / 4 \text{ hrs} = \text{£}12.50$  per standard hour.

Budgeted variable overhead rate per standard hour =  $\text{£}115,200 / 19,200 \text{ standard hours} = \text{£}6$  per standard hour.

- (i) Variable overhead expenditure variance  
(Actual hours x Variable overhead rate) - Actual cost  
 $(18,600 \times \text{£}6) = \text{£}111,600 - \text{£}115,600 = \text{£}4,000\text{A}$  2
- (ii) Variable overhead efficiency variance  
(Standard hours - Actual hours) x Variable overhead rate  
 $((5,000 \times 4) - 18,600) \times \text{£}6 = \text{£}8,400\text{F}$  2
- (iii) Fixed overhead expenditure variance  
Budgeted cost - Actual cost  
 $\text{£}240,000 - \text{£}236,000 = \text{£}4,000\text{F}$  2
- (iv) Fixed overhead volume variance  
(Actual production - Budgeted production) x Standard rate  
 $(5,000 \text{ units} - 4,800 \text{ units}) \times \text{£}50 = \text{£}10,000\text{F}$  2
- (v) Fixed overhead volume efficiency variance  
(Standard hours - Actual hours) x Fixed overhead rate  
 $(20,000 - 18,600) \times \text{£}12.50 = \text{£}17,500\text{F}$  2
- (vi) Fixed overhead volume capacity variance  
(Actual hours - Budgeted hours) x Fixed overhead rate  
 $(18,600 - 19,200) \times \text{£}12.50 = \text{£}7,500\text{A}$  2

(12)

(b)

- (i) The volume capacity variance indicates how well we utilise capacity within the organisation, ie our ability to achieve the budgeted capacity. Failure to achieve the budgeted capacity may be for a number of reasons, machine breakdowns, material shortages etc. Again, for it to be useful it would be better to express this variance in terms of lost contribution from lost sales caused by a failure to utilise the capacity. It is not meaningful to attach fixed costs to the variance, since the total fixed costs will not be affected by a failure to utilise capacity 3

- (iii) The volume efficiency variance is a sub-variance of the volume variance and indicates one of the reasons why actual production is different from the budgeted production. This may be a result of the fact that the labour force worked at a different level of efficiency from that anticipated in the budget. The reasons for the variance will be identical to that of the labour efficiency variance. As to its usefulness, it has to be remembered that attaching a value for fixed overheads has limitations as fixed overheads represent sunk costs. Total fixed overhead will not change because of the efficiency of labour. It would be better to measure this variance in terms of the lost contribution arising from lost sales.

3

(6)

- (c) One mark for each example given up to a maximum of two marks. Typical examples are power for the operation of machinery, indirect materials.

2

(20)

N.B. Assumes variable overheads are varying with output. Some will vary with input time (eg lighting, heating, costs). Textbooks (Drury et al) recognise this but tend to assume that variable overheads vary with input rather than output.



#### Question 4

Identify the major activities that take place in an organisation. This should cover the following:

- Activities are composed of units of work tasks.
- Activities are identified by carrying out an activity analysis.
- Activities chosen should be at a reasonable level of aggregation based on costs versus benefits criteria.
- The final choice of activities must be a matter of judgement. However, it can be influenced by the total cost of the activity centre and the ability of a single driver to provide a satisfactory determinant of the cost of the activity.

3

Assigning costs to cost pools/activity centres for each activity:

- This process happens after the activities have been identified.
- Many of the resources can be directly attributed to cost pools; others will be shared and will have to be apportioned on a suitable basis.
- The greater the amount of costs traced to activity centres by cost apportionments, the more arbitrary and less reliable the product/service cost information will be.

3

Determine the cost driver for each major activity:

- A cost driver must be selected for each activity centre/cost pool.
- It should provide a good explanation of costs in each activity centre/cost pool.
- The cost driver should be easily measurable and the data easy to obtain and to identify with products/services.
- The cost of measurement should be taken into account.
- Cost drivers should represent a reasonably homogenous measure of output for each activity.
- The final choice of the cost driver is likely to be based on managerial judgement.

3

Assigning the cost of the activities to products according to the product's demand for the cost driver.

- The final stage involves applying cost driver rates to products.
- Therefore the cost driver must be measurable in a way that enables it to be identified with individual products.

2

(11)

(b) The three main category activities can be classified into are:

- Unit-level activities – these are performed each time a unit of product or service is produced.
- Batch-related activities – such as setting up a machine or processing a purchase order, are performed each time a batch of goods is produced.
- Product-sustaining activities – are performed to support different products in the product line. They are performed to enable individual products to be produced and sold, but the resources consumed by these activities are independent of how many units or batches of the product are produced.

3

- (c) Advantages of Activity-Based Costing
- It allows for resource allocation at different activity levels; this information can be used for planning and estimating future expenditure.
  - It establishes a link between decision-making and cost behaviour.
  - It encourages a critical review of processes related to activities by exposing true cost, and facilitates cost cutting.
  - It is likely to give a more accurate estimate of product costs especially in multi-product, diverse organisations.

Disadvantages of Activity Based Costing

- There may be problems in defining activities and cost drivers.
- It is not always possible to monitor on a frequent basis in the short term.
- It requires a total review of the organisation's accounting and possibly managerial system.
- It is likely to be costlier to implement and maintain than traditional absorption costing.
- It may lead to behaviour changes that are sub-optimal from an organisational perspective.

*1 mark per point up to a maximum of 3 per advantage/disadvantage*

*To give a maximum of 6 marks*

*Other valid points can attract credit*

(20)

**Question 5**

(a) **Rohampton City Hospital NHS Trust**

**Budget 2002/2003**

	<b>Base Budget 2001/2002 (November 2000 prices) £</b>		<b>Base Budget 2002/2003 (November 2001 prices) £</b>	
<b>Pay</b>				
3 Cooks x £7,000	21,000	x 1.04	21,840	
8 Staff x £5,000	40,000	x 1.04 x 9/8	46,800	<i>1</i>
<b>Non Pay</b>				
Provisions:				
Patient	119,808	x 1.06	126,996	
Staff	23,400	x 1.06	24,804	
Uniforms	500	x 1.03	515	
Repairs	500	x 1.04	520	
Hardware	<u>250</u>	x 1.04	<u>260</u>	
Total Costs	<u>205,458</u>		<u>221,735</u>	
Income	<u>(31,200)</u>	x 1.06	<u>(33,072)</u>	
<b>Total</b>	<b><u>174,258</u></b>		<b><u>188,663</u></b>	<i>2</i>

**Rohampton City Trust Hospital**

**Budget 2002/2003**

	<b>Base Budget 2002/2003</b>		<b>Base Budget Outturn prices 2002/2003</b>	
	<b>£</b>	<b>(November 2001 prices)</b>	<b>£</b>	
<b>Pay</b>				
3 Cooks	21,840	(21,840 x 3/12) + (21,840 x 9/12 x 1.06) + (7,000 x 6/12 x 1.06)	26,533	1½
9 Staff	46,800	(46,800 x 3/12) + (46,800 x 9/12 x 1.06)	48,906	1½
<b>Non Pay</b>				
Provisions:				
Patient	126,996	x 1.08	137,156	
Staff	24,804	x 1.08	26,788	
Uniforms	515	x 1.06	546	
Repairs	520	x 1.07	556	
Hardware	<u>260</u>	x 1.07	<u>278</u>	
Total costs	<u>221,735</u>		<u>240,763</u>	
Income	(33,072)	x 1.07	(35,387)	
<b>Total</b>	<b><u>188,663</u></b>		<b><u>205,376</u></b>	2 (8)

(b)

<b>85% Occupancy</b>	<b>Original</b>		<b>Outturn</b>	
	<b>£</b>		<b>£</b>	
Per base budget 2002/2003	188,663		205,376	
Add Increase in patient provision (126,996 x 5/80)	<u>7,937</u>	(137,156 x 5/80)	<u>8,572</u>	
<b>New Total</b>	<b><u>196,600</u></b>		<b><u>213,948</u></b>	2
<b>95% Occupancy</b>	<b>Original</b>		<b>Outturn</b>	
	<b>£</b>		<b>£</b>	
Per base budget 2002/2003	188,663		205,376	
Add increase in patient provision (126,996 x 15/80)	23,812	(137,156 x 15/80)	25,717	
<b>New Total</b>	<b><u>212,475</u></b>		<b><u>231,093</u></b>	2

**Assumptions:** assumption that provisions cost will continue to vary directly with bed occupancy  
assumes every other cost and income will not change

(4)

- (c) The approach used in (a) is the incremental budgeting approach. It assumes that the current year's budget will be used as the basis for the next year's budget. It therefore concentrates upon marginal, incremental change from one year to the next.

The limitations are that it is backward looking as it looks to past budgets rather than the future requirements of the organisation. It assumes that existing budget patterns are relevant and satisfactory. It does not allow for an overall review of performance. It is reactive rather than proactive and does not deal well with new policy initiatives. It does not take account of outputs or objectives.

*1 mark to be awarded for each point up to a maximum of 5 marks.*

- (d) If zero-based budgeting had been used then current activity, not past activity, would be the main basis for building the budget. This would mean a systematic review and justification of the funding and performance of all existing programmes. The justification of resources for new activities. The determination and the clarification of objectives and the evaluation of alternative ways of achieving objectives.

*1 mark to be awarded for each point up to a maximum of 3 marks*

(20)

**Question 6**

(a) Relevant financial data:

Materials	£13,050	1
Labour	£19,500 Relevant alternative work available	1
Additional supervision	£5,400	1
Printing ink	£2,700	2
	(cost of buying £3,000 V to make labour + materials = £2,700)	
Machine A (Loss of realisable value)	£7,500	1
Machine B (1,200(machine hire)+ £450 (labour) x 12 weeks)	£19,800	2
Irrelevant costs:		
Materials purchase cost as a sunk cost		1
Full time supervisors cost as he/she is already in employment		1
Fixed overheads as these are a sunk cost		1
The overhead cost of making the specialist ink is irrelevant to the decision as these are sunk costs		1
Machine A depreciation as not a cash flow		1

*Marks include explanation of why it is relevant or irrelevant to the decision.*

(13)

(b) Net relevant benefit of accepting the special order:

	£
Materials	13,050
Labour	19,500
Additional supervision	5,400
Printing ink	2,700
Machine A	7,500
Machine B	19,800
Total relevant costs	<u>67,950</u>
Price of order	<u>75,000</u>
Net relevant benefit	<u>7,050</u>

On financial grounds we would accept the special order. 3

- (c) Qualitative factors which may influence the decision:
- The possibility of receiving repeat orders from the same source in the future.
  - Can the order be completed in time?
  - How will this affect our relationship with existing customers?
  - As it is a special one off order what is the possibility of staff not having the necessary experience for this type of work?

*1 mark per reasonable point up to a maximum of 4  
Other valid points can attract credit*

(20)