

### **General Comments**

The overall average mark was below the level achieved in the previous diet but it was encouraging to note that a significant number of candidates attained high individual marks.

The paper featured questions that covered a large proportion of the syllabus and included familiar topics that should have been no surprise to candidates, especially those candidates who took the time to familiarise themselves with previous papers. Topics such as linear programming, the learning curve and investment appraisal were again examined. Unfortunately the answers put forward by many candidates demonstrated that the subject being tested was understood only at a peripheral level.

It was also evident that while most candidates feel relatively comfortable when tackling numerical questions they are less able to answer discursive questions. Many candidates cannot explain, or describe, a technique they have been called upon to use, and many do not appear to appreciate what was actually required. The problem seems to be a complete lack of understanding of how to interpret a question i.e. having no understanding of the verb being used. When preparing for the examinations candidates need to know what is meant by words such as "explain", "discuss" and "identify".

As in previous diets it was disappointing to note that questions that tested fundamental aspects of management accounting were poorly answered. This emphasises again the point that candidates who have been awarded exemptions from paper C1 and in some cases P1, need to ensure that they have a good understanding of the complete syllabi of both papers before attempting the P2 paper.

In most cases the quality of writing was good but aspects of grammar need attention. In the majority of cases there was no clear evidence of an answer plan and many candidates presented answers that were difficult to follow. On these occasions candidates are putting themselves at a disadvantage as it is difficult to award the marks that are on offer.

The marking team also experienced difficulties when marking answers to numerical questions because many candidates gave no directions to workings. On other occasions the workings could not be deciphered and sometimes the workings were simply not provided. Under these circumstances it is difficult for markers to use the 'own figure' rule to award marks.

It was pleasing to note that very few candidates experienced time constraints, this being demonstrated by virtually every candidate attempting the required number of questions. This situation could also confirm that candidates are making full use of the 20 minutes allowed for planning.

**Section A – 20 marks**

**Question 1.1**

- (i) Penetration pricing is a strategy that is often used in the decline phase of a product's life cycle.
- (ii) In the context of quality costs, Conformance Costs are always equal to Internal Failure Costs.

Which of the above statements are correct?

- A** (i) only
- B** (ii) only
- C** Both
- D** Neither

*(2 marks)*

The answer is **D**

**Question 1.2**

The following details relate to Product Z:

	<i>\$/unit</i>
Selling price	45·00
Purchased components	14·00
Labour	10·00
Variable overhead	8·50
Fixed overhead	4·50
Time on bottleneck resource	10 minutes

Product return per minute is

- A** \$0·80
- B** \$1·25
- C** \$2·10
- D** \$3·10

*(2 marks)*

The answer is **D**

**Workings**

$(\text{Selling Price} - \text{Material Cost}) / \text{Time on bottleneck resource} = (\$45\cdot00 - \$14\cdot00) / 10 \text{ minutes} = \$3\cdot10$

### Question 1.3

In the context of quality costs, customer compensation costs and test equipment running costs would be classified as:

	<i>Customer compensation costs</i>	<i>Test equipment running costs</i>
<b>A</b>	Internal Failure Costs	Prevention Costs
<b>B</b>	Internal Failure Costs	Appraisal Costs
<b>C</b>	External Failure Costs	Appraisal Costs
<b>D</b>	External Failure Costs	Prevention Costs

(2 marks)

The answer is **C**

### Question 1.4

A company has an annual money cost of capital of 20% and inflation is 8% per annum. Calculate the company's annual real percentage cost of capital to 2 decimal places.

(2 marks)

#### Workings

$$\begin{aligned} (1+m) / (1+i) &= (1+r) \\ &= 1.20 / 1.08 = 1.1111 \\ \text{Answer} &= 11.11\% \end{aligned}$$

### Question 1.5

A project has a net present value of \$683,000. The present value of the direct material cost is \$825,000. Calculate the sensitivity of the project to changes in the direct material cost to 2 decimal places.

(2 marks)

#### Workings

$$\begin{aligned} \$683,000 / \$825,000 \\ &= 82.79\% \end{aligned}$$

### Question 1.6

RDE plc uses an activity based costing system to attribute overhead costs to its three products. The following budgeted data relates to the year to 31 December 2008:

Product	X	Y	Z
Production units (000)	15	25	20
Batch size (000 units)	2.5	5	4

Machine set up costs are caused by the number of batches of each product and have been estimated to be £600,000 for the year.

Calculate the machine set up costs that would be attributed to each unit of product Y.

(3 marks)

### Workings

The total number of batches =  $(15/2.5) + (25/5) + (20/4) = 16$

Cost driver rate =  $£600,000 / 16 = £37,500$

Cost per unit =  $£37,500 / 5,000 = £7.50$

### Question 1.7

A company is considering an investment of \$400,000 in new machinery. The machinery is expected to yield incremental profits over the next five years as follows:

Year	Profit (\$)
1	175,000
2	225,000
3	340,000
4	165,000
5	125,000

Thereafter, no incremental profits are expected and the machinery will be sold. It is company policy to depreciate machinery on a straight line basis over the life of the asset. The machinery is expected to have a value of \$50,000 at the end of year 5.

Calculate the payback period of the investment in this machinery to the nearest 0.1 years.

(3 marks)

### Workings

Annual depreciation =  $(\$400,000 - \$50,000) / 5 \text{ years} = \$70,000$

Year	Profit (\$)	Depreciation (\$)	Cash flow (\$)	Cash flow to date (\$)
1	175,000	70,000	245,000	245,000
2	225,000	70,000	295,000	540,000

Payback occurs during year 2

Payback period =  $[1 + (155,000/295,000)] \text{ years} = 1.5 \text{ years}$

### Question 1.8

A company has determined its activity level and is now predicting its costs for the quarter ended 31 March 2008. It has made the following predictions:

<i>Variable costs</i>	<i>Probability</i>	<i>Fixed costs</i>	<i>Probability</i>
\$560,000	0.3	\$440,000	0.15
\$780,000	0.5	\$640,000	0.55
\$950,000	0.2	\$760,000	0.30

Calculate the expected value of total cost and its standard deviation.

(4 marks)

### Workings

<i>Variable costs</i>	<i>Fixed costs</i>	<i>Total costs</i>	<i>Probability</i>		
<i>\$000</i>	<i>\$000</i>	<i>x</i>	<i>p</i>	<i>px</i>	<i>p(x-x)<sup>2</sup></i>
560	440	1,000	0.45	45	6,986
560	640	1,200	0.165	198	6,210
560	760	1,320	0.090	118.8	493
780	440	1,220	0.075	91.5	2,271
780	640	1,420	0.275	390.5	186
780	760	1,540	0.150	231	3,197
950	440	1,390	0.030	41.7	0
950	640	1,590	0.110	174.9	4,226
950	760	1,710	0.060	102.6	5,991
Totals			1.000	1,394	29,560

Expected value \$1,394,000; Standard Deviation  $\sqrt{29,560,000,000} = \$171,930$

### Examiner's comments

The average mark for this question was lower than in previous diets. Many candidates failed to gain the marks available by simply not presenting the answer as directed in the question.

Questions 1.4 and 1.5 specifically asked for the answer to be shown "to 2 decimal places" but many candidates chose instead to present their answer in another format, for example a whole number, that gained no marks.

When answering question 1.7 many candidates incorrectly subtracted the annual depreciation figure from the profit, rather than adding it. It was disappointing to see such a fundamental error.

#### Common Errors

1. Failing to present an answer as directed in the question
2. Demonstrating an inability to convert an annual profit figure into a cash flow figure by adding back the correct depreciation figure.

## Section B – 30 marks

ANSWER ALL THREE QUESTIONS

### Question 2

- (a) Explain the concept of the learning curve and why it may be relevant to the above company. (3 marks)
- (b) Calculate the expected time for the 6th unit of output. (3 marks)
- (c) Discuss the implications of the learning curve for a company adopting a penetration pricing policy. (4 marks)

(Total for Question Two = 10 marks)

### Rationale

**Question Two** This question tests candidates' ability to demonstrate their understanding of the learning curve and why it may be relevant to the company in the scenario, together with its implications for a company adopting a penetration pricing policy. This question addresses the learning outcome: D(iv) *Explain and apply learning and experience curves to estimate time and cost for new products and services.*

### Suggested Approach

- Read the scenario carefully and identify the key factors that are relevant to the operation of a learning curve
- Calculate the average time per unit for five units and six units
- Calculate the total times for five units and six units
- Calculate the time taken for the sixth unit
- Discuss the relationship between costs, prices and profits, and the implications of the learning curve for the adoption of a penetration pricing policy

### Marking Guide

	Marks
(a) Labour intensive process so repetition	1.5
Explanation of learning curve principle	1.5
(b) Calculate average times	1
Calculate total times	1
Time for sixth unit	1
(c) Pricing policy (e.g. using an average cost level)	1
Losses on early units	1
Profits on later units	1
Deterrent to competitors	1

### Examiner's Comments

Although parts (a) and (b) were generally well answered, the answers to part (c) were generally poor. Part (c) asked candidates to 'discuss the implications of the learning curve for a company adopting a penetration pricing policy'. Unfortunately the majority of candidates simply wrote all they knew about penetration pricing and did not even consider the implications of the learning curve. Marks were not awarded for answers that did not consider the learning curve.

#### Common Errors

1. Calculating incorrect times for the fifth and sixth units.
2. Ignoring the implications of the learning curve when formulating an answer to part (c).

### Question 3

- (a) Calculate the optimum (profit maximising) selling price of the component for the period.

*Note: If Price =  $a - bq$  then Marginal Revenue =  $a - 2bq$*

**(6 marks)**

- (b) Identify and explain two reasons why it may be inappropriate for HS to use this theoretical pricing model in practice.

**(4 marks)**

**(Total for Question Three = 10 marks)**

### Rationale

**Question Three** This question tests candidates' knowledge of pricing. In part (a) candidates are required to prepare calculations to determine the profit maximising selling price. In part (b) candidates are required to identify and explain why the use of this theoretical model may be inappropriate in practice. This question addresses the learning outcome: A (iii) *Apply an approach to pricing based on profit maximisation in imperfect markets and evaluate the financial consequences of alternative pricing strategies.*

### Suggested Approach

- Read the scenario carefully to identify the key factors in determining the optimum price
- Analyse the costs provided using the high & low points method to separate them into their fixed and variable components
- Determine the theoretical optimum price

### Marking Guide

### Marks

(a) Calculate marginal cost	1
Calculate the price at zero demand	2
Calculate q	2
Calculate the optimum price	1
(b) Each reason (2 X 2 marks)	4

### Examiner's Comments

Both parts of this question were generally well answered. However there were two common errors. Firstly the inability of candidates to use the high-low method to calculate a variable labour and conversion cost. This is a most basic management accounting technique that appears in several areas of the syllabus (for example breakeven analysis and flexible budgets). Secondly, the answers put forward by many candidates were not 'sensible' in the context of the question.

#### Common Errors

1. Demonstrating an inability to apply the high-low technique.
2. Failing to ensure that answers were sensible i.e. putting forward answers that were completely out of context to the figures in the question.
3. Failing to distinguish between "cost" and "price"

#### Question 4

- (a) Prepare a decision tree to illustrate the above problem and use this to recommend, with reasons, the best course of action for the owner of the hotel.

(7 marks)

- (b) Briefly discuss the limitations of using a decision tree to solve this problem.

(3 marks)

(Total for Question Four = 10 marks)

#### Rationale

**Question Four** This question tests candidates' ability to interpret data and solve a problem using a decision tree approach. In part (b) candidates are then required to discuss the limitations of using a decision tree to solve such a problem. This question addresses the learning outcome: C(v) *Prepare and apply decision trees.*

#### Suggested Approach

- Analyse the data provided to determine the possible outcomes
- Prepare a decision tree that summarises those outcomes
- Evaluate each branch of the decision tree to determine the optimal solution
- Discuss your recommendations and the limitations of using decision trees

#### Marking Guide

#### Marks

(a) Each branch (3 x 0.5 marks)	1.5
Evaluate each branch (3 x 1 mark)	3
Recommendation	1.5
(b) Negative contributions from all options	1
Uses expected values	1
Expected value is an average	1
Use may not be appropriate for this non-repeating decision	1
Ignores range of possible outcomes	1
	Max 3

#### Examiner's Comments

The answers to both parts of this question were generally poor. The decision trees put forward demonstrated clearly that many candidates were either unfamiliar with the principles associated with a decision tree, or had not practised/revised this topic. In view of the poor quality of many of the decision trees, the marking task was very difficult. On many occasions markers were unable to award marks. In part (b) most candidates did not discuss the limitations of using a decision tree as a management accounting tool, but simply discussed weather conditions and the hotel trade.

#### Common Errors

1. Demonstrating an inability to present clear, well tabulated, decision trees.
2. Not understanding multiple probabilities.
3. Failing to provide an answer to (part b).



**Section C – 50 marks**

ANSWER TWO QUESTIONS OUT OF THREE

**Question 5**

(a)

- (i) Calculate the Net Present Value (NPV) of the investment in the new facility.

(14 marks)

- (ii) Explain **two** other factors that SQ should consider before making its decision.

(4 marks)

(b) A company is thinking of investing in a new project. The details are as follows:

Investment	\$15,000
Time span	3 years
Annual cash inflows	\$30,000
Annual cash outflows	\$22,500
Cost of capital	10%
NPV @ 10%	\$3,652.50

The project does not have a residual value. Ignore taxation.

- (i) Calculate the Internal Rate of Return (IRR) of the investment proposal.

(3 marks)

- (ii) Calculate the sensitivity of the investment to changes in the annual cash inflows.

(4 marks)

(Total for Question Five = 25 marks)

**Rationale**

**Question Five** This question tests candidates' ability in part (a) to calculate the net present value of an investment proposal from the data provided and in part (b) to calculate the internal rate of return and the sensitivity of a project to a change in one of the input variables. This question addresses the learning outcome: B(iii) *Calculate project cash flows, accounting for tax and inflation, and apply perpetuities to derive "end of project" value where appropriate.*

**Suggested Approach**

- Read the scenario carefully to ascertain the incremental nature of the decision being made
- Identify the cost and revenue changes that will occur as a result of the decision and the timing of those changes
- Determine the tax consequences of those incremental costs and revenues
- Evaluate the proposal using net present value (NPV)
- Discuss the practical difficulties of using NPV to evaluate investment proposals
- Calculate the Internal Rate of Return
- Analyse the sensitivity of the project outcome to changes in the forecast cash inflows

Marking Guide	Marks
(a)(i) Calculate annual cost saving on existing production	3
Calculate additional units for each year:	
2008 – 2011	1
2012	1
Calculate annual contribution from additional units	3
Tax payable on pre tax profit	1
Tax saving on investment	3
Investment cash flows	1
Discounting of cash flows	1
(a)(ii) Each factor (2 x 2 marks)	4
(b)(i) Calculate NPV using a different discount factor	2
Calculate IRR	2
	Max 3
(b)(ii) Calculate present value of the forecast annual cash inflows	2
Sensitivity calculation	2
Examiner's Comments	
<p>Part (a)(i) was a familiar investment appraisal question, similar to questions that have appeared in previous papers. The most important aspect of this question was the need to adopt an incremental approach, i.e. the impact of investing in the new facility. Unfortunately only about ten per cent of answers attempted an incremental approach. A rather disappointing point to note is the high proportion of poorly presented answers. Many answers contained figures that were difficult to read, no details were included to explain the origin of the figures and workings were either non-existent or not referred to. Marking became quite a tortuous task and on occasions it was difficult to award marks. Parts a(ii), b(i) and b(ii) were generally well answered.</p>	
<p><i>Common Errors</i></p>	
<ol style="list-style-type: none"> <li>1. Not appreciating that an incremental approach was a vital aspect when answering a(i).</li> <li>2. Providing poorly presented answers</li> <li>3. Providing no reference to working/support details.</li> </ol>	

### Question 6

- (a) Using graphical linear programming identify the weekly production schedule for products D and G that maximises the profits of DFG during the next four weeks.

(15 marks)

- (b) The optimal solution to part (a) shows that the shadow prices of Skilled labour and Direct material A are as follows:

Skilled labour £Nil  
Direct material A £5.82

Explain the relevance of these values to the management of DFG.

(6 marks)

- (c) Using the graph you have drawn in part (a) explain how you would calculate by how much the selling price of Product D could rise before the optimal solution would change.

*Note:* Assume that demand is not affected by the selling price. You are **not** required to perform any calculations.

(4 marks)

(Total for Question Six = 25 marks)

### Rationale

**Question Six** This question tests candidates' ability to solve a scarce resource problem using linear programming and to interpret the solution. This question addresses the learning outcome: A(vii) *Apply variable/fixed cost analysis in multiple product contexts to break-even analysis and product mix decision making, including circumstances where there are multiple constraints and linear programming methods are needed to reach "optimal" solutions.*

### Suggested Approach

- Produce resource constraint equations from the data provided
- Determine the iso-contribution function
- Plot the resource constraints on a graph and identify the feasible region
- Determine the optimal solution using the iso-contribution function
- Explain the meaning of the shadow prices
- Explain how a change in selling price would affect the optimal solution

### Marking Guide

	Marks
(a) Establish and plot constraints	12
Identify iso-contribution line	2
Identify optimal plan	1
(b) General explanation of shadow price	1
Shadow price of skilled labour	2
Shadow price of material A	3
(c) Change in contribution	1
Change in iso-contribution line	1
Change in plan	2

### **Examiner's Comments**

Overall this was a well answered question with most candidates achieving a good mark for parts (a) and (b). Many candidates chose not to use graph paper when presenting their answer to part (a). In most cases this led to inaccurate figures being put forward for the optimal solution and obviously lost marks. The answers to part (c) were generally poor. This called for an understanding of the type of graph requested, in particular, the ability to manipulate the iso-contribution line. Calculations were not required, but while figures could perhaps have supported a written answer, many students chose to put forward only numerical answers.

### *Common Errors*

1. Not using the graph paper provided.
2. Not showing all details on the graph e.g. maximum demand.
3. In part (c), putting forward calculations as opposed to answering the question, i.e. "explain how you would calculate".

### Question 7

- (a) Advise the owner of the retail outlet which option to choose in order to minimise the losses that will occur as a result of the decision. All workings must be shown.

(15 marks)

- (b) Explain how Activity Based Costing may be used in a retail environment to improve the decision making and profitability of the business.

(10 marks)

(Total for Question Seven = 25 marks)

### Rationale

**Question Seven** This question tests candidates' ability to analyse the data provided to determine the optimal solution to a closure problem and then to explain how the use of activity based costing might improve the decision making and profitability of a retail business. This question addresses the learning outcomes: A(i) *Discuss the principles of decision making including the identification of relevant cash flows and their use alongside non-quantifiable factors in making rounded judgements*; and D(v) *Apply the techniques of activity based management in identifying cost drivers/activities and explain how process re-engineering can be used to eliminate non-value adding activities and reduce activity costs*.

### Suggested Approach

- Read the scenario carefully and identify the impact on costs and revenues of each alternative option
- Determine the costs and revenues of each option and advise the owner
- Discuss the application of Activity Based Costing to the retail sector
- Discuss how ABC could improve decision making and profitability for this retailer

### Marking Guide

### Marks

(a) Each relevant cost and revenue value (8 x 2 marks)	14 Max
Advice	1
(b) Categories of cost with examples	3
ABC identifies causes of costs	1
Examples relevant to scenario (2 x 2 marks)	4
Improved decision making and profitability	2

### Examiner's Comments

This was the least popular optional question and in the majority of cases the answers for both parts were poor. No specific management accounting technique was required for part (a). The question simply required a candidate to assimilate the data provided and quantify the impact of choosing option 1 or option 2. A variety of approaches were available to answer the question but the majority of answers were inaccurate and provided no supporting details or workings. When marking the answers to part (b) it was disappointing to note that many candidates have lost the ability to structure a written answer. In most cases there was very little evidence of any form of an answer plan and many answers were disjointed and not cohesive. Most candidates were able to put forward a brief explanation of ABC but very few were able to relate ABC to the retail environment.

*Common Errors*

1. In part (a), adopting a poor approach and using a poor layout for answers
2. Providing no supporting details or reference to workings
3. In part (b), not using an answer plan
4. Demonstrating a poor standard of handwriting.