

General Comments

A high proportion of students attained good marks and many students attained excellent marks. The actual exam paper resembled the pilot paper, which resulted in students encountering no 'surprises' in the topics tested, in the method of testing, and in the technical aspects of the questions.

It was pleasing to see an improvement in most cases in the neatness, layout and presentation of answers, and clear referencing to workings. Unfortunately it was again obvious that many students did not plan their answers, particularly to the written/discursive questions, and wrote all they knew about a particular topic without referring to the scenario in the question. This clearly demonstrated that students did not make full use of the 20 minutes planning time.

The performance on question 1 (objective test questions) was generally good but a significant number of students did not respond correctly to the question. For example 'to the nearest 1%' is not 11.96%.

Section A – 50 marks

Question 1.1

The following details relate to ready meals that are prepared by a food processing company:

<i>Ready meal</i>	<i>K</i> \$/meal	<i>L</i> \$/meal	<i>M</i> \$/meal
Selling price	5.00	3.00	4.40
Ingredients	2.00	1.00	1.30
Variable conversion costs	1.60	0.80	1.85
Fixed conversion costs*	0.50	0.30	0.60
Profit	0.90	0.90	0.65
Oven time (minutes per ready meal)	10	4	8

Each of the meals is prepared using a series of processes, one of which involves cooking the ingredients in a large oven. The availability of cooking time in the oven is limited and, because each of the meals requires cooking at a different oven temperature, it is not possible to cook more than one of the meals in the oven at the same time.

*The fixed conversion costs are general fixed costs that are not specific to any type of ready meal.

The most and least profitable use of the oven is

	<i>Most profitable</i>	<i>Least profitable</i>
A	Meal K	Meal L
B	Meal L	Meal M
C	Meal L	Meal K
D	Meal M	Meal L

(2 marks)

The answer is **C**

Workings

	<i>K</i>	<i>L</i>	<i>M</i>
Contribution per meal	\$1.40	\$1.20	\$1.25
Minutes	10	4	8
Contribution per minute	\$0.14	\$0.30	\$0.16

Question 1.2

A company provides three different levels of customer service support for one of its software products.

The following data relate to these three levels of support:

<i>Support level</i>	<i>Superior \$ per contract</i>	<i>Standard \$ per contract</i>	<i>Basic \$ per contract</i>
Annual fee	1,000	750	400
Annual variable costs	450	250	180
Annual fixed costs (see note below)	200	100	50
Profit	350	400	170

Note: The total annual fixed costs are budgeted to be \$1,000,000. None of these costs are specific to any type of customer service support.

Assuming that the number of customer service support contracts sold are in the proportion:

Superior 20%

Standard 30%

Basic 50%

The annual revenue needed to be generated to break even is closest to

- A** \$1,690,000
- B** \$1,695,000
- C** \$1,710,000
- D** \$2,270,000

(2 marks)

The answer is **A**

Workings

<i>Contract</i>	<i>Contribution</i>	<i>Weight</i>	<i>Contribution x Weight</i>
Superior	\$550	2	\$1,100
Standard	\$500	3	\$1,500
Basic	\$220	5	<u>\$1,100</u>
			<u>\$3,700</u>

$$\frac{\$1,000,000}{\$3,700} = 270.27 \text{ packages}$$

Each package has a sales value of \$6,250 so the breakeven sales value is \$1,689,188.

Question 1.3

A company is preparing a quotation for a one-month consultancy project and seeks your help in determining the relevant cost of one of the members of its project team. Currently the company employs the consultant on an annual salary of £36,000. In addition, the company provides the consultant with a company car which incurs running costs of £6,000 each year. The car will continue to be provided to the consultant whether this project is undertaken by the company or not.

This consultant is fully employed on current projects and, if she were to be transferred to this new project, then an existing junior consultant would be used to cover her current work. The junior consultant would be paid a bonus of £5,000 for undertaking this additional responsibility.

Another alternative that the company is considering is hiring an external consultant who has the necessary technical knowledge to work on the new consultancy project on a one month contract at a cost of £4,500.

The relevant cost to be used in preparing the quotation is

- A £3,000
- B £3,500
- C £4,500
- D £5,000

(2 marks)

The answer is C

Workings

The lowest cost option is to hire the external consultant.

Question 1.4

A company has determined that the net present value of an investment project is \$12,304 when using a 10% discount rate and \$(3,216) when using a discount rate of 15%.

Calculate the Internal Rate of Return of the project to the nearest 1%.

(2 marks)

Workings

The internal rate of return of the project is $10\% + [(\$12,304 / \$15,520) \times 5\%] = 14\%$

Question 1.5

A company has a nominal (money) cost of capital of 18% per annum. If inflation is 6% each year, calculate the company's real cost of capital to the nearest 0.01%.

(2 marks)

Workings

$$1.18 / 1.06 = 1.1132$$

$$\text{Real cost of capital} = 11.32\%$$

Question 1.6

A company is considering the price that it should charge for a repeat order. Fifteen units of the product have already been made and supplied to the customer and the company has experienced an 80% learning curve so far. The first unit required 54 hours of labour to complete the manufacture, assembly and testing processes.

Assuming that the 80% learning curve continues, calculate the expected time to be taken for the 16th unit.

Note: The learning index for an 80% learning curve is -0.3219.

(3 marks)

Workings

$$\begin{aligned}\text{Average time for 15 units} &= y = ax^b \\ &= 54 \times 15^{-0.3219} \\ &= 22.584 \text{ hours}\end{aligned}$$

$$\begin{aligned}\text{Average time for 16 units} &= y = ax^b \\ &= 54 \times 16^{-0.3219} \\ &= 22.12 \text{ hours}\end{aligned}$$

$$\begin{aligned}\text{Total time for 15 units} &= 338.76 \text{ hours} \\ \text{Total time for 16 units} &= 353.92 \text{ hours} \\ \text{Time for 16th unit} &= 15.16 \text{ hours}\end{aligned}$$

Question 1.7

A company has estimated the selling prices and variable costs of one of its products as follows:

<i>Selling price per unit</i>		<i>Variable cost per unit</i>	
\$	<i>Probability</i>	\$	<i>Probability</i>
40	0.30	20	0.55
50	0.45	30	0.25
60	0.25	40	0.20

Given that the company will be able to supply 1,000 units of its product each week irrespective of the selling price, and that selling price and variable cost per unit are independent of each other, calculate the probability that the weekly contribution will exceed \$20,000.

(3 marks)

Workings

Weekly contribution of \$20,000 if sales demand = 1,000 units equals a contribution of \$20 per unit.

The following combinations of selling price and variable cost per unit yield a contribution of more than \$20 per unit:

<i>Selling Price</i>	<i>Variable Cost</i>	<i>Probability</i>
\$50	\$20	$0.45 \times 0.55 = 0.2475$
\$60	\$30	$0.25 \times 0.25 = 0.0625$
\$60	\$20	$0.25 \times 0.55 = 0.1375$
		<u>0.4475</u>

Answer = 44.75%

Question 1.8

A company is considering the pricing of one of its products. It has already carried out some market research with the following results:

The quantity demanded at a price of \$100 will be 1,000 units

The quantity demanded will increase / decrease by 100 units for every \$50 decrease / increase in the selling price

The marginal cost of each unit is \$35

Note that if Selling Price (P) = $a - bx$ then Marginal Revenue = $a - 2bx$

Calculate the selling price that maximises company profit.

(4 marks)

Workings

Price at which demand = zero

$$= \$100 + \left(\frac{1000}{100} \times \$50 \right) = \$600$$

$$P = \$600 - 0.5x$$

$$MR = \$600 - x$$

$$MC = \$35$$

$$MC = MR$$

$$\$35 = \$600 - x$$

$$x = \$565$$

$$p = \$600 - (0.5 \times 565)$$

$$= \underline{\underline{\$317.50}}$$

Section B – 30 marks

ANSWER ALL THREE QUESTIONS

Question 2

Write a report, addressed to the Managing Director of the X group, that explains how the adoption of JIT might affect its profitability.

(10 marks)

Rationale

Question Two requires candidates to prepare a report that explains how the adoption of a Just in Time (JIT) approach to its manufacturing systems might affect its profitability. This requires a comparison between the existing system and JIT in order to identify the differences and how they would affect the company's profitability. This addresses learning outcome D(ii) *Evaluate the impacts of just in time production, the theory of constraints and total quality management on efficiency, inventory and cost*

Suggested Approach

- Identify the key characteristics of the existing purchasing and production system.
- Determine the changes that would occur as a result of implementing a JIT purchasing and production system.
- Explain the effect of those changes on the profitability of the company.

Marking Guide

Marks

Introduction that explains the principles of JIT, using an appropriate answer format	2
Explanation of how the changes implemented affect profitability (up to two marks per point)	8

Examiner's Comments

Most students made a good attempt at this question but many simply wrote all they knew about JIT (simply a 'brain dump').

Common Errors

- Not discussing how JIT might affect profitability.
- Not presenting a report ('To' and 'from' is simply not sufficient).
- Not relating the answer to the scenario described in the question.

Question 3

Calculate whether the company should purchase or lease the vehicle and clearly state your recommendation to the company.

(10 marks)

Rationale

Question Three requires candidates to calculate whether it is beneficial for a company to purchase or lease a vehicle. Candidates must recognise that this is a long term decision involving relevant costs and taxation and requiring the application of discounting techniques. This addresses learning outcome B(vi) *Evaluate project proposals using the techniques of investment appraisal*.

Suggested Approach

For the purchase option:

- Calculate the values of tax depreciation and the years in which the depreciation allowances occur.
- Calculate the tax relief and the years in which it is claimable.
- Discount the tax and investment cash flows.

For the lease option:

- Calculate the tax saving and the years in which it occurs.
- Discount the lease payments and tax savings.

Recommend the lowest cost option.

Marking Guide

Marks

Calculate the values of tax depreciation and the years in which they occur and the tax relief and the years in which it is claimable
Discount the tax and investment cash flows for the purchase option
Calculate the lease tax saving and the years in which it occurs
Discount the lease payments and tax savings
Recommendation

3
3
2
1
1

Examiner's Comments

This question was generally well answered.

Common Errors

- Calculating an incorrect figure for the balancing allowance on the purchase option.
- Calculating incorrect figures for the tax savings on both the purchase and the lease option.
- Showing no tax relief for the initial lease payment.

Question 4

- (a) State the method used to apportion the common costs between the products M, N and P and comment on its acceptability. Explain why it is necessary to apportion the common costs between each of the products. (5 marks)
- (b) Evaluate the viability of the common process, and determine the optimal processing plan for each of the three products showing appropriate calculations. (5 marks)

Rationale

Question Four is divided into two parts. Part (a) requires candidates to identify the method that has been used to apportion the common costs of a process between its joint product outputs and then to comment on the acceptability of the method used. Part (b) requires candidates to evaluate the viability of the common process and to determine the optimal production plan for each of the three joint products. This addresses learning outcome A(v) *Explain why joint costs must be allocated to final products for financial reporting purposes, but why this is unhelpful when decisions concerning process and product viability have to be taken*

Suggested Approach

- Calculate the unit cost of each litre of output and thus identify the method used to apportion the common costs.
- Comment on the acceptability of the apportionment method used.
- Explain the reasons why it is necessary to apportion the common costs.
- Compare the sales values of the output from the common process with the common process costs to determine its viability.
- Compare the incremental costs and revenues from further processing to determine the optimal processing plan for each product.

Marking Guide

Marks

Calculate the unit cost of each litre of output and thus identify the method used to apportion the common costs	1
Comment on the acceptability of the apportionment method used	2
Explain the reasons why it is necessary to apportion the common costs	2
Compare the sales values of the output from the common process with the common process costs to determine its viability	2
Compare the incremental costs and revenues from further processing to determine the optimal processing plan for each product	3

Examiner's Comments

This question was poorly answered, particularly part (a). Only one to two per cent of candidates attempted to explain why it was necessary to apportion the common costs (for example for inventory valuation).

Many students did not appreciate the simplicity of part (b).

Common Errors

- Misreading the question (part (a)) and answering that the method used to apportion meant absorption costing or ABC.
- In part (b), putting forward a complete profitability statement showing the position 'without further processing' and 'after further processing' instead of simply comparing the incremental revenues with the incremental costs.
- Either misunderstanding or totally ignoring the viability of the common process i.e. did it generate an overall profit.

Section C – 50 marks

ANSWER TWO QUESTIONS OUT OF THREE

Question 5

- (a) Evaluate the proposed purchase of the new printing machine from a financial perspective using appropriate calculations, and advise the company as to whether the investment is worthwhile. (15 marks)
- (b) Explain sensitivity analysis and prepare calculations to show the sensitivity of the decision to independent changes in each of the following:
- (i) annual contribution;
 - (ii) rate of corporation tax on profits.
- (10 marks)

Rationale

Question Five is divided into two parts. Part (a) requires candidates to evaluate the proposed purchase of a new machine. Candidates must recognise that this is a long-term decision involving relevant costs and revenues as well as taxation which requires the use of discounting techniques. This addresses learning outcomes B(ii) *Apply the principles of relevant cash flow analysis to long-run projects that continue for several years*; and B(vi) *Evaluate project proposals using the techniques of investment appraisal*. Part (b) requires candidates to measure the sensitivity of two of the decision variables in the project. This addresses learning outcome B(ix) *Apply sensitivity analysis to cash flow parameters to identify those to which net present value is particularly sensitive*.

Suggested Approach

Part (a)

- Determine the incremental contribution from the investment.
- Determine the tax depreciation arising from the investment.
- Calculate the tax cash flows arising from the project.
- Discount the project cash flows and recommend acceptance.

Part (b)

- Explain the meaning of sensitivity analysis.
- Calculate the present value of the after tax annual contribution and compare this to the net present value of the project.
- Calculate the present value of the tax payments arising from the project and compare this to the net present value of the project.

Marking Guide	Marks
Part (a) Determine the incremental contribution from the investment Determine the tax depreciation arising from the investment Calculate the tax cash flows arising from the project Discount the project cash flows and recommend acceptance	5 3 4 3
Part (b) Explain the meaning of sensitivity analysis Calculate the present value of the after tax annual contribution and compare this to the net present value of the project Calculate the present value of the tax payments arising from the project and compare this to the net present value of the project	3 4 3
Examiner's Comments	
Part (a) A good attempt was made by most students but the standard of layout/presentation in many cases was poor. Reference to workings was generally poor.	
Part (b) This was very poorly answered. Many students demonstrated that they did not have a full understanding of sensitivity analysis.	
<i>Common Errors</i> • Not appreciating that the calculations needed to reflect the 'additional contribution' (£896K), rather than the new contribution (£2,496K). • Phasing incorrectly both the tax relief and the tax on the incremental contribution. • Calculating an incorrect figure for the balancing charge. • Not discounting the contribution figures. • Not realising that the answer to part (a) needed to be the numerator for the sensitivity tests (the principle of the 'own figure' rule would have gained marks for many students).	

Question 6(a)

Prepare a statement showing the total relevant cost of the contract. Explain clearly the reasons for each of the values in your quotation and for excluding any of the costs (if appropriate).

(10 marks)

Rationale

Question Six is divided into two parts. Part (a) requires candidates to identify the relevant costs associated with a short-term decision making situation. This addresses learning outcome 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*. In part (b) candidates are required to explain the meaning of the two-way data table provided and to produce another table showing how the two-way data table may be used with probability analysis to improve the information available to the manager. This addresses learning outcome C(iii) *Analyse risk and uncertainty by calculating expected values and standard deviations together with probability tables and histograms*.

Suggested Approach

- Identify the relevant costs of the proposal.
- Explain the reasons for including / excluding values in the quotation.

Marking Guide

Marks

Identify the relevant costs of the proposal
Explain the reasons for including / excluding values in the quotation

4
6

Examiner's Comments

This was generally well answered.

Common Errors

- Providing poor or non-existent reasons for the inclusion or exclusion of particular figures.
- Providing incorrect reasons for the inclusion or exclusion of particular figures.

Question 6(b)

- (i) Explain the meaning of the above two-way data table.
- (ii) Produce and interpret a table that shows how the two-way data table may be used in conjunction with the probabilities to improve the information available to the manager of VBJ.

(15 marks)

Rationale

See 6(a).

Suggested Approach

- Explain the two-way data table provided.
- Prepare a table that shows each outcome, its joint probability, and the expected value of its cost.
- Explain how the table prepared can be used and interpreted to improve the information available to the manager.

Marking Guide

Marks

Explain the two-way data table provided	3
Prepare a table that shows each outcome, its joint probability, and the expected value of its cost	6
Explain how the table prepared can be used and interpreted to improve the information available to the manager	6

Examiner's Comments

This was generally well answered.

Common Errors

- Providing poorly tabulated tables.
- Providing an incorrect interpretation of tables.
- Providing a poor description of how the information generated would be valuable to the manager receiving it.
- Not relating part (a) with part (b).

Question 7(a)

Explain the relevance of the product life cycle to the consideration of alternative pricing policies that might be adopted by Q.

(10 marks)

Rationale

Question 7 is divided into two parts. Part (a) requires candidates to discuss the relevance of the product life cycle to pricing policies. This addresses learning outcome D(vii) *Explain the concept of life cycle costing and how life cycle costs interact with marketing strategies at each stage of the life cycle*. Part (b) requires candidates to calculate the rate of learning that is expected to occur and apply this to a pricing decision before determining the required level of activity to achieve a target profit. This addresses learning outcomes A(iii) *Apply an approach to pricing based on profit maximisation in imperfect markets and evaluate the financial consequences of alternative pricing strategies* and D(iv) *Explain and apply learning and experience curves to estimate time and cost for new products and services*.

Suggested Approach

- State and briefly explain the stages of the product life cycle.
- For each stage of the product life cycle discuss the pricing policies that might be adopted.

Marking Guide

Marks

State and briefly explain the stages of the product life cycle	2
For each stage of the product life cycle discuss the pricing policies that might be adopted (up to 2 marks each)	8

Examiner's Comments

Most students made a good attempt at this question but a large proportion did not actually answer the question (see below).

Common Errors

- Describing 'life cycle costing' as opposed to the 'product life cycle'.
- Not relating alternative pricing policies to the stages of the product life cycle.
- Suggesting inappropriate pricing policies.

Question 7(b)

- (i) Calculate the rate of learning that is expected by the production director.

(4 marks)

- (ii) Calculate the optimum price at which Q should sell the DVD recorder in order to maximise its profits during the initial launch phase of the product.

(8 marks)

- (iii) Q expects that after the initial launch phase the market price will be £57 per unit. Estimated product specific fixed costs during this phase of the product's life are expected to be £15,000 per month. During this phase of the product life cycle Q wishes to achieve a target monthly profit from the product of £30,000.

Calculate the number of units that need to be sold each month during this phase in order that Q achieves this target monthly profit.

(3 marks)

Rationale

See 7(a).

Suggested Approach

- Calculate the rate of learning.
- Calculate the unit variable cost for each demand level.
- Calculate the total contribution at each demand level and identify the optimal price.
- Calculate the sales volume required to achieve the target profit.

Marking Guide

Marks

Calculate the rate of learning	4
Calculate the unit variable cost for each demand level	5
Calculate the total contribution at each demand level and identify the optimal price	3
Calculate the sales volume required to achieve the target profit	3

Examiner's Comments

Too many candidates had only a basic understanding of the learning curve and appeared to have ignored this topic when preparing for the exam.

Common Errors

- Not using initiative by introducing their 'own figure' from part (i) when attempting part (ii). Marks were available, as usual, for students who took this initiative.
- Applying the formula incorrectly, particularly when the quantity being produced falls outside the 'doubling process' (part (ii)).
- Applying the learning curve effect to the full £60 (part (i) and part (ii)).
- Not understanding what was required in part (iii).