MANUFACTURING ENGINEERING TRIPOS PART I

Saturday 26 April 2003 9 to 12

Paper P3

MANAGEMENT ECONOMICS AND ACCOUNTING

Answer not more than ***four*** *questions.*

All questions carry the same number of marks.

The ***approximate*** *percentage of marks allocated to each part of a question is indicated in the right margin.*

You may not start to read the questions printed on the subsequent pages of this question paper until instructed that you may do so by the Invigilator

1 (a) Explain briefly what is meant by each of the following accounting terms:

(i) matching concept;

(ii) accruals concept;

(iii) share premium account;

(iv) minority interests. [20%]

(b) Sam Snoad runs the golf professional shop at Amenturn Golf Club, which he started one year ago on 1 January 2002. To finance the business, Sam took out a bank loan of £28,000 and invested an equal amount of his own savings. There is a 5% annual interest charge on the loan, which is paid at the end of December each year. Sam previously earned a 5% return on his savings before investing them in the golf shop.

At the end of June 2002, Sam invested in a state-of-the-art golf instruction machine. The machine cost £25,000 and will probably be used for 10 years, at which time it will be sold for £5,000.

In January 2002, Sam purchased 30 sets of golf clubs at a cost of £1,000 each. By December 2002, Sam had sold 15 of these sets for a 50% profit. One of the 15 unsold sets had become a collector's item and increased in value to £10,000. In December 2002, Sam had ordered and paid in advance for 15 more sets, at a cost of £1,000 each, which were due to arrive in February 2003.

Every month, Sam gives a two-hour golf lesson to each of the 50 club members. The hourly rate is £30 and the members pay for their lessons at the end of the following month. During the month of January 2003, one of the club members passed away, leaving all his possessions to the local dogs' home.

At the end of February 2002, Sam recruited a promising young golf professional, Ben Hogal, who is paid £12,000 per annum. Ben's success in local golf competitions in 2002 is likely to result in twice as many lessons being given in 2003. However, Ben's dedication to practice in 2002 resulted in excessive use of the shop's practice ground, which may cost up to £1,000 to repair.

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Sam rents the professional shop for £10,000 per year, payable in advance in equal instalments on 1 January, and 1 July each year. Taxation is 35%, and is payable six months after the end of the financial year. Sam intends to reinvest any profits made back into the business. On 31 December 2002, the golf shop had a £20,100 cash balance.

Prepare a profit and loss account, balance sheet, and cash flow statement for Sam's golf shop for the year from 1 January 2002 to 31 December 2002. Show your workings clearly and briefly explain any assumptions you make. [80%]

2 (a) Discuss the advantages and disadvantages of discounted cash flow techniques of investment appraisal. [40%]

(b) How should a firm determine the appropriate discount rate to be used in its investment appraisal method? [60%]

3 (a) Under what conditions is the market valuation of a company a function of its retention ratio? Discuss the validity of these conditions. [60%]

(b) What factors influence management in their choice of the retention ratio? [40%]

4 'Economies of scale are the most important determinant of changes in U.K. industrial concentration in the post-war period.' Discuss. [100%]

5 'The rapid development of e-commerce will tend to reduce the strength of industry competition and be detrimental to consumer welfare.' Discuss. [100%]

6 Bunters Ltd produces special equipment, where each job is undertaken according to specific instructions from the customer. For each job, the company's management accountant estimates the direct materials cost and the direct labour cost. Variable overhead and fixed production overhead are estimated as standard percentages of direct labour cost, where the standard percentages are set equal to the actual percentage relationship in the previous financial year. The sum of all these items gives a total cost for the job, to which is added 5% for the price charged to the customer. The results for the year 2001 were as follows:

	£	£
Sales		255,150
Direct labour cost	120,000	
Direct materials cost	27,000	
Variable overhead cost	60,000	
Fixed production overhead cost	36,000	
Net profit		12,150

During 2002, business fell by 10% measured in labour hours required. However, for organisational reasons, the labour force could not be reduced below the level of 10 employees. The company simply paid for idle time and therefore total wage costs for 2002 were the same as 2001, as were total fixed costs and total variable costs. Direct materials costs were £23,000. At the end of 2002, the management accountant was surprised to find that the company had made a loss even though each job had shown a satisfactory profit.

(a) Prepare a calculation showing the loss for the year 2002 and comment critically on Bunters pricing system. [40%]

(b) When firms use cost-plus pricing methods, which factors may determine the size of the mark-up charged? [20%]

(c) At the start of 2003, Bunters had just completed production of an item of special equipment for a customer, only to be notified that the customer no longer wanted the equipment. The costs incurred to date were £25,200, which included £9,800 on direct materials. The customer had already paid a non-returnable deposit to Bunters

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of £3,000. However, the management accountant had found another potential buyer who would buy the equipment if it could be converted. The conversion work would require direct material costs of £1,920, and one worker to work for four weeks at £160 per week. Variable and fixed production overhead would be absorbed as described in the first paragraph. Demand had continued to be at the same level as 2002, and thus the labour force had a workload of only 90% of its standard capacity. In the original equipment, there were two types of material, A and B. Type A would need to be scrapped, at a cost to Bunters of £220. Type B could be sold for scrap for £480 but it would take 24 hours of casual labour paid at £4 per hour to put it in a condition in which it was suitable for sale. The direct materials required for the conversion were already in stock. If these direct materials were not needed for the conversion they would be used in other production, in place of materials that would otherwise need to be purchased at a cost of £1,760. If the equipment were to be scrapped, the design plans could be sold to a different customer for £900.

Calculate the minimum price that Bunters should quote for the converted machine if this is the best option. Explain clearly how you have reached this figure and conclusion. [40%]

7 'The empirical evidence shows that mergers and acquisitions result in large share price gains at the time of announcement and tend to cluster in industries undergoing significant change. Such evidence provides little basis for government regulation of mergers and acquisitions.' Discuss. [100%]

8 'During the 1980s and early 1990s it was very difficult to accurately measure the performance of U.K. companies that used acquisition accounting. However, acquisition accounting is now a far superior accounting technique to merger accounting, which should be banned and replaced by acquisition accounting.' Discuss. [100%]

9 Atkins plc currently estimates the level of manufacturing overhead costs relating to its processing plant using the traditional overhead allocation method, relying solely on machine processing hours. However, Atkins wants to examine the impact of using activity based costing methods, and to evaluate whether it should change its basis of overhead allocation. The expected annual costs at the plant for 2003 consist of handling materials (£17,400), production set up (£46,400), processing inspection (£52,200), and machine maintenance (£29,000). The estimated levels of activity for 2003 consist of the number of inspections (348), set-up hours (1,160), number of times that machines are filled (290), and machine processing hours (11,600). During April 2003, processing included production of two products, A and B, for which the following information is available:

	A	B
Set-up hours	58	12
Cost of direct labour (£)	6,960	5,220
Processing hours	348	278
Labour hours	870	638
Cost of material inputs (£)	9,280	8,120
Number of times that machines are filled	17	3
Number of units produced	1,740	1,450
Number of inspections	17	6

(a) Assuming that all overheads are allocated on the basis of machine processing hours, calculate the unit cost of each product. [20%]

(b) Assuming that overheads are allocated using activity based costing, use appropriate cost drivers and calculate the unit cost of each product. [20%]

(c) Explain any differences in the estimates for each product, and discuss the implications for the choice of cost allocation method. [20%]

(d) What are the advantages and disadvantages of implementing and using an activity based costing system? [40%]

10 Two profit-maximising firms operate in the same market producing an identical good. The monthly total cost curves of these firms are:

Firm 1: $£TC_1 = 40{,}000 + 200X_1 + X_1^2$

Firm 2: $£TC_2 = 80{,}000 + 400X_2 + 0.8X_2^2$

where X_1 and X_2 are the units produced and sold by Firm 1 and Firm 2 respectively.

The market price for this good is given by the following demand curve:

$$£P = 1{,}500 - 0.2X$$

where P is the price per unit and X is the total monthly demand for the good.

(a) Find the Cournot solution and show the price, output and profits of each firm. [40%]

(b) If the Government imposes a maximum price of £1,000 for this good, what will be the output and profits of each firm? [12%]

(c) If a 'black market' develops for this good in these circumstances, what is the likely 'black market' price? [12%]

(d) If, without Government price regulation, Firm 1 acquires Firm 2, what will be the total profit of Firm 1 after the acquisition? [16%]

(e) Discuss the economic significance of your findings. [20%]

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