# ACCOUNTING FOR DECISION MAKING

## Professional 1 examination
## 7 June 2000

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 **four** questions in total: Question **one** from Section **A**, and **three** questions from Section **B**. The marks available for each question are shown in italics in the right-hand margin.*

*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 examinations room.*

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

## SECTION A (Compulsory)

**1** Lynx Electronics plc manufactures consumer audio and video products. The portable cassette player division has been giving cause for concern. The following information relates to the division's four products for the financial year just ending:

| **Model:** | **A** | **B** | **C** | **D** |
|---|---|---|---|---|
| Sales volume (units) | 20,000 | 87,000 | 8,000 | 6,000 |
| Unit selling price (£) | 35 | 48 | 90 | 45 |
| Variable cost per unit (£) | 6 | 6 | 19 | 8 |

Divisional fixed costs for the year (including a share of central company overheads) were £5,000,000.

Model A is the oldest in the range. It was very successful when first launched but sales have fallen and now seem to be steady at 20,000 a year. The Marketing Director has suggested that the company should plan to replace it but should aim for one more year's sales while a replacement is prepared. He suggests that a re-launch of model A with a new casing should boost sales in its final year. The re-launch will have a one off cost of £100,000.

Evidence from similar re-launches in other divisions suggest the following possible results for model A:

| | |
|---|---|
| No increase in sales volume: | probability 20% |
| 20% increase in sales volume: | probability 50% |
| 30% increase in sales volume: | probability 30% |

Model C is the top of the range. It has sold steadily since it was introduced. The current variable cost of £19 per unit reflects a recent significant increase in the cost of some components. The Marketing Director has suggested that a 10% price increase could be introduced without affecting sales levels. Alternatively a 20% increase would be possible but could be expected to reduce sales volume by 4%.

Model D is the most recent addition to the range. It is a "sports" model which was introduced to compete with similar models being offered by other firms. Most manufacturers have experienced disappointing results from this type of model. The Marketing Director wants to withdraw model D. This could be expected to cut divisional fixed costs by £175,000.

The company sets divisional managers a target that each of their products should achieve a net profit equal to 4% of sales.

Divisional fixed costs are absorbed in proportion to sales income.

Inflation over the next year is expected to be negligible.

You are a trainee management accountant with Lynx Electronics and you have been asked to investigate the portable cassette player division.

· **Requirement for question 1**

(a) Prepare a statement of the financial results for the division showing the contribution from each product and in total. The statement should also show the performance of each of the products and the division as a whole compared with the management target. *10*

(b) Evaluate the position of models A, C and D, and recommend what action should be taken in relation to each, giving your reasons. *11*

(c) Comment on the management target, showing how it may lead to sub-optimal decisions, and suggest a more appropriate type of target. *4*

*(25)*

**SECTION B (Answer three questions)**

**2** Clampdown NHS Trust has a number of operating theatres, one of which is dedicated to fee-paying private patients. The theatres are supported by non-medical support departments, the costs of which are charged to theatres, and to other medical departments, using a 'specified order of closure' for dealing with the services provided reciprocally between these support departments. The order of closure is Estates, Finance/IT and then Human Resources. Relevant details are:

| Department | Apportioned by | Floor area (m2) | Staff numbers | Work done by Finance/ IT (%) | Budgeted expenditure (£) |
|---|---|---|---|---|---|
| Estates | Floor area | 100 | 40 | 10 | 9,000,000 |
| Finance/IT | Percentage work done | 500 | 100 | - | 4,000,000 |
| Human Resources | Staff numbers | 300 | 10 | 10 | 800,000 |
| Theatres | | 900 | 60 | 20 | |
| Other medical departments | | 6,000 | 600 | 60 | |
| **Total** | | **7,800** | **810** | **100** | |

Within theatres, the apportioned support department costs are split between private patient and other theatres according to budgeted operating hours. Budgeted annual activity is 18,000 operating hours, of which 20% is expected to be private patients.

Also, other costs are already directly attributed to **private patient theatres**, as follows:

| Cost item | Budgeted cost (£) |
|---|---|
| Nursing and Medical staff | 600,000 |
| Administrative staff | 170,000 |
| Medical and surgical supplies | 230,000 |
| Drugs | 300,000 |
| Capital charges on equipment | 50,000 |
| Domestic expenses (catering, laundry, etc.) | 50,000 |
| **Total** | 1,400,000 |

The costs of administrative staff, equipment capital charges and domestic expenses are absorbed, along with support department recharges, into individual operations as overheads at a rate per operating hour. 10% of these overheads varies with operating hours. Other costs listed above are directly identified with each operation.

Since the budget was set, a neighbouring private hospital, which has experienced a recent fire, has approached Clampdown to see if it could hire some private patient operating theatre capacity at short notice. It wishes to book in 20 Operation As at Clampdown. Clampdown can accommodate the extra workload but 10 Operation Bs may need to be cancelled as a result, and the private patient income from them, at a price of £2,000 each, foregone. If Operation Bs are cancelled the staff freed up could not be redeployed on Operation A due to the specialised nature of the operations.

While Clampdown hope to be able to charge the current price for these extra operations, they are prepared to accept a lower price. Most private patient prices currently achieve mark-ups on full cost of around 50%. The neighbouring hospital is one with which Clampdown hope to collaborate in future, and it is known that Clampdown is not the only hospital that they could use for this extra work.

Details relating to operations A and B are as follows:

| | **Operation A per unit** | **Operation B per unit** |
|---|---|---|
| Nursing and Medical staff (£) | 400 | 300 |
| Medical and surgical supplies (£) | 100 | 200 |
| Drugs (£) | 100 | 250 |
| Operating hours | 3 | 4 |

If the extra work went ahead the nursing and medical staff hours would need to be resourced by external staff, which cost on average 50% more than the costs shown above.

· **Requirement for question 2**

(a) Calculate the price that would be quoted to the neighbouring hospital by Clampdown for the extra work if it is based upon:

(i) operation A's normal full unit cost plus 50%. *9*

(ii) the opportunity cost of operation A both with and without any effect on the volume of operation Bs conducted. *5*

(b) Discuss the arguments for and against using the two costing methods in (a) for pricing the extra work for the neighbouring hospital. *7*

(c) Mention briefly other factors that management should consider before reaching their decision. *4*

*(25)*

# 3

Jimmyjazz plc made three products last month, X, Y and Z. Their production details are:

| | **Product X** | **Product Y** | **Product Z** |
|---|---|---|---|
| Production/sales (units) | 20,000 | 25,000 | 30,000 |
| Unfulfilled demand (units) | 0 | 5,000 | 5,000 |
| | **£** | **£** | **£** |
| Price per unit | 50 | 80 | 100 |
| Unit Cost | | | |
| Materials | 10 | 25 | 35 |
| Labour | 20 | 25 | 25 |
| Overheads (Note 1) | 10 | 25 | 35 |
| Profit | 10 | 5 | 5 |

(Note 1): Overheads are fixed costs. All other costs are variable.

The products used the following resources per unit of output last month:

| | **Product X** | **Product Y** | **Product Z** |
|---|---|---|---|
| Materials (kgs.) | 2 | 5 | 7 |
| Labour (hrs.) | 4 | 5 | 5 |
| Machines (hrs.) | 10 | 12 | 18 |

During last month there were available for production 445,000 kilogrammes of materials, 355,000 labour hours and 1,200,000 machine hours. In the coming month, the same resources will again be available, except for the loss of 200,000 machine hours compared to last month, due to a planned machine overhaul. In addition, though, an expected fall in demand for Product X has led Jimmyjazz to focus production exclusively on Products Y and Z next month. However, given that Product Y is, to some extent, a substitute for Product X, the company has decided to produce at least as many Product Ys as Product Z in the coming month.

All prices and costs can be assumed to be as per last month but no limits on demand for Y and Z are envisaged. Each product can also be assumed to be capable of manufacture in fractions of units.

- **Requirement for question 3**

(a) Calculate the profit earned last month, and evaluate to what extent this maximised the company's profit given the available resources last month, quantifying the level of any forgone profit. *9*

(b) Using an appropriate graphical method, determine the profit maximising mix of Products Y and Z for the coming month, and calculate the resulting profit. *10*

(c) Calculate a single relevant shadow price, and explain briefly the significance of your result. *6*

*(25)*

**4** The Ship Services Agency is investigating the possibility of equipping HMS Costcutter, one of the Navy's largest war ships, with a new nuclear power plant during the forthcoming financial year. The following information has been provided:

- The capital cost of the project would be £20 million.
- The installation of the new power plant would take one year and would need to be paid for in two equal instalments, the first of which would be made at the time the contract was signed and the second on completion.
- The Agency has nuclear facilities at one of its dockyards. These are due to be de-commissioned over the next few weeks at a cost of £1 million. However, these facilities will be needed if it is decided to go ahead with re-equipping HMS Costcutter, so the de-commissioning would be delayed for a year.
- The new power plant would have a useful life of 25 years after which it would need to be safely disposed of; the disposal cost at today's prices has been estimated at £10 million.
- The new power plant would be expected to reduce the running cost of the ship by £2 million a year.
- The Treasury Test Discount Rate is currently 6% in real terms.

The Agency's chief executive has suggested that major "spend to save" projects of this kind should only be accepted if they pay back their initial capital cost within 10 years of the start of the project.

The Agency's un-committed capital budget for the forthcoming financial year is £320 million. The following programme of desirable capital works has already been identified for the year. The nuclear power plant project would be added to this list if it could be demonstrated that the cost of the plant would be outweighed by the savings.

| Project | Capital Cost (£m) | Net Present Value (£m) |
|---|---|---|
| A | 170 | 21 |
| B | 150 | 19 |
| C | 100 | 14 |
| D | 40 | 4 |

- **Requirement for question 4**

(a) Calculate the payback period and net present value of the power plant project. *10*

(b) Calculate the percentage change in the annual savings figure needed to make the Net Present Value equal to £0. *3*

(c) Prepare a short briefing note for the Agency's chief executive in which you:

- comment on the significance of the figure calculated in (b) above;
- explain whether the power plant project would be justified from a financial point of view (assuming capital could be made available); and
- comment critically on the chief executive's view that only projects which can pay back within ten years are acceptable. *8*

(d) Establish which of the five capital projects (A – D plus the new power plant) should be implemented next year in order to achieve the best overall value for money from the available capital funds. *4*

*(25)*

**5** TM Contracts plc is a large construction firm. It has been awarded a contract to construct a large new manufacturing plant and corporate HQ for a major client which is aiming to re-locate all its activities on one site.

The construction project is expected to last 5 years and to involve between 45 and 50 office based staff throughout that period. The staff involved will need to be located near to the construction site throughout the project and the company is looking at options for providing office accommodation. Two options have been identified:

**Option 1:** Lease. A 12 storey office building has been identified near the site. A five year operating lease is available on one floor of the building. This would be just large enough to house the required number of staff. The initial (non capital) moving in costs are estimated at £25,000 and the rent and other costs will be £55,000 per year payable annually in advance.

**Option 2:** Buy. A small, freehold office building near the site, with enough space to house the required number of staff, is available for sale at a cost of £200,000. Ongoing costs, including a high standard of maintenance, are expected to amount to £18,000 a year. On completion of the project the company would need to dispose of the building; the best estimate of its disposal value is that it would be equivalent to the purchase price adjusted for five years' inflation.

All costs are stated at today's prices. TM Contracts plc has a weighted average cost of capital of 17% after tax, in nominal terms. Inflation is expected to be 4% a year for the foreseeable future.

TM Contracts plc is subject to corporation tax at 30%. All non capital costs mentioned above, including operating lease payments, are allowable against tax. Capital allowances are available on commercial property, starting in the first year of occupation at a rate of 4% a year on a straight line basis. You should assume that corporation tax is paid at the end of the year following the year to which it relates.

· **Requirement for question 5**

You are required to write a report for the project manager in which you:

(a) Appraise the two options financially; *14*

(b) Using the results from part (a), indicate which is the more cost effective option, and calculate by how much the estimated disposal value would need to change in order to change your conclusion, explaining the significance of your result; and *7*

(c) State any significant assumptions you have made. *4*

*(25)*