

ENGINEERING TRIPOS PART IIB
ELECTRICAL AND INFORMATION SCIENCES TRIPOS PART II
ENGINEERING TRIPOS PART IIA

Monday 5 May 2003 9 – 10.30

Module 4E6

ACCOUNTING AND FINANCE

Answer not more than two questions.

All questions carry the same number of marks.

Submit all workings.

Calculations are to be made to the nearest £, unless told otherwise.

*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**

TURN OVER

- 1 The accounts of Smart plc, a sock manufacturer are reproduced below and on the following page. Using ratio analysis, comment on these accounts.

Make recommendations on what the company might usefully consider paying attention to in future.

[100%]

Smart plc – Balance sheet as at 31 December 19X8 and 31 December 19X7

	19X8		19X7	
	£000	£000	£000	£000
Fixed assets (note 1)		1,250		950
<i>Current assets:</i>				
Stock	498		390	
Debtors	936		637	
Prepayments	160		120	
Bank	–		80	
	<u>1,594</u>		<u>1,227</u>	
<i>Current liabilities:</i>				
Trade creditors	138		118	
Accruals	100		110	
Tax	158		119	
Dividend	150		105	
Overdraft	423		–	
	<u>969</u>		<u>452</u>	
Net current assets		<u>625</u>		<u>775</u>
		1,875		1,725
Debentures (15%)		<u>800</u>		<u>800</u>
		1,075		925
Share capital		500		500
Share premium		100		100
Retained profit		<u>475</u>		<u>325</u>
		<u>1,075</u>		<u>925</u>

(Cont.)

Smart plc – Profit and loss account as at 31 December 19X8 and 31 December 19X7

	<i>19X8</i>		<i>19X7</i>	
	<i>£000</i>	<i>£000</i>	<i>£000</i>	<i>£000</i>
Turnover		5,694		4,745
Cost of sales		<u>3,644</u>		<u>3,084</u>
Gross profit		2,050		1,661
Distribution	854		712	
Administration	<u>556</u>		<u>500</u>	
		<u>1,140</u>		<u>1,212</u>
Operating profit		640		449
Interest payable		<u>180</u>		<u>120</u>
Profit before tax		460		329
Taxation		<u>160</u>		<u>119</u>
Profit after tax		300		210
Dividend		<u>150</u>		<u>105</u>
Retained profit		<u>150</u>		<u>105</u>

Note 1: Fixed assets

	<i>Land & bldg</i>	<i>Plant</i>	<i>Total</i>
	<i>£000</i>	<i>£000</i>	<i>£000</i>
<i>Cost</i>			
1.1.X8	400	800	1,200
Additions	200	220	420
Disposals	<u>–</u>	<u>(100)</u>	<u>(100)</u>
31.12.X8	<u>600</u>	<u>920</u>	<u>1,520</u>
<i>Depreciation</i>			
1.1.X8	–	250	250
Charge for year	–	100	100
Disposals	<u>–</u>	<u>(80)</u>	<u>(80)</u>
31.12.X8	<u>–</u>	<u>270</u>	<u>270</u>
Net book 1.1.X8	<u>400</u>	<u>550</u>	<u>950</u>
31.12.X8	<u>600</u>	<u>650</u>	<u>1,250</u>
(Plant sold for £10,000)			

TURN OVER

2 Techtoc plc is a manufacturing company which has two production departments, Machining and Assembly, and two service departments, Maintenance and Handling. The estimated factory expenses for the quarter ending 31 December 19X3 are as follows:

Indirect labour:	£
Machining.....	20 000
Assembly	8 800
Maintenance	39 700
Handling	12 000
Supervision	6 000
Canteen	7 200
Rent and rates.....	25 000
Fuel and light	7 500
Other costs:	
Machining.....	4 230
Assembly	420
Maintenance	300
Handling	320
Plant insurance	1 880
Plant depreciation.....	23 250

The following additional information is available and is to be used, where appropriate, in apportioning the expenses to departments:

	Machining	Assembly	Maintenance	Handling
Floor area (sq.m)	12 000	9 000	3 000	1 000
Number of employees	40	60	15	5
Cost of plant	£300 000	£100 000	£50 000	£20 000
Plant annual (on cost) depreciation rates	20%	25%	10%	15%
Direct labour hours	3 880	15 120		
Direct machine hours	6 750	1 100		

(Cont.)

Of the total maintenance cost, 10% is to be charged to Handling, and the remainder to the production departments on the basis of 30% to Machining and 70% to Assembly.

The cost of the Handling department is to be charged via technical estimates, 40% to Machining department and 60% to Assembly department.

- a) i) Prepare a statement allocating and apportioning factory expenses to production departments (explaining clearly the basis of allocation and apportionment).
- ii) Calculate the machine hour rate for the Machining department, and a direct labour hour rate for the Assembly department. [64%]
- b) 'Budgets must be prepared with a column for each month so that you can see the whole year at a glance, month by month.' Critically discuss. (Note that it is not essential that your answer relates to part (a).) [18%]
- c) What is meant by the *break-even point* for an activity? How is the break-even point calculated? (Note that it is not essential that your answer relates to earlier parts of the question.) [18%]

TURN OVER

3 Senator Terry Trufo's firm, TT Bonus Inc, has undertaken some legal and academic research at a cost of £4,000, into the possibilities of selling university degrees. The firm is unsure of the outcome of such a venture but feels that there is a 60% chance of annual income of £70,000 and a 40% chance of annual income of £40,000.

Printing machinery would need to be bought at a cost of some £40,000 payable in two equal annual instalments, one immediately and one in one year's time. The equipment would be depreciated on a straight line basis by £3,500 per annum for ten years and then sold for £5,000. Use would also be made of some existing equipment which originally cost £6,000, has a book value of £1,000, and would cost £9,000 to replace, though the firm is considering selling it for £2,000 (the existing equipment will have no salvage value at the end of the project).

Production and labour costs in the first year would amount to £55,000 payable in one year's time though the next nine years' costs would fall to £30,000 if demand were low in the first year. Revenue would first be receivable in two years' time and for the following nine years. Fixed costs of £5,000 per annum would be reallocated to the degree project.

Calculate the following:

- a) The return on capital employed by expressing:
 - i) average annual pre-tax accounting profit on the project as a percentage of the book value of the initial investment
 - ii) the same profit as a percentage of the average book value of the investment
 - iii) total accounting profit as a percentage of the initial investment. [16%]
- b) The payback period. [14%]
- c) The net present value of the project at the company's required rate of return of 8%. [14%]

(Cont.

- d) The internal rate of return of the project using the interpolation method (showing your workings clearly). [14%]
- e) The sensitivity of your result in (c) to the estimates of:
- i) the required rate of return,
 - ii) the sales revenue,
 - iii) the life of the project, and,
 - iv) the probabilities of high and low income. [42%]

END OF PAPER