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MANUFACTURING ENGINEERING TRIPOS PART IIA

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Friday 25 April 2014

9 to 12

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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**

Engineering Data Book

CUED approved calculator allowed

**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 31 December 2011 balance sheet for Entire Home Services is summarised in the table below.

Assets	£	Liabilities and Shareholders' equity	£
Cash	10,000	Liabilities	6,000
Receivables	4,000	Common shares	10,000
Long-term assets	10,000	Retained earnings	8,000
Total assets	24,000	Total liabilities and shareholders' equity	24,000

During January of 2012, the following transactions were entered into:

1. Services were performed for £7,000 in cash.
2. £3,000 cash was received from customers on outstanding accounts receivable.
3. £3,000 cash was paid for outstanding liabilities.
4. Long-term assets were purchased in exchange for £6,000 long-term note payable.
5. Expenses of £4,000 were paid in cash.
6. A dividend of £800 was issued to the owners.

(a) Provide a journal entry for each transaction, identifying the accounts as revenue, expense, asset, liability or shareholders' equity respectively. [20%]

(b) Prepare the income statement, the 31 January 2012 balance sheet, and the statement of cash flows (direct method) for January. [50%]

(c) Entire Home Services is planning to purchase goods in order to sell them to customers as part of a new business line. Write a note to brief the senior management team as to different accounting methods such as LIFO, FIFO and AVCO for valuing inventory and their implications for the reported profits. [30%]

2 The financial information in the table below was taken from the records of Pinetechnic Enterprises. The company pays no dividends.

<b>All in £</b>	<b>2012</b>	<b>2011</b>	<b>2010</b>	<b>2009</b>
Current assets	35,000	31,000	24,000	20,000
Non-current assets	93,000	86,000	64,000	33,000
<b>Total assets</b>	<b>128,000</b>	<b>117,000</b>	<b>88,000</b>	<b>53,000</b>
Current liabilities	30,000	25,000	13,000	8,000
Long-term liabilities	40,000	40,000	35,000	15,000
Share capital	20,000	20,000	20,000	20,000
Retained earnings	38,000	32,000	20,000	10,000
<b>Total liabilities and shareholders' equity</b>	<b>128,000</b>	<b>117,000</b>	<b>88,000</b>	<b>53,000</b>
Net cash provided (used) by operating activities	(2,000)	3,000	6,000	7,000
Net cash provided (used) by investing activities	(10,000)	(20,000)	(31,000)	(12,000)
Net cash provided (used) by financing activities	15,000	15,000	25,000	8,000
Net increase (decrease) in cash	3,000	(2,000)	0	3,000
Interest expense	5,000	5,000	4,000	2,000
Net profit	24,000	21,000	14,000	13,000

- (a) Compute the current ratio, the debt/equity ratio, and return on assets for each of the four years. Assume that the year-end balances in 2009 reflect the average balances during the year. [30%]
- (b) Prepare a common-size balance sheet for each of the four years. [20%]
- (c) Use the statement of cash flows to analyse the earning power and solvency positions of this company. [50%]

## SECTION B

Answer *one* question from this section.

3 A company, Mirage, has made the following forecast for its new potential product, the Telepad.

Year	Capital outlay (£)	Capital inflow (£)	Sales (£)	Interest (£)	Expenses (excludes depreciation) (£)	Taxation (£)
0	(700,000)	-	-	-	-	-
1			340,000	(20,000)	(40,000)	-
2			270,000	(20,000)	(130,000)	(4,500)
3			320,000	(20,000)	(160,000)	(18,375)
4			345,000	(20,000)	(185,000)	(24,281)
5			430,500	(20,000)	(205,000)	(48,361)
6			330,300	(20,000)	(160,300)	(35,033)
7			200,600	(20,000)	(100,100)	(16,825)
8			145,300	(20,000)	(46,500)	(18,034)
9			85,200	(20,000)	(28,100)	(6,925)
10		5,000	38,600	(20,000)	(8,300)	-

Mirage's cost of capital is 10%. The capital outlay is for a specialist machine which will last 10 years. Assume that the machine will be depreciated on a straight-line basis. The capital inflow of £5,000 is its scrap value after 10 years.

(a) Advise the management team at Mirage on whether to launch Telepad based on each of the investment appraisal methods below (an interest rate table is provided on the opposite page):

- (i) the payback period
- (ii) the accounting rate of return
- (iii) the net present value
- (iv) the internal rate of return

[70%]

(b) Outline other financial information that might be required before Mirage can go ahead and make a more informed decision on whether to launch Telepad. Your answer should include reasons why Mirage might benefit from additional financial information.

[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	0.9254
	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	0.7531
	4	0.6830
	5	0.6209
	6	0.5645
	7	0.5132
	8	0.4665
	9	0.4241
	10	0.3855
15%	1	0.8696
	2	0.7561
	3	0.6575
	4	0.5718
	5	0.4972
	6	0.4323
	7	0.3759
	8	0.3269
	9	0.2843
	10	0.2472
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

4 A company manufactures two products: the Red and the Green. The company has traditionally allocated its production overheads on the basis of the 100,000 direct hours used in the manufacturing department. Direct labour costs £5 per hour. The company is now considering using activity-based costing. Details of the overhead and cost drivers are given in the following table:

<b>Production overhead</b>	<b>Total cost (£)</b>	<b>Cost driver</b>	<b>Total</b>
Manufacturing	10,000	Assembly-line hours	100,000 hours
Material handling	60,000	Number of stores notes	1,500 notes
Inspection	40,000	Number of inspections	600 inspections
Set-ups	5,000	Number of set-ups	500 set-ups

Information about the products is given in the following table:

	<b>Red</b>	<b>Green</b>
Number of units	15,000	2,500
Assembly-line hours per unit (direct labour)	6 hours	4 hours
Direct materials per unit	£8	£100
Number of stores notes	600	900
Number of inspections	257	343
Number of set-ups	200	300

(a) Calculate the cost for each product

(i) using traditional total absorption costing, recovering overheads using direct labour hours; and

(ii) using activity-based costing. [60%]

(b) Comment on any differences between the results from the two costing approaches. Compare and contrast the total absorption and the activity-based costing approaches to costing. [40%]

SECTION C

Answer **one** question from this section.

5 (a) Briefly describe the Cournot and Bertrand duopoly models. Compare and contrast the results of these models. [30%]

(b) Discuss the usefulness of game theory for strategic management. [70%]

6 (a) American and European bricks-and-mortar retailing is increasingly becoming dominated by *hypermarts*: enormous stores that sell groceries, household goods, hardware and other products under one roof. What are the possible economies of scale that might be enjoyed by hypermarts? What are the potential diseconomies of scale? [40%]

(b) “Owning our own source of supply of raw materials used in production insulates us from short-run supply-demand imbalances and therefore will give us a competitive advantage over rival producers.” Discuss this statement in the light of the concept of vertical integration. [30%]

(c) Explain why the make-or-buy decision is less relevant when contracts are complete. [30%]

SECTION D

Answer *one* question from this section.

7 It has been suggested that business model innovation can create competitive advantage more than product or process innovations.

- (a) Explain the difference between business model, product and process innovations. [20%]
- (b) Explain why business model innovation would create competitive advantage more than product or process innovations. [20%]
- (c) What are the challenges that firms face in trying to innovate their business models? [60%]

8 ConnectWorld is an established online social media platform that plans to launch MealDeals, a restaurant website for special discounts and offers. The Chief Strategy Officer 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.

This is because she heard recently that it is important to consider cross-price elasticities in deciding pricing in two-sided markets.

- (a) Explain what two-sided markets are. [15%]
- (b) Explain the concept of cross-price elasticities in two-sided markets. [40%]
- (c) How would you develop the pricing strategy for MealDeals by considering cross-price elasticities in two-sided markets? [45%]

**END OF PAPER**