

# ACCOUNTING FOR DECISION MAKING

**Diploma stage examination  
7 December 2005**

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: **One** question 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 examination room.*

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

*Where a question asks for a specific format or style, such as a letter, report or layout of accounts, marks will be awarded for presentation and written communication.*



**SECTION A (Compulsory)****1**

Boweshire County Council has operated its own quarry service for over forty years. Five years ago the service became an independent business unit (TQS – The Quarry Service) responsible for its own strategic and operational development, subject to overall Council scrutiny and financial guidelines. Two quarries are currently being actively used, at Limegate and at Stonefoss. The operation is mainly concerned with the quarrying of roadstone and aggregate for use in road repair and maintenance. It is responsible for supplying approximately 75% of the Council's requirements at the present time and there is an open-ended agreement for this arrangement to continue into the future. In addition, TQS can sell materials to private contractors, although this has not been possible up to the present time. However, this is a market which has grown significantly in the last five years with an expansion of housing developments within the council area. It is estimated that the Limegate quarry is capable of sustainable development for a minimum period of twelve years, but Stonefoss is nearing the end of its life and will need to be decommissioned in three years time. Limegate accounts for 90% of current production.

The Quarries Manager operates a differential tariff and plans to charge a premium of 30% on materials supplied to private contractors. He has estimated that he could sell material to these contractors, but the quarries are constrained by a priority need to meet the council's requirements and by the capacity of the existing machines which are used. The machines are very basic and are all in excess of ten years old. Whilst little has changed technologically during this period the machines themselves are not as efficient as they could be and have become increasingly susceptible to breakdown. They could, however, probably still be used for up to ten years, albeit with a higher risk involved in their operation.

The Quarries Manager has put forward a proposal to purchase three new machines for Limegate and has estimated that they could increase the production capacity of the quarry by 15% per annum. He is confident that the whole of this additional 15% could be sold on to private contractors. Together with the Quarry Accountant he has produced some figures covering the financial implications of the potential investment.

The Council produced guidelines for the management and development of TQS following an overall review of service provision carried out in 1999/2000. All new investment must be subjected to a net present value (NPV) appraisal using a discount rate equivalent to the authority's real cost of capital. The average loan rate for the authority is 8.65% and inflation is estimated at 2.5%. TQS has been asked to operate in accordance with the Council's environmental policies which fully embrace the twin ethics of recycling and sustainability.

Each of the new machines would cost £25,000 to purchase. They would replace existing machines, but those machines are extremely old and have no resale value. In fact, it would cost £500 in total to dispose of them safely. The new machines would be more efficient and should each provide savings in running costs, mainly due to maintenance and repairs. This should be £2,000 per machine per annum. However, these savings would be partly offset by additional variable costs arising out of the extra production. For every 1% increase in production this would be £100 per annum.

The Quarry Manager has assumed no change in either the volume or the price of material supplied to the Council, but has estimated that an additional 15% of

production would be equivalent to 13,500 tonnes of material priced at £2.60 per tonne. This reflects the premium price currently being charged to private contractors.

The new machines would have an expected life of ten years. The likelihood of any form of obsolescence appears extremely low. TQS policy would be to purchase assets with this projected life span. The additional volume of quarrying would have an effect upon the projected sustainable life of the quarry and would probably reduce this by two years. The net value of lost production in those two years has been estimated as £65,000 per annum.

In three years time Stonefoss will close. The service will lose 10% of its current production, and the Council would then require a proportion of the increased production at Limegate which would reduce the amount available for sale to the private sector.

An alternative proposal has been put forward and it has been agreed that it should be evaluated, although it does not have the support of the Quarries Manager. It has been suggested that the existing machinery at Stonefoss could be transferred to Limegate. The view is that this machinery would be able to increase output to an equivalent degree to the new machines. This would mean closing Stonefoss prematurely and there would be some decommissioning and relocation costs. The workforce could all be re-deployed at Limegate and there would be a neutral effect on running costs. The one-off changeover cost is estimated at £12,000.

The Council's road repair and maintenance service may be reorganised shortly if negotiations to form a PPP consortium with neighbouring authorities and private sector partners are successful. It is probable that this development would have an impact upon demand for quarry products. This could take the form of a reduction in demand if the consortium chose to source its requirements elsewhere and would leave the quarry with its private sector customers only. Alternatively it could lead to an increase in demand, but the consortium would be unwilling to pay the premium which it is planned to charge the private sector. The probability of the consortium sourcing externally has been estimated at 25% by the Chief Executive and she has also estimated that there is a 25% chance of the consortium taking all of the quarry production.

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• **Requirement for question 1**

- (a) Using the information provided by the Quarry Manager calculate the net present values (NPV) of the two proposals. Comment upon the results of your calculations and recommend which option should be adopted. Ignore the possible effects arising out of the formation of a PPP consortium. Choose an appropriate period for your NPV calculation and state clearly any assumptions made. 14
- (b) Discuss three approaches which can be used to take account of risk and uncertainty in the investment appraisal process. Evaluate the sensitivity of your NPV analysis to changes in sales volume. How useful a tool is sensitivity analysis in evaluating project risk? 10
- (c) Discuss the likely effects of the formation and operation of a PPP consortium. How can this risk be dealt with? How can the use of expected values be helpful in this situation? (No calculations required.) 6

- (d) Apart from the financial considerations what other factors should be taken into account before reaching a decision on this investment? How might you incorporate these factors into a decision-making model? Overall, what course of action would you recommend to Boweshire County Council?

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**SECTION B (Answer three questions from this section)**

**2**

As part of its responsibility as a local education authority Mickleton Council has developed a training facility, the Winston Centre, which it makes available to schools both inside and outside of its area. Schools have resources available to spend upon training, but they are not obliged to purchase training from the Council and there is competition from other neighbouring local authorities.

For the past five years the Centre has struggled to make ends meet and has failed to meet financial targets at any time during this period. The run-down nature of its facilities and poor management has been blamed for this.

The Centre has been closed for six months during which time extensive refurbishment has taken place. The Centre is due to be re-launched shortly with a major publicity and marketing campaign. Although the Centre provides a range of services it is expected that 80% of its income will come from training courses for which charges will be determined based upon a daily rate. A new price is to be set to reflect the improvement in facilities and also to meet a financial objective of achieving break-even or better. It is felt that the determination of this charge at the correct level will have an important bearing on the future financial viability of the Centre.

There has been criticism of the refurbishment work within the authority and this has been the subject of adverse publicity in the local press. The management of the centre is under pressure to make the centre a success and to demonstrate that it will not be a burden on local taxpayers.

An analysis of demand for the Centre over the last four years and a market research questionnaire have resulted in the following estimations of attendance at three possible levels of daily charge. (This charge is for a full day's course to include teaching, provision of a room and course materials and refreshments.)

State	Probability	£40 per day Est. number of attendees	£50 per day Est. number of attendees	£60 per day Est. number of attendees
Pessimistic	0.3	33,000	24,000	19,000
Neutral	0.4	38,000	26,000	21,000
Optimistic	0.3	40,000	30,000	22,000

Variable costs are estimated as being £18 per attendee per day.

• **Requirement for question 2**

- (a) What price should the Centre charge based upon the:
- Maximax model
  - Maximin model
  - Minimax regret model?
- (b) Define and explain the aims of each of the models and compare them with the use of expected values. Calculate expected values for each of the pricing options and compare the outcome with those provided by the models used in

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- part (a). Given the circumstances surrounding the refurbishment and re-launch of the centre and the limited information available to you, what price would you recommend should be adopted and why? 10
- (c) What is the difference between risk and uncertainty? Illustrate your answer with one example of each based upon the scenario. 5
- (20)**
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# 3

Dustblow has developed a revolutionary new domestic cleaner which is based upon blowing dust and dirt away rather than sucking it up. It manufactures and sells two versions of its product, the Basic and the Supreme. Most of the sales are made through direct marketing and via the internet.

Manufacturing costs are split between direct and indirect costs. Direct costs include costs of materials, labour and machines. Each product is produced using a specific group of machines. Dustblow uses a partial activity based costing methodology and collects indirect costs into three cost pools, the procurement of materials, quality control (which includes testing and inspection of the product) and the costs of repairing defective products (rework). The total amounts incurred by Dustblow in 2005 were:

- Procurement - £640,000 (80,000 orders placed during year)
- Quality control - £350,000 (70,000 hours spent on product testing)
- Rework - £200,000 (40,000 hours spent on repairing defective products).

In addition, costs are also incurred under the headings of design, marketing and distribution, but not allocated on an activity base. These costs are apportioned on the basis of total direct cost and in 2005 this was at a rate of 25%.

During the year 2005 Dustblow manufactured and sold 100,000 Supremes. It had no finished goods stocks at the beginning or the end of the year. It made a profit of £3,000,000 on those sales. Other relevant information is given below:

1. Direct materials costs per unit of Supreme are £45
2. Direct labour costs per unit of Supreme are £12
3. Direct fixed costs of machines used for Supreme are £1,500,000 per year
4. Number of orders for the manufacture of Supreme is 50,000 per year
5. Number of testing hours for Supreme was 40,000 and the number of hours spent on rework was 20,000 per year.

Pricing policy has been quite uncoordinated and the price charged has varied in different markets. Dustblow is now wanting to remedy this by introducing standard prices and gaining more control over pricing and profit. It is considering using cost plus pricing, but it has also been suggested to them that target pricing might be more appropriate. A competitor has recently entered the market and its product, the Windyvac, is a direct competitor for the Supreme and is widely available at £115.

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• **Requirement for question 3**

- (a) Calculate the total costs for the Supreme in 2005 and produce a statement which clearly shows profitability per unit and the average price being charged during 2005. 4
- (b) Explain what is meant by cost plus pricing and show the effect of adopting a mark-up of 25% on total product costs. What are the drawbacks of this method? 4

- (c) Explain what is meant by target pricing. Assuming a need to price competitively in comparison with the Windyvac, how would Dustblow maintain the current operating profit per unit? Outline the steps in the process. (Assume no change in the level of sales). 8
- (d) How would you distinguish between value-added and non value-added costs and how might this distinction help Dustblow achieve its target operating profit? 4
- (20)**
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# 4

Thwaite NHS Trust has allocated £4.2m to “spend to save” projects for the year 2005/2006. Four projects have met the criteria set by the capital planning group and are now being considered. It would not be possible to carry out all four investments as the total sum required to finance them exceeds the allocation.

Information on the four schemes is provided in the table below. Two of the schemes have a ten year life span and the other two have an eight year life span. The table shows net discounted cash flows in each year. A rate of 3.5% has been used.

**Table 1. Capital projects – spend and save schemes**

Scheme	Initial £m	Yr 1 £m	Yr 2 £m	Yr 3 £m	Yr 4 £m	Yr 5 £m	Yr 6 £m	Yr 7 £m	Yr 8 £m	Yr 9 £m	Yr 10 £m
A	-1.70	0.12	0.25	0.30	0.35	0.35	0.35	0.30	0.30	0.25	0.25
B	-0.80	0.25	0.24	0.23	0.22	0.21	0.20	0.19	0.18	0.17	0.16
C	-2.40	0.50	0.48	0.46	0.44	0.42	0.40	0.38	0.36		
D	-1.15	0.30	0.30	0.32	0.32	0.28	0.18	0.15	0.10		

Each of the projects meets the Trust's strategic objectives and is consistent with Department of Health priorities. Scheme B is divisible and would provide a corresponding return relative to the amount of investment, but the schemes A, C and D are not divisible. Discussion has been going on for some time surrounding the need for a structured approach towards capital rationing.

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• **Requirement for question 4**

- (a) Calculate the NPV of each of the projects under consideration. Using an appropriate method rank the schemes in order and suggest what action should be taken by the Trust on the basis of your analysis. What are the limitations of this type of analysis? Outline and apply an alternative approach that could be taken. How would your analysis have differed if all the schemes had been divisible?
- (b) Distinguish between hard and soft capital rationing and give an example of how each may occur. Comment upon the use of financially-based capital rationing in the public sector. How could non-financial factors be incorporated into the Trust's decision-making rules?

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# 5

Truth is an independent charity which provides welfare services and advice to asylum seekers. It has grown rapidly over the last five years and now employs a core of full time professional staff and operates out of five advice centres located in a large urban area in the north of England.

The manager of the largest advice centre has argued that the organisation would benefit from gaining a quality accreditation and has suggested that it should apply for QualMark status. At the present time the organisation does not employ a formal performance management framework, but in order to apply for QualMark it would have to demonstrate the existence and use of such a system. Balanced Scorecard and Business Excellence are two models which have been mentioned briefly in discussions at management board.

You are the management accountant, but your role is wider than simply being involved with financial considerations. Increasingly you are being seen as the management board member with responsibility for performance management.

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- **Requirement for question 5**

Produce a report on the issues referred to above for the next meeting of the management board. The report should cover:

- (a) An outline of the nature and content of Balanced Scorecard and Business Excellence and an indication of what you see as the strengths and weaknesses of each approach. Use diagrams as appropriate. 13
- (b) Discussion of the issues that might arise in relation to the use of a performance management framework in an organisation such as Truth. 4
- (c) An indication of the importance of a financial input into performance management and how that is reflected in the two frameworks under consideration. 3

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