

MET2  
MANUFACTURING ENGINEERING TRIPOS PART IIA

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Wednesday 01 May 2019

9:00 to 12:10

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**Paper 5**

**Module 3P8: FINANCIAL AND MANAGEMENT ACCOUNTING**

**Module 3P9: INDUSTRIAL ECONOMICS, STRATEGY AND GOVERNANCE**

*Answer **four** questions, one from each of sections **A, B, C and D**.*

*Answers to sections **A, B, C and D** must appear in four separate booklets.*

*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.*

*Write your candidate number **not** your name on the cover sheet.*

**STATIONERY REQUIREMENTS**

8 page answer booklet x 4

Rough work pad

**SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAM**

CUED approved calculator allowed

Engineering Data Book

Discount Rate Data Sheet

**10 minutes reading time is allowed for this paper at the start of the exam.**

**You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.**

## SECTION A

Answer **one** question from this section.

1 The following information is available about the balances and transactions of Shelley Limited:

<u>Balances at 30<sup>th</sup> April 2011</u>	<u>£000</u>
Fixed assets - cost	1,000
Accumulated depreciation	230
Stocks	410
Debtors	380
Cash	87
Creditors	219
Issued share capital	400
Retained profits	818
Long term loan at 10% interest	200
Loan interest owing	10

<u>Transactions during the year ended 30<sup>th</sup> April 2012</u>	<u>£000</u>
Sales	4,006
Purchases	2,120
Expenses	1,640
Interest on Loan paid during the year	20
Issue of 150,000 equity shares at £1 each	150

There were no purchases or disposals of fixed assets during the year.

Adjustments as of 30<sup>th</sup> April 2012

Depreciation is to be charged at 10% of fixed asset cost

Bad debts of £20,000 are to be written off

<u>Balances at 30<sup>th</sup> April 2012</u>	<u>£000</u>
Stocks	450
Debtors (before writing off bad debts)	690
Cash	114
Creditors	180

- (a) Calculate the retained earnings figure as at 30<sup>th</sup> April 2012. Show your workings. [30%]  
 (b) Prepare the balance sheet as at 30<sup>th</sup> April 2012. Show your workings. [40%]

(c) Shelley Limited is considering embarking on a programme of research and development. Prepare a note for the Managing Director summarising the accounting treatment of research and development costs as an intangible asset. [30%]

2 Extracts from the recent financial statements of Pip Limited are as follows:

Statement of profit and loss

	<i>2016</i>	<i>2015</i>
	<u>£000</u>	<u>£000</u>
Sales revenue	15,600	11,100
Cost of sales	9,300	6,600
Gross profit	6,300	4,500
Administration expenses	1,000	750
Profit before interest and tax	5,300	3,750
Interest	100	15
Profit before tax	<u>5,200</u>	<u>3,735</u>

Statements of financial position

	<i>2016</i>		<i>2015</i>	
	£000	£000	£000	£000
Non-current assets	1,880		3,650	
<i>Current assets</i>				
Inventory	3,000		1,300	
Receivables	3,800		1,850	
Cash	120		900	
		6,920		4,050
Total assets	8,800		7,700	

	<i>2016</i>		<i>2015</i>	
	£000	£000	£000	£000
Total equity	4,930		5,950	
<i>Current liabilities</i>				
Trade payables	2,870		1,600	
Overdraft	1,000		150	
		3,870		1,750
Total equity and liabilities	8,800		7,700	

All sales were on credit. Pip Limited has no long-term debt. Credit purchases in each year were 95% of cost of sales. Pip Limited pays interest on its overdraft at an annual rate of 8%. Current sector averages are as follows:

Inventory days: 90 days;

Receivables days: 60 days;

Payables days: 80 days.

- (a) Using the inventory, receivables and payable balances at the end of 2015 and 2016, calculate the following ratios for each of these years. Show your workings.
- (i) Inventory Ratio;
  - (ii) Receivables Ratio;
  - (iii) Payables Ratio (related to credit purchases). [40%]
- (b) For each of the following ratios define how they are calculated and what they are designed to assess.
- (i) Return on capital employed;
  - (ii) Revenue per employee;
  - (iii) Current ratio;
  - (iv) Debt to equity ratio;
  - (v) Interest coverage ratio (debt service coverage ratio);
  - (vi) Earnings per share. [40%]
- (c) Comment on the limitations of using ratios for financial analysis. [20%]

## SECTION B

*Answer one question from this section.*

3 (a) Discuss the advantages and disadvantages of using internal rate of return to assess planned investments. [25%]

(b) Bubbles is a company which installs bathrooms to customer specifications. It is planning to invest £4,000,000 (at the beginning of 2011) in a new facility to convert vans and trucks into high class mobile homes. Each mobile home will be designed and built according to customer requirements. Bubbles expects mobile home production and sales in the first four years of operation to be as follows:

Year:	2011	2012	2013	2014
Mobile homes produced and sold	250	300	450	450

The selling price for a mobile home depends on the van or truck which is converted, the quality of the units installed and the extent of conversion work required. Bubbles has undertaken research into likely sales and costs of different kinds of mobile homes which could be selected by customers, as follows:

Mobile home type	Basic	Standard	Deluxe
Probability of selection	20%	45%	35%
Selling price (£/unit)	30,000	42,000	72,000
Conversion cost (£/unit)	23,000	29,000	40,000

Fixed costs of the production facility are expected to depend on the volume of mobile home production as follows:

Production volume (units/year)	200 - 299	300 - 399	400 - 499
Fixed costs (£000/year)	4,000	5,000	5,500

Bubbles pays franchise cost of 28% on the net cash flow for each year. The franchise cost liability being settled in the year in which it arises. Bubbles evaluates investment projects using a discount rate of 10%.

(i) Calculate the expected *net present value* and *internal rate of return* of the planned investment for the first four years of operation (a Discount Rate Data Sheet is supplied separately). Show your workings. [45%]

(ii) After the fourth year of operation, Bubbles expects to continue to produce and sell 450 mobile homes per year for the foreseeable future at the Year 4 selling prices and production costs. Calculate the effect on the expected *net present value* of the planned investment, if Bubbles continues to produce and sell mobile homes beyond the first four years. Comment on the financial acceptability of the planned investment. Show your workings. [30%]

4 Mysty Limited manufactures three components M, Y and S using the same machines for each and assembles them into a single finished product. The budget for the next year calls for the production of 4,000 of each component and assembly into 4,000 units of finished product (to meet the expected demand). The variable production cost per unit of each component is as follows:

Component	Machine (hours)	Variable cost (£)
M	3	20
Y	2	36
S	4	24

Assembly cost is £100 per finished product. Only 24,000 hours of machine time will be available during the year. A subcontractor, Maddison has quoted the following unit prices for supplying components:

Component	Unit Price (£)
M	£29
Y	£40
S	£34

The management have set a selling price of £200 per unit of the completed product.

(a) Advise Mysty Limited on its most profitable production plan and show the maximum budgeted profit that could be achieved from this production plan. Show your workings. [50%]

(b) The management feels that it could raise the price of the completed product to £210. However such a rise is expected to result in a drop in demand to only 2,500 units for the next year. Advise on whether the company should adopt this plan. What other factors may need to be taken into account in reaching a decision. Show your workings. [30%]



(c) An alternative plan involves selling the M, Y and S components to other manufacturers. Comment on this plan. What additional factors may need to be taken into account in this decision? [20%]

SECTION C

Answer **one** question from this section.

5 (a) In November 2005, six of Paris's most luxurious hotels were fined for colluding on room rates. Regular guests showed little concern, noting that, whatever the listed room rate, it was always possible to negotiate substantial discounts. Using the prisoner's dilemma model, explain why the hotels were able to collude over their listed room rates but not over discounts? [50%]

(b) (i) Explain what is meant by *real options*. [15%]

(ii) A supplier of sports footwear and apparel is interested in the idea that it could increase its stock market value by creating real options for its business. What actions might the firm take to generate value from real options? [35%]

6 (a) Discuss why patents might be more effective in protecting *product innovations* than *process innovations*. [50%]

(b) Discuss why a more turbulent business environment encourages outsourcing and increased focus on core business among large firms. [50%]

SECTION D

Answer **one** question from this section.

7 TradeInfo sells information on UK stock traded firms to private investors in the UK via mobile phones. The service enables the private investors to understand the firms on the market with the aggregated latest news from multiple sources. TradeInfo is now planning to scale up its operations after a successful first two years and is considering how to innovate its business model.

(a) Explain what is meant by a *business model*? [20%]

(b) Discuss the possible business models that TradeInfo could consider as it plans to scale up its operations. Explain which business model might be most appropriate for TradeInfo. [40%]

(c) What are the challenges that TradeInfo would face in implementing the business model you have recommended in (b)? [40%]

8 (a) Explain the concept of *two-sided markets*. [15%]

(b) Explain the concept of *cross price elasticities* in two-sided markets. [40%]

(c) CityInfo is an established online social media platform that plans to launch MealDeals, a restaurant website for special discounts and offers. The Chief Strategy Officer has been informed that it is important to consider cross-price elasticities in deciding pricing in two-sided markets, hence she is unsure whether to charge:

- restaurants for advertising their special discounts and offers, or
- potential customers for accessing and using the site, or
- both restaurants and potential customers.

Show how you would develop the pricing strategy for MealDeals, taking into account cross-price elasticities in two-sided markets? [45%]

**END OF PAPER**

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