MANAGEMENT ACCOUNTING

Professional 1 examination
5 December 2001

From 2.00 pm to 5.00 pm
plus ten minutes reading time from 1.50 pm to 2.00 pm

Instructions to candidates

*Answer **five** questions: Two **questions** from Section **A** and **all three** questions in Section **B.** All questions carry equal marks.*

All workings should be shown. Where calculations are required using formulae, calculators may be used but steps in the workings must be shown. Calculations with no evidence of this (for example, using the scientific functions of calculators) will receive no credit. Programmable calculators are not permitted in the examination room.

Formula sheets, statistical tables, graph paper and cash analysis paper are available from the invigilator, where applicable.

SECTION A (Answer TWO questions)

1 ABC plc is a manufacturing company, which makes a product Zeta. The budgeted monthly production and sales are 200,000 units. A standard cost has been estimated on the basis of direct costs of £7.00 for materials (2 kg @ £3.50 per kg) and £6.00 for wages (half an hour @ £12 per hour). In addition, variable overheads have been determined as £2.00 per unit and monthly fixed overheads are £200,000.

Monthly sales for the first five months of 2002 have been estimated as:

	Units
January	210,000
February	180,000
March	210,000
April	220,000
May	200,000

Actual sales at the end of 2001 were 190,000 in November and 220,000 in December.

Cash received from sales is based on previous experience and is expected to be received 60% in the month of sale, 25% in the following month and 10% two months after the sale. It is expected that 5% will be irrecoverable and will be written off in the month of sale, as bad debts. The selling price is £18 per unit.

Creditors for raw materials are paid at the end of the month of purchase.

Direct wages are paid in the month in which they are incurred.

Variable overheads are paid 60% in the month in which they are incurred, and 40% in the following month.

Fixed overheads include £25,000 of depreciation and are paid one month after the costs are incurred.

At the 1 January 2002 creditors for variable and fixed overheads are estimated as £92,000 and £150,000 respectively.

The company intends to have finished stocks at the end of each month equivalent to 15% of the following month's budgeted sales. For raw materials stocks, the policy is to have 25% of the following month's production requirements.

Stocks at 1 January 2002 are estimated as 22,000 units of finished goods and 104,000 kg of raw materials.

The cash balance at 1 January 2002 is estimated as £31,000.

- **Requirement for question 1**

Produce for the months of January, February and March 2002:

(a) A production budget in units; *4*

(b) A materials purchases budget; *4*

(c) The cash budget; and *6*

(d) A budgeted Profit and Loss Account for the three-month period. *6*

(20)

2 South West Highways plc is looking into the possibility of investing in a new tarmac laying machine. Two possible tarmac laying machines have been identified, machine X and machine Y, both costing £500,000.

Machines X and Y both have an expected life of four years and have an estimated residual value of £100,000. Disposal will occur at the end of the four year period.

The expected net cash inflows resulting from the use of each of the machines is as follows:

Year	Machine X	Machine Y
	£	£
1	250,000	100,000
2	200,000	100,000
3	150,000	140,000
4	100,000	260,000

The cash inflows are calculated before deducting straight-line depreciation and the cost of capital to be used is 10%.

- **Requirement for question 2**

(a) Calculate for each machine:

(i) The accounting rate of return based on the average annual rate of return on average capital invested;
(ii) The payback period; and
(iii) The net present value. *10*

(b) Briefly discuss the relative advantages and disadvantages of the three methods of evaluation mentioned in (a) above. *9*

(c) Explain which machine you would recommend for purchase. *1*

(20)

3 Shipshire City Council operates a window making factory. The factory makes standard sized window frames for the local authority's window replacement programme and for all other local authorities in the South East of England. The production process is labour-intensive and the factory operates a standard absorption cost accounting system. The following information is provided for period 6:

Normal capacity, in direct labour hours	19,200
Budgeted variable production overhead	£6 per direct labour hour
Budgeted fixed production overhead per four-week financial period	£240,000

To produce one window frame takes four hours of working.

Actual figures produced for the four-week period 6 were:

Production, in units	5,000
Variable production overhead incurred	£115,600
Fixed production overhead incurred	£236,000
Actual direct labour hours worked	18,600

- **Requirement for question 3**

(a) As the cost accountant for the window making factory you are required to calculate the following overhead variances:

(i) The variable overhead expenditure variance;
(ii) The variable overhead efficiency variance;
(iii) The fixed overhead expenditure variance;
(iv) The fixed overhead volume variance;
(v) The fixed overhead volume efficiency variance; and
(vi) The fixed overhead volume capacity variance. *12*

(b) Comment on the usefulness to the management of the window factory of reporting the sub-variances for:

(i) Volume capacity.
(ii) Volume efficiency. *6*

(c) Give the names of two typical production costs which would be classified as variable production overhead expenses. *2*

(20)

SECTION B (Answer all three questions)

4 Public sector organisations have traditionally been noted for their lack of sophisticated costing systems and their use of relatively unsophisticated budgeting and control systems, compared with large manufacturing organisations. This is now changing with many public sector organisations such as NHS Trusts and local authorities now introducing Activity-Based Costing.

As a recently qualified accountant in your organisation you have been asked to give a talk to the trainee accountants on Activity-Based Costing. You have been asked to cover certain areas on Activity-Based Costing in your talk.

- **Requirement for question 4**

Prepare the notes for your talk covering the following areas:

(a) The main stages to be considered in the design of an Activity-Based Costing system. *11*

(b) The three major categories activities can be classified into, together with a brief explanation of each. *3*

(c) The advantages and disadvantages of an Activity-Based Costing system. *6*

(*20)*

5 You are the management accountant for Rohampton City Hospital NHS Trust. One of your duties as the management accountant of the Rohampton City Hospital NHS Trust is to prepare the hospital's catering budget. You have been provided with the 2001/2002 budget details.

Catering department - Rohampton City Hospital NHS Trust

2001/2002 Original estimates (November 2000 price base)

Statistics:
Number of beds 320
Bed occupancy 80% (to reflect average overall workload)
Patient meals per annum (assume 3 meals per patient per day)
80% x 320 x 3 x 365 = 280,320
Staff meals per week = 600

Unit costs:

Provisions - Ingredient cost of staff meals	£0.75
- Ingredient cost of feeding one patient per week	£9.00
Income from staff meals (per meal)	£1.00

2001/2002 Original estimates (November 2000 price base)

Pay:

3 WTE (wholetime equivalent) cooks at £7,000 p.a. each	£21,000
8 WTE kitchen/dining room staff at £5,000 p.a. each	£40,000
Total pay	£61,000

Non pay:

Provisions:	
Patients (£9.00 x 52 weeks x (80% x 320))	£119,808
Staff (600 x £0.75 x 52)	£23,400
Uniforms	£500
Repairs to kitchen equipment	£500
Hardware and crockery	£250
Income from staff meals (600 x 1 x 52 weeks)	£(31,200)
Total non pay	£113,258
Total budget	**£174,258**

In order to produce the 2002/2003 budget at November 2001 prices, the following information is available:

Staff received a 4% pay award operative from 1 April 2001.

An additional kitchen employee was appointed on 1 July 2001. No provision for this appointment appeared in the 2001/2002 original estimates.

Inflation for the period November 2000 to November 2001 is as follows:

Provisions	6%
Uniforms	3%
Other	4%

Income from staff meals rose over the period November 2000 - November 2001, by 6%.

Number of beds and bed occupancy for 2002/2003 will remain the same as that used for 2001/2002 original estimates.

After the original estimates had been produced, the Trust approved a development in the catering service. A full time cook will be appointed on 1 October 2002, £7000 p.a. at November 2001 prices.

Additional information

A staff pay award of 6% will take place on the 1 July 2002.

The expected full year effect on 2002/2003 spending of inflation, over the period November 2001 - 31 March 2003, is Provisions 8%, Uniforms 6% and Other (including income) 7%.

- **Requirement for question 5**

(a) Calculate the original estimates for 2002/2003 at November 2001 prices and the 2002/2003 budget at outturn prices. *8*

(b) Calculate the likely effect on the 2002/2003 original and outturn estimates if bed occupancy turned out to be 85% or 95%, and state your assumptions. *4*

(c) Comment on the assumptions and limitations of the approach used in (a). *5*

(d) If you had used a zero-based budgeting approach to the budget preparation in part (a), how would your approach have differed? *3*

(20)

6 MapU is a central government agency and is operated on commercial principles. It produces a range of different types of maps for use by central and local government, and also takes on specialist orders from the private sector. MapU has received an enquiry for a quantity of specialist maps from a private sector engineering company. The price suggested by the engineering company for the order is £75,000.

The estimated production requirements for the order are as follows:

Materials

These are already in stock because of an overestimation in a previous order. The materials cost £11,250 but have a current realisable value of £13,050.

Labour

The Production Department already has sufficient orders to keep the labour in the department fully occupied. The direct wages cost of the staff that would be involved in the order is £10,500, but to ensure the order can be fulfilled other work earning a contribution of £9,000 would have to be forgone.

Supervision

This particular order, because of its unique nature, will require a high degree of supervision. This will result in one supervisor being in full time attendance on the order for 12 weeks, which can be accommodated within present capacity. Supervisors are paid £500 per week. However, due to the high level of supervision needed on this order, additional supervision will be required. This additional supervision will be carried out by other employees already on other work. They will need to spend 6 weeks on this order, and the other work will need to be covered, at a cost of £5,400, by agency staff.

Fixed overheads

These will be apportioned on the normal bases and for the order these will amount to £22,500.

Specialised printing ink

This can be bought in for the order at a cost of £3,000 or mixed using existing stock of printing ink at a cost of £4,500, arrived at as follows: Variable Labour £1,500, Materials with resale value of £1,200 and Fixed overheads £1,800.

Machine A

Machine A is owned by MapU. £15,000 of depreciation would be apportioned to the job, following normal depreciation policy. The machine is currently due for replacement and if sold immediately would raise £18,000, but if used on the order would only realise £10,500, in the future.

Machine B

Machine B is leased by MapU at a cost of £1,500 per week on a long period agreement. Accepting the order would mean withholding this machine from other work, and temporarily hiring a substitute machine. The substitute machine hire would be at £1,200 per week for 12 weeks - it is worth noting that this is an older model of machine B. As a result, additional production labour will also be needed for that period to maintain output. This will be at a cost of £450 per week.

An estimate has been made for the order indicating that the order should not be taken as it would generate a loss. The details are as follows:

	£
Materials	11,250
Labour	10,500
Supervision	11,400
Overheads	22,500
Components	3,000
Machine A - Depreciation	15,000
Machine B - Lease	18,000
Total cost	91,650
Price offered	75,000
Loss	**16,650**

- **Requirement for question 6**

(a) Identify the relevant and non-relevant data relating to the decision faced by MapU and explain why the data falls into either the relevant or non-relevant category? *13*

(b) Re-assess the estimate that has been made on the order, taking account of the relevant financial data only and determine whether or not to accept or reject the order. *3*

(c) What qualitative factors may influence the decision of MapU to accept or reject the order? *4*

(20)