MANUFACTURING ENGINEERING TRIPOS PART I

Friday 23 April 2004 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.*

There are no attachments.

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 the purpose of a Cash Flow Statement and discuss its usefulness to both investors and management. [30%]

(b) From the following information prepare a Cash Flow Statement. [70%]

BALANCE SHEET	**31.12.2002**	**31.12.2003**
Fixed Assets		
Land & Buildings	2,047	2,174
Plant & Machinery	6,440	8,165
Current Assets		
Stocks	1,725	1,380
Debtors	2,824	3,105
Cash & Bank	1,472	667
Current Liabilities		
Trade Creditors	3,473	3,190
Overdraft	1794	345
Dividend	156	184
Taxation	575	460
Total Assets less Current Liabilities	8,510	11,311
Long Term Liabilities		
Long Term Loans	920	1,725
Capital & Reserves		
Ordinary Share Capital	1,150	1,840
Profit & Loss Reserve	5,290	6,366
Share Premium	1,150	1,380

PROFIT & LOSS ACCOUNT	**31.12.2003**
Turnover	3,910
Depreciation	-1,461
Operating Profit	2,450
Profit on Asset Sale	-115
Interest Received	58
Interest Paid	-230
Profit before Tax	2,162
Taxation	-649
Profit after Tax	1,513
Dividends	-437
Retained Profit	1,076

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FIXED ASSETS	**31.12.02**	Additions	Disposals	Depreciation	**31.12.03**
Land & Buildings					
Gross Book Value	2,530	207	0	0	2,737
Accumulated Depreciation	483	0	0	81	564
Net Book Value	**2,047**	**207**	**0**	**-81**	**2,174**
Plant & Machinery					
Gross Book Value	9,890	3,910	-1,150	0	12,650
Accumulated Depreciation	3,450	0	-345	1,380	4,485
Net Book Value	**6,440**	**3,910**	**-805**	**-1,380**	**8,165**
Total Assets					
Gross Book Value	12,420	4,117	-1,150	0	15,387
Accumulated Depreciation	3,933	0	-345	1,461	5,049
Net Book Value	**8,487**	**4,117**	**-805**	**-1,461**	**10,339**

2 Most introductory economics textbooks assume that both the short-run and the long-run average cost curves are U-shaped. Discuss these assumptions in the light of theoretical arguments and empirical evidence. [100%]

3 (a) Discuss the relative merits of any two measures of industrial concentration. [30%]

(b) Describe the changes in industrial concentration in the U.K. since 1960. [70%]

4 Which factors are likely to deter new firms from entering an industry? How would you attempt to measure the degree of actual and potential competition in an industry? [100%]

5 Yardright plc is a company involved in the manufacture of golfers' calculators, aimed specifically at the U.K. market. The managing director, Mr Palmer, has just received a report from the market researchers he employed concerning anticipated demand for the company's latest product, the Eagle Eye. Their report indicates that annual sales are expected to be 2,760 units each year and that the unit selling price will be £80. No credit will be offered to customers. The researchers are to be paid £10,350 for their report.

Before consulting the Finance Department regarding the proposed financing of the project, Mr Palmer wants to appraise the 10-year project. The following information regarding the Eagle Eye project has been made available to Mr Palmer.

The project would require specialist machinery. The company, however, could utilise an existing machine which was purchased three years ago at a cost of £207,000. Currently the machine has a net book value of £126,500, although the company is considering selling the machine for £138,000 as it no longer serves any useful function. If modification costs of £92,000 were incurred immediately, the machine would be able to produce the Eagle Eye. Alternatively, the company could buy a machine to produce Eagle Eyes; the cost of such a machine would be £264,500. The company's depreciation policy is to use a straight-line basis over the useful life of the asset. Due to the specialised nature of the production process the machinery will have a nil residual value at the end of its useful life of 10 years; furthermore, the machinery would require a major overhaul in five years time at a cost of £11,500.

Each Eagle Eye will require two types of labour: half an hour of skilled labour at a cost of £20 per hour, and one hour of unskilled labour at a cost of £10 per hour. As a consequence of the world recession affecting other parts of the Yardright business, the unskilled labour in the company is not fully utilised; indeed there is sufficient spare capacity to meet production requirements of the Eagle Eye over the next two years. After this time additional unskilled labour will have to be hired. Yardright will not lay off any unskilled labour during the recessionary period as the company wishes to be well staffed to meet the economic upturn. The additional skilled labour that will be used on the Eagle Eye project will not be available until a year of training has been completed at a cash cost to Yardright plc of £19,550, payable at the end of the first year. During this training period the project will be staffed by transferring labour from another department, where the labour is currently employed earning a net cash flow of £5 per labour hour. All skilled labour is paid at the same hourly rate.

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The material cost is expected to be £13 per unit. However, the company can utilise recent purchases of a similar substitute material which it bought last week at a reduced price of £23,000. There is enough of this material to manufacture the first 2,300 units if production of the Eagle Eye were to proceed. Alternatively, this material could be sold for £26,450.

As a consequence of undertaking the project, fixed production overheads will rise by £17,250 per annum over the 10-year project life. Company policy will, however, result in fixed production overheads of £20,700 per annum being allocated to the project. Variable overheads are recovered on the basis of £18 per direct labour hour.

Mr Palmer wants to use the company's weighted average cost of capital as the discount rate for the project. The company is financed 50% by debt and 50% by equity. The £22m debt was raised 3 years ago. Annual interest payments on the debt are £1m, and the market value of the debt is currently £20m. To estimate the company's cost of equity, Mr Palmer has decided to use the Capital Asset Pricing model (CAPM). The company has a Beta of 1.20. The risk-free rate is 4.10% and the market risk premium (the return on the market minus the risk-free rate) is 5.75%.

Estimate whether the project will be viable on the basis of net present value. [100%]

6 Critically discuss the factors that influence the choice of gearing ratio for a company. [100%]

7 'The corporate governance changes that occurred in the U.K. during the 1990s were long overdue and are likely to have significantly improved the performance of public companies.' Discuss. [100%]

8 Smith Ltd wants to use variance analysis to assess the performance of its leading product in the month of March 2004. Smith Ltd expected its performance in March to be the same as its performance in February 2004. In February, 22,500 units of the product were sold at a price of £128 per unit. 30,000 kg. of direct materials were used at a cost of £24 per kg., whilst 57,000 direct labour hours were worked at a cost of £7.20 per hour. There were also variable overhead costs of £53 per unit produced, and fixed overhead costs of £225,000.

Actual sales of the product in March were 18,000 units at a price of £131 for each unit sold. A total of 23,250 kg. of direct materials were used, at a cost of £547,538. Direct labour costs amounted to £387,531 for a total of 55,800 hours. The product was allocated overhead costs, which consisted of fixed overheads totalling £240,000 and variable overhead costs of £904,500.

(a) Analyse the variances and present your answer in the form of an operating profit statement. [60%]

(b) How would you interpret the variances and what actions would you advise the company to take? [40%]

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

(i) accruals concept; [8%]

(ii) cost concept; [8%]

(iii) share premium account; [8%]

(iv) acquisition accounting; [8%]

(v) exceptional items. [8%]

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(b) A bank is attempting to evaluate a loan application from a company (MET Ltd) recently formed by a group of promising manufacturing students from Cambridge University. The following table presents some information concerning the "average" company in the industry in which MET Ltd operates, and the corresponding information for MET Ltd.

	MET Ltd	**Industry Average**
	31.12.03	**31.12.03**
	£ 000's	£ 000's
Sales (all credit)	100	300
Cost of sales	70	220
Profit before interest and taxation	15	30
Interest payments	5	6
Total assets	100	300
Current assets	30	100
Debtors	13	30
Opening stock	14	38
Closing stock	15	40
Cash	2	30
Current liabilities	20	50
Creditors	15	40
Other current liabilities	5	10
Long term liabilities	40	50
Shareholder funds	40	200

In the light of the information provided, prepare a report for the bank, outlining those factors which might be useful for making the decision about granting the loan. [60%]

10 An industry has the following demand curve for its product:

$$Q = 3{,}000 - 2/3\ P$$

where Q is the total demand in units per annum and P is the price per unit.

The cost of production of this product is given by:

$$\text{Total Cost} = 600 + 6\ Q^2$$

(a) If the industry is characterised by a number of firms operating within perfect competition, what will be the equilibrium price, total output and number of firms? [20%]

(b) If, on the other hand, the industry has only a monopolist with the following cost function:

$$\text{Total Cost} = 500{,}000 + 0.75\ Q^2$$

What will be its output, price and profits? [20%]

(c) The government decides to regulate the monopoly by setting a maximum price for this product of £1,950. What will be the monopolist's revised output, price and profits? [20%]

(d) If, on the other hand, the government sets the maximum price to achieve maximum possible output, what price should it set from the monopolist and what will be the output? [20%]

(e) Briefly discuss your findings in relation to the U.K. Government's price regulation of utilities. [20%]

END OF PAPER