CIMA

Intermediate Level

Management Accounting – Decision Making

9 IDEC

24 November 2004

Wednesday afternoon

INSTRUCTIONS TO CANDIDATES

Read this page before you look at the questions

You are allowed three hours to answer this question paper.
Answer the ONE question in Section A (this has 7 sub-questions). Answer the ONE question in Section B. Answer ONE question ONLY from Section C. Answer ONE question ONLY from Section D.

SECTION A – 20 MARKS
ANSWER *ALL* SEVEN SUB-QUESTIONS

Question One

1.1 The standard output from a joint process was 5,000 litres of Product K, 3,000 litres of Product L and 2,000 litres of Product M. The total cost of the joint process was £156,000. The company is now deciding if it should modify Product K by putting it through an additional process.

In order to help with that decision the best way to apportion the joint costs of £156,000 to the products is

A in the ratio of 5 : 3 : 2.

B in the ratio of the sales value at the split off point.

C in the ratio of the sales value after further processing.

D £52,000 each (that is one third each).

E none of the above methods.

(2 marks)

1.2 The times taken to produce each of the first four batches of a new product were as follows:

Batch number	**Time taken**
1	100 minutes
2	70 minutes
3	59 minutes
4	55 minutes

Based upon the above data, the rate of learning was closest to

A 85·0%

B 84·3%

C 78·6%

D 70·0%

E 69·3%

(4 marks)

---

*The following information relates to questions **1.3** and **1.4***

A company is considering buying a new machine. The machine will cost £200,000 and make annual profits, after depreciation, of £28,000. The machine will be depreciated on a straight-line basis over its four-year life and it will have no residual value.

The company uses three techniques to appraise the proposed investment: net present value (NPV), first year residual income (RI) and cash payback (PB). The company has a 15% cost of capital and requires projects to pay back within three years.

1.3 The recommendations arising from each of the appraisal techniques will be (✓ = accept, X = reject)

	NPV	RI	PB
A	✓	✓	✓
B	✓	X	✓
C	✓	X	X
D	X	✓	X
E	X	X	X

(4 marks)

1.4 The internal rate of return for the machine is closest to

A -£120,060.
B £22,690.
C 10%.
D 15%.
E 20%.

(2 marks)

1.5 The budgeted profit statement for Product X for next year shows that it has a margin of safety equal to 20% of budgeted sales and a unit selling price of £10. Product X has a contribution to sales (c/s) ratio of 60% and budgeted fixed costs of £120,000 for the year.

The percentage increase in the unit variable cost that would result in Product X breaking even is

A 20%.
B 25%.
C 30%.
D 40%.
E 80%.

(3 marks)

*The following information relates to questions **1.6** and **1.7***

Trialpha Ltd produces and sells three products (R, S and T). The company uses a standard costing system. Budgeted and actual data for last year is shown in the table below.

	Selling price (£/unit)		*Sales volume (units)*	
	Budget	*Actual*	*Budget*	*Actual*
R	£3·00	£2·50	10,000	12,000
S	£6·00	£7·00	6,000	7,000
T	£8·00	£10·00	4,000	3,000

1.6 The total sales mix revenue variance for last year was

A £8,700 A.

B £5,800 A.

C £1,280 A.

D £1,000 A.

E £2,080 A.

(3 marks)

1.7 The total sales volume revenue variance for last year was

A £2,000 F.

B £3,500 F.

C £4,000 F.

D £4,200 F.

E £9,800 F.

(2 marks)

(Total = 20 marks)

End of Section A

SECTION B – 30 MARKS

ANSWER THIS QUESTION

Question Two

X manufactures and sells audio-visual products. Over the last two years it has developed a DVD recorder (the DVDR). The company is currently deciding whether it should manufacture the DVDR itself or sell the design to another manufacturer for $3 million net of tax.

Information relating to the in-house manufacture and sale of the DVDR is as follows:

Investment

The equipment needed to manufacture the DVDR would cost $5·12 million and could be sold for $1·12 million at the end of year four. The equipment would be depreciated in equal amounts over four years.

Working capital of $1·2 million will be needed.

Sales

The Managing Director of X thinks that a target costing based approach should be adopted. As a result of a market research survey that has already been conducted at a cost of $750,000, it has been decided that the selling price of the DVDR will be set, and held, at $180 per unit. It is thought that this price will be lower than that charged by competitors.

The annual unit sales forecasts for the DVDR are:

Year	*Unit sales*
1	190,000
2	200,000
3	150,000
4	100,000

It is thought that the DVDR will be obsolete in Year 5 due to further advances in audio-visual technology.

Costs

The Management Accountant expects that the variable costs will reduce as a result of the impact of a learning curve. She has forecast the following relationship between the unit variable cost of a DVDR and the selling price:

Year	*Variable Cost/Selling Price*
1	105%
2	85%
3	60%
4	60%

The annual fixed costs directly attributable to the DVDR project are forecast to be:

Depreciation	$1·00 million
Manufacturing overhead	$0·90 million
Administration overhead	$0·10 million
Marketing and distribution overhead	$0·35 million

Taxation
X pays tax at 30%. This is payable at the end of the year after that in which profits are earned. An annual writing down allowance of 25% on a reducing balance basis will be available on the manufacturing equipment. The company has sufficient profits from other activities to offset any losses that may arise on the DVDR project.

Cost of Capital
X has an after tax cost of capital of 14% per year.

Required:

(a) Prepare calculations that show, from a financial perspective, whether X should manufacture the DVDR. State clearly your recommendation based upon your calculations.

(17 marks)

(b) Discuss any other factors that the management of X should consider before making the decision.

(6 marks)

(c) (i) Briefly explain "target costing".

(2 marks)

(ii) Identify and explain evidence from the scenario that X has adopted “target costing”.

(5 marks)

Total for requirement (c) = (7 marks)

(Total = 30 marks)

End of Section B

SECTION C – 25 MARKS

ANSWER ONE QUESTION ONLY

Question Three

C Ltd excavates, mixes, processes and then distributes a variety of materials that are used to surface roads and pedestrian walkways. The business works to capacity every year and usually earns annual profits of £24 million.

Another company, Z Ltd, has developed a new product, "Flexicrete", which can be used to provide a softer and safer surface than traditional coverings. Flexicrete is made by passing traditional coverings through an additional process. Z Ltd has developed this finishing process, but does not have access to the earlier stages of the process or a distribution network. Consequently, Z Ltd has offered to lease the machinery needed for the finishing process to C Ltd.

There are three sizes of machinery that could be leased. However, the machines are not reliable. Their possible annual outputs and associated probabilities are shown in the table below. The annual lease payments are also shown.

	Probability		
Annual output (m^3)	*Machine A*	*Machine B*	*Machine C*
1 million	0·8	0·4	-
5 million	0·2	0·3	0·6
8 million	-	0·3	0·4

Annual lease (£ million)	£20	£30	£40

Operating costs

If C Ltd processed Flexicrete, it would not be able to sell any of its traditional products. Due to the unreliability of the machinery, rectification problems, overtime working and possibly the need to reduce the output of the earlier processing plants, the costs per cubic metre (m^3) will vary with the type of machine and its output. The uncertainty is so great that even for a given output there is a range of possible costs. Z Ltd will dictate the selling price of Flexicrete. The accountant for C Ltd has produced the following forecasts of profit per cubic metre and their probabilities.

	Machine A		*Machine B*		*Machine C*	
Annual output (m^3)	*Profit (£ per m^3)*	*Prob*	*Profit (£ per m^3)*	*Prob*	*Profit (£ per m^3)*	*Prob*
1 million	35	0·7	5	0·4	-	-
1 million	25	0·3	-5	0·6	-	-
5 million	35	0·4	25	0·4	10	0·3
5 million	15	0·3	15	0·3	5	0·5
5 million	5	0·3	5	0·3	-5	0·2
8 million	-	-	25	0·5	25	0·6
8 million	-	-	5	0·5	5	0·4

Note: The profit per cubic metre is after charging all costs except the lease payments.

Required:

(a) Draw a decision tree that shows the situation facing C Ltd.

(7 marks)

(b) Using the decision tree, or any other method, calculate for **each** machine

(i) the expected value of the total profit;

(ii) the probability of at least breaking even.

(9 marks)

(c) As management accountant, write a report to the management of C Ltd that recommends the action it should take. The report must support your recommendation by evaluating the situation and include a discussion of the appropriateness of the methodologies used in part *(b)*.

(9 marks)

(Total = 25 marks)

Question Four

Part (a)

The Premier Cycle Company has two divisions: the Frame Division and the Assembly Division. One type of frame produced by the Frame Division is a high quality carbon frame for racing bicycles. The Frame Division can sell the frames directly to external customers as "frame only" or the frames can be transferred to the Assembly Division where they are assembled into complete racing bicycles.

Company policy
It is current company policy for the managers of each division to seek to maximise their own divisional profits. Consequently, the transfer price of a carbon frame is set by the manager of the Frame Division to be the same as the external selling price.

Frame Division
The relationship between the selling price of carbon frames and the annual quantity demanded by external customers is such that at a price of £4,000 there will be no demand, but demand will increase by 500 frames for every £250 decrease in price. The variable cost of producing a carbon frame is £1,000. The division has a maximum annual output of 10,000 frames and fixed costs of £2 million each year.

Assembly Division
The relationship between selling price and annual demand for a complete bicycle is such that at a price of £7,000 there will be no demand, but demand will increase by 300 bicycles for every £100 decrease in price. The Assembly Division has a maximum annual capacity of 30,000 assemblies and fixed costs of £1·2 million each year. The total variable costs of additional parts and assembling are £1,750 for each bicycle.

Note: If the relationship between Price (P) and quantity demanded (x) is represented by the equation P = a - bx then Marginal Revenue (MR) will be given by MR = a - 2bx.

Required:

(i) Calculate the unit selling price of an assembled bicycle and the quantity that would be demanded given the current company policy;

(8 marks)

(ii) Calculate the unit selling price, and quantity demanded, of an assembled bicycle that would maximise the profit of the Premier Cycle Company.

(4 marks)

Total for requirement (a) = (12 marks)

Part (b)

Freezer Foods Ltd is a divisionalised company that specialises in the production of frozen foods. Each division is a profit centre. The Pizza Division produces frozen pizzas. In order to ensure a regular supply of suitable packaging, Freezer Foods Ltd recently acquired a company that produces high quality packaging. This company is now the Box Division.

Bonus scheme
Freezer Foods Ltd will pay a fixed bonus to each Divisional Manager next year if he/she earns a minimum profit equivalent to at least 12% of his/her division's fixed costs.

Pizza Division
The manager of the Pizza Division has just won a fixed price contract to supply 7 million pizzas to a chain of food shops. This contract will fully utilise all of the capacity of the Pizza Division for the next year.

Budget details for the next year are:

Variable cost per pizza	£0·89 (this does ***not*** include the box)
Fixed costs	£4·50 million
Revenue	£11·55 million
Capacity	7 million pizzas

Box Division
Budget details for the Box Division for the next year are:

Variable production cost	£0·025 per box
Fixed costs	£1 million
External market demand	32 million boxes

Required:

(i) Calculate the price per box that the Box Division will want to charge the Pizza Division if this is to equal the budgeted external selling price;

(3 marks)

(ii) Calculate the maximum price per box that the Pizza Division would be willing to pay;

(3 marks)

(iii) Discuss the validity of using relevant costs as a basis to set transfer prices for internal performance measurement. You should use data from Freezer Foods Ltd to illustrate your answer.

(7 marks)

Total for requirement (b) = (13 marks)

(Total = 25 marks)

End of Section C

SECTION D – 25 MARKS

ANSWER ONE QUESTION ONLY

Question Five

B Ltd produces a wide variety of differently flavoured confectionery products (candy bars, chews and other sweets) in batches using various combinations of highly automated processes. These processes include mixing, cooking and packaging. Some, but not all, of the processes are common to all products. Each type of product has its own manager. The performance of each Product Manager is evaluated by the profit that their products earn and the managers' salaries are linked to those profits.

The Managing Director has received complaints from some Product Managers about the amount of costs being charged to their products. He has also heard about the growing rivalry and tension between Product Managers that has been caused by this profit-focused performance appraisal system. The Managing Director thinks that the problems would be solved by using activity based costing (ABC) instead of the traditional absorption costing system currently used. He believes the biggest benefit of introducing ABC will be better product costings and that this will lead to more appropriate selling prices, so that Product Managers will have no grounds for complaint.

Required:

(a) Discuss the applicability of ABC to B Ltd's situation.

(13 marks)

(b) Discuss the intended use of ABC to

(i) set selling prices by B Ltd;

(6 marks)

(ii) support B Ltd's performance appraisal system.

(6 marks)

Total for requirement (b) = (12 marks)

(Total = 25 marks)

Question Six

Traditional cost classifications, terminology and the dominance of periodic financial accounts must be challenged if managers are to be provided with information that is focused on decision-making in a modern manufacturing environment.

Required:

(a) Discuss the above statement.

(7 marks)

(b) Explain how EACH of the following has responded to the challenges:

(i) Activity Based Costing (ABC);

(ii) Throughput accounting;

(iii) Life cycle costing.

Note: Your answers to part *(b)* should focus on how each **one** of the above has challenged traditional cost classifications, terminology and/or periodic accounting; *simply describing* ABC, throughput accounting and life cycle costing will **not** answer the question.

(18 marks)

(Total = 25 marks)

End of paper