

MET2  
MANUFACTURING ENGINEERING TRIPOS PART IIA

---

Wednesday 2 May 2018      9.00 to 12.10

---

**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

**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 Belvedere is a limited liability company. A trial balance for the year ended 31 December 2015 is presented below:

	Dr (£)	Cr (£)
Revenue		450,000
Purchases	180,000	
Administrative expenses	140,000	
Distribution expenses	56,000	
Plant and machinery – at cost	150,000	
Plant and machinery – accumulated depreciation at 1 January 2015		30,000
Trade receivables	36,000	
Allowance for receivables – 1 January 2015		2,500
Inventory – 1 January 2015	33,000	
Share capital		10,000
Trade payables		32,000
Retained earnings – 1 January 2015		25,500
8% Loan – repayable 31 December 2019		50,000
Cash	<u>5,000</u>	
	<u>600,000</u>	<u>600,000</u>

The following notes are relevant to the preparation of the financial statements for the business for the year ended 31 December 2015:

- (i) It has been determined that trade receivables of £1,500 are irrecoverable. In addition, it was decided that the allowance for receivables should be increased by £1,000.
- (ii) Depreciation on plant and machinery is charged at 20% per annum on a reducing balance basis. Depreciation is charged to cost of sales.
- (iii) The loan was taken out on 1 October 2015 and interest has not yet been paid or accrued.
- (iv) Closing inventory has been correctly valued at £27,000.
- (v) A customer bought goods on credit from Belvedere for £1,000 on 5 December 2015. The customer returned these goods on 28 December 2015. No entries have been posted for this return.

(vi) Belvedere is being sued by a customer regarding the sale of goods that the customer believes to be defective. Legal advisers think that it is probable that Belvedere will lose the case and that they will have to pay damages of £20,000 in 2016. Legal expenses are charged to administrative expenses.

(a) Provide a profit and loss account for the year ending 31 December 2015. [40%]

(b) Provide a detailed balance sheet as at 31 December 2015. [40%]

(c) The inventory has been valued on a First-in, First-out (FIFO) basis. The management is considering changing the inventory valuation method to the weighted Average Cost (AVCO) method. Write a memo to the senior management which outlines the difference between the FIFO and AVCO methods of inventory valuation and the accounting implications for Belvedere. [20%]

2 The following financial statements and supporting information relate to Hiru, a limited liability entity.

Hiru's profit and loss account for the year ended 30 June 2015 is as follows:

	£'000
Revenue	113,250
Cost of sales	<u>(77,500)</u>
Gross profit	35,750
Distribution costs	(3,000)
Administrative expenses	(1,000)
Interest payable	<u>(750)</u>
Profit from operations for the year	31,000
Revaluation of property, plant and equipment	<u>2,000</u>
Profit for the year	<u>33,000</u>

Hiru's Balance sheet as at 30 June 2015

	2015 £'000	2014 £'000
<b>ASSETS</b>		
<i>Non-current assets</i>		
Property, plant and equipment	110,000	93,000
<i>Current assets</i>		
Inventories	36,000	30,000
Trade receivables	40,000	35,000
Cash and cash equivalents	<u>7,500</u>	<u>10,000</u>
Total assets	<u>193,500</u>	<u>168,000</u>
<b>EQUITIES AND LIABILITIES</b>		
Equity share capital	20,000	15,000
Share premium	8,000	3,000
Revaluation reserve	10,000	8,000
Retained earnings	<u>112,000</u>	<u>95,000</u>
Total equity	<u>150,000</u>	<u>121,000</u>
<i>Non-current liabilities</i>		
Bank loan	7,000	17,000
<i>Current liabilities</i>		
Trade payables	<u>36,500</u>	<u>30,000</u>
Total equity and liabilities	<u>193,500</u>	<u>168,000</u>

Notes:

(i) The depreciation charge for the plant and equipment for Hiru for the year was £15,000,000.

(ii) During the year ended 30 June 2015, Hiru disposed of several items of plant and equipment for sale proceeds of £8,000,000. The loss on this disposal of £2,000,000 is included within cost of sales.

(a) Based upon the available information, prepare a statement of cash flows for Hiru using the indirect method for the year ended 30 June 2015. [80%]

(b) Discuss the additional information that the statement of cash flows provides to complement the profit and loss account and the balance sheet of Hiru. [20%]

### SECTION B

Answer **one** question from this section.

3 Hot Chips, a toy company, has developed a new toy, 'Samping', which it plans to launch in the near future. Sales of the new toy are expected to be very strong, following a favourable review by a popular magazine. Hot Chips has been informed that the review will give the toy a 'Best Buy' recommendation. Sales volumes and selling prices for 'Samping' over its anticipated four year life are expected to be as follows:

	Year 1	Year 2	Year 3	Year 4
Sales (units)	150,000	70,000	60,000	60,000
Selling price (£ per toy)	£24	£24	£22	£22

Sales and production volumes are assumed to be identical.

Financial information on 'Samping' for the first year of production is as follows:

Direct material costs £5.40 per toy

Other variable production costs £6.00 per toy

Fixed costs £4.00 per toy

Advertising costs to stimulate demand are expected to be £650,000 in the first year of production and £100,000 in the second year of production. No advertising costs are expected in the third and fourth year of production. Fixed costs represent incremental cash fixed production overheads. 'Samping' will be produced on a new production machine costing £800,000. Depreciation will be charged at a rate of 25% on a reducing balance basis. The machine will have a useful life of four years at the end of which no scrap value is expected.

The finance manager is unsure about the cost of capital, but expects it is around 10%.

(a) For the proposed investment:

- (i) calculate the net present value; [30%]
- (ii) estimate the internal rate of return (an Interest Table is provided in Fig.1); [20%]
- (iii) calculate the payback period. [10%]

(b) Based on the results that you have obtained in part (a) above, recommend whether Hot Chips should invest in 'Sampinge'. Justify your recommendation. [10%]

(c) Discuss the reasons why the net present value investment appraisal method is preferred to other investment appraisal methods such as the internal rate return and the payback period. [30%]

### Interest Rate Table

Interest rate p.a., $r$	Number of years, $T$	Present value of £1 receivable at the end of $T$ years, $PV = \frac{1}{(1+r)^T}$
5%	1	0.9524
	2	0.9070
	3	0.8638
	4	0.8227
	5	0.7853
	6	0.7462
	7	0.7107
	8	0.6768
	9	0.6446
	10	0.6139
10%	1	0.9091
	2	0.8264
	3	0.7513
	4	0.6830
	5	0.6209
	6	0.5645
	7	0.5132
	8	0.4665
	9	0.4241
	10	0.3855
20%	1	0.8333
	2	0.6944
	3	0.5787
	4	0.4823
	5	0.4019
	6	0.3349
	7	0.2791
	8	0.2326
	9	0.1938
	10	0.1615
30%	1	0.7692
	2	0.5917
	3	0.4552
	4	0.3501
	5	0.2693
	6	0.2072
	7	0.1594
	8	0.1226
	9	0.0943
	10	0.0725

Fig. 1



4 Daffodil is a building business that provides a range of building services to the public. Recently they have been asked to quote for bathroom conversions (BC) and extensions to property (EX) and have found that they are winning fewer BC contracts than expected. Daffodil has a policy to price all jobs at budgeted total cost plus 50%, and overheads are currently absorbed on a labour hour basis. Daffodil thinks that a switch to activity based costing (ABC) to absorb overheads would reduce the cost associated to BC and hence make them more competitive.

You are provided with the following data:

<i>Overhead categories</i>	<i>Annual overhead (£)</i>	<i>Activity driver</i>	<i>Total number of activities per year</i>
Supervisors	90,000	Site visits	500
Planners	70,000	Planning documents	250
Property related	<u>240,000</u>		
Total	<u>400,000</u>		

Labour hours is expected to be 40,000 hours.

A typical BC costs £3,500 in materials and takes 300 labour hours to complete. To build a BC requires only one site visit by a supervisor and needs only one planning document to be raised. The typical EX costs £8,000 in materials and takes 500 hours to complete. An EX requires six visits and five planning documents. In all cases labour employment cost is £15 per hour.

- (a) Calculate and comment on the cost and quoted price of a BC and of an EX:
- (i) using absorption costing, by applying direct labour hours to absorb the overheads; [20%]
  - (ii) using activity based costing to absorb the overheads. [40%]
- (b) Discuss the point of view that only marginal costs should be used in budgeted costs and pricing. [40%]

SECTION C

Answer *one* question from this section.

5 (a) Discuss the following statement - Porter's Five Forces framework is reflected in the economic identity represented in the following equation:  $Profit = (Price - Average Cost) \times Quantity$ . [50%]

(b) Explain what the concept of *coopetition* adds to Porter's Five Forces framework of industry analysis. [50%]

6 (a) Explain the concept of *economies of scale* in creating competitive advantage and disadvantage for firms. [50%]

(b) Discuss how digitalisation can affect economies of scale in inventory management in the book industry. [50%]

SECTION D

Answer *one* question from this section.

7 (a) Explain how the concept of *incomplete contracts* could affect the make or buy decision of firms. [40%]

(b) Caledonian distributes wines and spirits in India. Kingbrew is a conglomerate that manufactures, among other things, a popular lager beer. By virtue of a lifetime contract, Caledonian has exclusive rights to distribute Kingbrew Beer in Tamil Nadu, one of the larger states in India. Caledonian uses its market power to pay a lower wholesale price for Kingbrew Beer in Tamil Nadu than do distributors in other states. Discuss whether Kingbrew should buy out Caledonian. [60%]

8 (a) Explain the concept of *business model innovation* and its importance in strategy formulation. [40%]

(b) GoodCare is a major pharmacy chain with extensive branches throughout the USA. The strategy director of GoodCare is considering launching OnlineCare, a new business model that will provide all-hours access to physicians over the Internet. Registered members of OnlineCare could have an online Web session with a doctor for basic illness. Write a memo to the strategy director of GoodCare that explains the challenges that GoodCare might face in trying to innovate their business model in launching OnlineCare. [60%]

**END OF PAPER**

**THIS PAGE IS BLANK**