CIMA

Intermediate Level

Management Accounting – Decision Making

9 IDEC

21 May 2003

Wednesday afternoon

INSTRUCTIONS TO CANDIDATES

Read this page before you look at the questions

You are allowed three hours to answer this question paper.
Ensure that there is graph paper on your desk.
Answer the ONE question in section A (this has 8 sub-questions). Answer the ONE question in section B. Answer ONE question ONLY from section C. Answer ONE question ONLY from section D.
Maths tables and formulae were provided at the end of the questions and are available elsewhere on the website.
Write your examination number in the boxes provided on the front of the answer book. Write IDEC on the line marked "Subject" on the front of the answer book. Write your examination number on the special answer sheet for section A which is on page 3 of this question paper booklet. Detach the sheet from the booklet and insert it into your answer book before you hand this in.
Do NOT write your name or your student registration number anywhere on your answer book.
Tick the appropriate boxes on the front of the answer book to indicate which questions you have answered.

SECTION A — 20 MARKS
ANSWER *ALL* EIGHT SUB-QUESTIONS

Each of the sub-questions numbered from **1.1** to **1.8** inclusive, given below, has only ONE correct answer.

Required:

On the SPECIAL ANSWER SHEET opposite, place a circle "O" around the letter that gives the correct answer to each sub-question.

If you wish to change your mind about an answer, block out your first answer completely and then circle another letter. You will not receive marks if more than one letter is circled.

Please note that you will not receive marks for any workings to these sub-questions.

You must detach the special answer sheet from the question paper and attach it inside the front cover of your answer book before you hand it to the invigilators at the end of the examination.

Question One

1.1 BG plc has recently developed a new product. The nature of BG plc's work is repetitive, and it is usual for there to be an 80% learning effect when a new product is developed. The time taken for the first unit was 22 minutes. Assuming that an 80% learning effect applies, the time to be taken for the fourth unit is nearest to

A 9·91 minutes.

B 9·97 minutes.

C 14·08 minutes.

D 15·45 minutes.

E 17·60 minutes.

(3 marks)

The following data relates to both questions 1.2 and 1.3

X Ltd can choose from five mutually exclusive projects. The projects will each last for one year only and their net cash inflows will be determined by the prevailing market conditions. The forecast annual cash inflows and their associated probabilities are shown below.

Market Conditions	*Poor*	*Good*	*Excellent*
Probability	0·20	0·50	0·30
	£000	*£000*	*£000*
Project L	500	470	550
Project M	400	550	570
Project N	450	400	475
Project O	360	400	420
Project P	600	500	425

1.2 Based on the expected value of the net cash inflows, which project should be undertaken?

A L

B M

C N

D O

E P

(2 marks)

1.3 The value of perfect information about the state of the market is

A Nil

B £5,000

C £26,000

D £40,000

E £128,000

(3 marks)

The following data relates to both questions 1.4 and 1.5

An education authority is considering the implementation of a CCTV (closed circuit television) security system in one of its schools.

Details of the proposed project are as follows:

Life of project	5 years
Initial cost	£75,000
Annual savings:	
Labour costs	£20,000
Other costs	£5,000
Cost of capital	15% per annum

1.4 The internal rate of return for this project is nearest to

A 10·13%

B 14·87%

C 15·64%

D 19·88%

E 20·13%

(2 marks)

1.5 The percentage change in the annual labour cost savings that could occur before the project ceased to be viable is

A 10·50%

B 11·73%

C 13·13%

D 35·20%

E 44·00%

(3 marks)

The following data relates to both questions 1.6 and 1.7

P Ltd operates a standard costing system. The following information has been extracted from the standard cost card for one of its products:

Budgeted production		1,250 units
Direct material cost	7 kg @ £4·10 per kg	£28·70 per unit

Actual results for the period were as follows:

Production		1,000 units
Direct material (purchased and used)	7,700 kg	£33,880

It has subsequently been noted that the market price of the material was £4·50 per kg during the period.

1.6 The value of the planning variance is

A £1,225 adverse.

B £2,800 adverse.

C £3,500 adverse.

D £4,375 adverse.

E £5,950 adverse.

(2 marks)

1.7 The value of the material usage variance is

A £2,870 adverse.

B £3,080 adverse.

C £3,150 adverse.

D £3,587·50 adverse.

E £3,937·50 adverse.

(2 marks)

1.8 X plc, a manufacturing company, has two divisions: Division A and Division B. Division A produces one type of product, ProdX, which it transfers to Division B and also sells externally. Division B has been approached by another company which has offered to supply 2,500 units of ProdX for £35 each.

The following details for Division A are available:

	£
Sales revenue	
Sales to Division B @ £40 per unit	400,000
External sales @ £45 per unit	270,000
Less:	
Variable cost @ £22 per unit	352,000
Fixed costs	100,000
Profit	218,000

If Division B decides to buy from the other company, the impact of the decision on the profits of Division A and X plc, assuming external sales of ProdX cannot be increased, will be

	Division A	*X plc*
A	£12,500 decrease	£12,500 decrease
B	£15,625 decrease	£12,500 increase
C	£32,500 decrease	£32,500 increase
D	£45,000 decrease	£32,500 decrease
E	£45,000 decrease	£45,000 decrease

(3 marks)

(Total = 20 marks)

SECTION B – 30 MARKS

ANSWER THIS QUESTION, showing supporting calculations where appropriate

Question Two

Just over two years ago, R Ltd was the first company to produce a specific "off-the-shelf" accounting software packages. The pricing strategy, decided on by the Managing Director, for the packages was to add a 50% mark-up to the budgeted full cost of the packages. The company achieved and maintained a significant market share and high profits for the first two years.

Budgeted information for the current year (Year 3) was as follows:

Production and sales	15,000 packages
Full cost	£400 per package

At a recent Board meeting, the Finance Director reported that although costs were in line with the budget for the current year, profits were declining. He explained that the full cost included £80 for fixed overheads. This figure had been calculated by using an overhead absorption rate based on labour hours and the budgeted level of production which, he pointed out, was much lower than the current capacity of 25,000 packages.

The Marketing Director stated that competitors were beginning to increase their market share. He also reported the results of a recent competitor analysis which showed that when R Ltd announced its prices for the current year, the competitors responded by undercutting them by 15%. Consequently, he commissioned an investigation of the market. He informed the Board that the market research showed that at a price of £750 there would be no demand for the packages but for every £10 reduction in price the demand would increase by 1,000 packages.

The Managing Director appeared to be unconcerned about the loss of market share and argued that profits could be restored to their former level by increasing the mark-up.

Note:	If price	=	$a - bx$
	then marginal revenue	=	$a - 2bx$

Required:

(a) Discuss the Managing Director's pricing strategy in the circumstances described above. Your appraisal must include a discussion of the alternative strategies that could have been implemented at the launch of the packages.

(10 marks)

(b) *(i)* Based on the data supplied by the market research, calculate the maximum annual profit that can be earned from the sale of the packages from year 3 onwards.

(6 marks)

(b) *(ii)* A German computer software distribution company, L, which is interested in becoming the sole distributor of the accounting software packages, has now approached R Ltd. It has offered to purchase 25,000 accounting packages per annum at a fixed price of □930 per package. If R Ltd were to sell the packages to L, then the variable costs would be £300 per package.

The current exchange rate is □1 = £0·60.

Required:

Draw a diagram to illustrate the sensitivity of the proposal from the German company to changes in the exchange rate and then state and comment on the minimum exchange rate needed for the proposal to be worthwhile.

(7 marks)

(c) R Ltd has signed a contract with L to supply the accounting packages. However, there has been a fire in one of the software manufacturing departments and a machine has been seriously damaged and requires urgent replacement.

The replacement machine will cost £1 million and R Ltd is considering whether to lease or buy the machine. A lease could be arranged under which R Ltd would pay £300,000 per annum for four years with each payment being made annually in advance. The lease payments would be an allowable expense for taxation purposes.

Corporation tax is payable at the rate of 30% per annum in two equal instalments: one in the year that profits are earned and the other in the following year. Writing-down allowances are allowed at 25% each year on a reducing balance basis. It is anticipated that the machine will have a useful economic life of 4 years, at the end of which there will be no residual value.

The after-tax cost of capital is 12%.

Required:

Evaluate the acquisition of the new machine from a financial viewpoint.

(7 marks)

(Total = 30 marks)

SECTION C – 25 MARKS

ANSWER ONE QUESTION ONLY, showing supporting calculations where appropriate

Question Three

All of the 100 accountants employed by X Ltd are offered the opportunity to attend six training courses per year. Each course lasts for several days and requires the delegates to travel to a specially selected hotel for the training. The current costs incurred for each course are:

Delegate costs:

	£ per delegate per course
Travel	200
Accommodation, food and drink	670
	870

It is expected that the current delegate costs will increase by 5% per annum.

Course costs:

	£ per course
Room hire	1,500
Trainers	6,000
Course material	2,000
Equipment hire	1,500
Course administration	750
	11,750

It is expected that the current course costs will increase by 2·5% per annum.

The Human Resources Director of X Ltd is concerned at the level of costs that these courses incur and has recently read an article about the use of the Internet for the delivery of training courses (e-learning). She decided to hire an external consultant at a cost of £5,000 to advise the company on how to implement an e-learning solution. The consultant prepared a report which detailed the costs of implementing and running an e-learning solution:

	Notes	*£*
Computer hardware	*(1)*	1,500,000
Software licences	*(2)*	35,000 per annum
Technical Manager	*(3)*	30,000 per annum
Camera and sound crew	*(4)*	4,000 per course
Trainers and course material	*(5)*	2,000 per course
Broadband connection	*(6)*	300 per delegate per annum

Notes

(1) The computer hardware will be depreciated on a straight-line basis over five years. The scrap value at the end of the five years is expected to be £50,000.

(2) The company would sign a software licence agreement which fixes the annual software licence fee for five years. This fee is payable in advance.

(3) An employee working in the IT Department currently earning £20,000 per annum will be promoted to Technical Manager for this project. This employee's position will be replaced. The salary of the Technical Manager is expected to increase by 6% per annum.

(4) The company supplying the camera and sound crew for recording the courses for Internet delivery has agreed to hold its current level of pricing for the first two years but then it will increase costs by 6% per annum. All courses will be recorded in the first quarter of the year of delivery.

(5) The trainers will charge a fixed fee of £2,000 per course for the delivery and course material in the first year and expect to increase this by 6% per annum thereafter. The preparation of the course material and the recording of the trainers delivering the courses will take place in the first quarter of the year of delivery.

(6) All of the accountants utilising the training courses will be offered £300 towards broadband costs which will allow them to access the courses from home. They will claim this expense annually in arrears. Broadband costs are expected to decrease by 5% per annum after the first year as it becomes more widely used by Internet users.

X Ltd uses a 14% cost of capital to appraise projects of this nature.

Ignore taxation.

Required:

As the Management Accountant for X Ltd,

(a) prepare a financial evaluation of the options available to the company and advise the directors on the best course of action to take, from a purely financial point of view;
(Your answer should state any assumptions you have made.)

(16 marks)

(b) *(i)* using the annual equivalent technique, calculate the breakeven number of delegates per annum taking each of the six e-learning courses that is required to justify the implementation of the e-learning solution;
(Note that you should assume that the number of delegates taking the e-learning courses will be the same in each of the five years.)

(6 marks)

(ii) comment on the implications of the breakeven number you have calculated in your answer to *(b) (i).*

(3 marks)

(Total = 25 marks)

Question Four

The management team of T Ltd, a small venture capital company, is planning its investment activities for the next five years. It has been approached by four start-up companies from the same industry sector which have presented their business plans for consideration. The forecast cash flows and resulting net present values (NPV) for each start-up company are as follows:

Company	*Capital*	*Operational cash flows*					*NPV*
	Year 0	*Year 1*	*Year 2*	*Year 3*	*Year 4*	*Year 5*	
	$000	*$000*	*$000*	*$000*	*$000*	*$000*	*$000*
A	(500)	(75)	(40)	50	400	650	60
B	(250)	(30)	(20)	(5)	250	247	0
C	(475)	(100)	(30)	(20)	400	750	77
D	(800)	(150)	(50)	50	900	786	80

The directors of T Ltd use a 12% cost of capital for appraising this type of investment.

You can assume that all investments are divisible and that they are not mutually exclusive.

Ignore tax and inflation.

Required:

(a) Advise T Ltd which of the investments, if any, it should invest in.

(3 marks)

(b) If capital for investment now is limited to $700,000 but T Ltd can raise further capital in one year's time and thereafter at a cost of 12% per annum,

(i) advise T Ltd how it should invest the $700,000;

(5 marks)

(ii) discuss other factors which may affect the decision.

(4 marks)

(c) T Ltd has now found out that funds will also be restricted in future years and that the constraints are absolute and cannot be removed by project generated incomes. The present values of cash that will be available for future investment are as follows:

	Present value
	$000
Year 0	700
Year 1	80
Year 2	35

Required:

Formulate the linear programming model that will maximise net present value and explain the meaning of each variable and the purpose of each constraint you have identified.
(You are not required to attempt a solution.)

(10 marks)

(d) Briefly explain the benefits of using a linear programming format in this situation.

(3 marks)

(Total = 25 marks)

SECTION D – 25 MARKS

ANSWER ONE QUESTION ONLY, showing supporting calculations where appropriate

Question Five

M Ltd has two divisions, X and Y. Division X is a chip manufacturer and Division Y assembles mobile phones. Division X currently manufactures many different types of chip, one of which is used in the manufacture of the mobile phones. Division X has no external market for the chips that are used in the mobile phones and currently sets the transfer price on the basis of total cost plus 20% mark-up.

The budgeted profit and loss statement for Division Y for next year shows the following results:

Mobile phone range	*P*	*Q*	*R*
	£000	*£000*	*£000*
Sales	10,000	9,500	11,750
Less: Total costs	7,200	11,700	9,250
Profit / (loss)	2,800	(2,200)	2,500
Fixed costs	2,000	5,400	5,875

The total costs shown above include the cost of the chips.

Division Y uses a traditional absorption costing system based on labour hours.

M Ltd operates a performance measurement system based on divisional profits. In order to increase profit for the forthcoming year, Division Y has asked permission to buy chips from an external supplier.

The accountant of M Ltd has recently attended a course on activity based costing (ABC) and has recommended that the divisions should implement an ABC system rather than continue to operate the traditional absorption costing system.

Required:

(a) A presenter at the conference stated that "ABC provides information that is more relevant for decision making than traditional forms of costing". Discuss this statement, using Division Y when appropriate to explain the issues you raise.

(8 marks)

(b) The management team of M Ltd has decided to implement ABC in all of the divisions. Discuss any difficulties which might be experienced when implementing ABC in the divisions.

(6 marks)

(c) *(i)* Discuss the current transfer pricing system and explain alternative systems that might be more appropriate for the forthcoming year.

(7 marks)

(ii) Explain the impact that the introduction of an ABC system could have on the transfer price and on divisional profits.

(4 marks)

(Total = 25 marks)

Question Six

X Ltd has recently automated its manufacturing plant and has also adopted a Total Quality Management (TQM) philosophy and a Just in Time (JIT) manufacturing system. The company currently uses a standard absorption costing system for the electronic diaries which it manufactures.

The following information for the last quarter has been extracted from the company records:

	Budget	*Actual*
Fixed production overheads	$100,000	$102,300
Labour hours	10,000	11,000
Output (electronic diaries)	100,000	105,000

Fixed production overheads are absorbed on the basis of direct labour hours.

The following fixed production overhead variances have been reported:

	$
Expenditure variance	2,300 (A)
Capacity variance	10,000 (F)
Efficiency variance	5,000 (A)
Total	2,700 (F)

If the fixed production overheads had been further analysed and classified under an Activity Based Costing (ABC) system, the above information would then have been presented as follows:

	Budget	*Actual*
Costs:		
Material handling	$30,000	$30,800
Set up	$70,000	$71,500
Output (electronic diaries)	100,000	105,000
Activity:		
Material handling (orders executed)	5,000	5,500
Set up (production runs)	2,800	2,600

The following variances would have been reported:

		$
Overhead expenditure variance	Material handling	2,200 (F)
	Set ups	6,500 (A)
Overhead efficiency variance	Material handling	1,500 (A)
	Set ups	8,500 (F)
Total		2,700 (F)

Required:

(a) Explain why and how X Ltd may have to adapt its standard costing system now that it has adopted TQM and JIT in its recently automated manufacturing plant.

(9 marks)

(b) Explain the meaning of the fixed overhead variances calculated under the standard absorption costing system and discuss their usefulness to the management of X Ltd for decision-making.

(6 marks)

(c) For the variances calculated under the ABC classification,

(i) explain how they have been calculated;

(ii) discuss their usefulness to the management of X Ltd for decision-making.

(10 marks)

(Total = 25 marks)

End of paper