

General Comments

Candidates did not perform well on this paper. Many seemed to lack knowledge of even the basic concepts of costing and management accounting.

Poor and inexact expression also marred scripts. It is vital to use the correct cost accounting terminology and, if required to do so, to state the meaning clearly and precisely. For example, within a single sentence the same cost category was referred to as being both direct and variable and some scripts referred to the absorption of variable costs into product costs.

The layout and presentation of answers to the discounted cash flow questions left much to be desired and because of a lack of forethought many unnecessary duplicated calculations were undertaken.

Apart from 1.8, question 1 was generally quite well answered, possibly because it was the first question to be tackled by the vast majority of candidates. Judging by some of the answers to the later questions on the paper it appeared that most candidates had spent the 20 minutes reading time on question 1 alone.

Section A – 20 marks

Question 1.1

A five year project has a net present value of \$160,000 when it is discounted at 12%. The project includes an annual cash outflow of \$50,000 for each of the five years. No tax is payable on projects of this type.

The percentage increase in the value of this annual cash outflow that would make the project no longer financially viable is closest to

- A** 64%
- B** 89%
- C** 113%
- D** 156%

(2 marks)

The answer is **B**

Workings

Years 1 – 5 $\$50,000 \times 3.605 = \$180,250$
 $\$160,000 / \$180,250 = 0.8876$

The following data are to be used when answering questions 1.2 and 1.3

A company expects to sell 1,000 units per month of a new product but there is uncertainty as to both the unit selling price and the unit variable cost of the product. The following estimates of selling price, variable costs and their related probabilities have been made:

Selling Price		Unit Variable Cost	
£ per unit	Probability	£ per unit	Probability
20	25%	8	20%
25	40%	10	50%
30	35%	12	30%

There are specific fixed costs of £5,000 per month expected for the new product.

Question 1.2

The expected value of monthly contribution is

- A** £5,890
- B** £10,300
- C** £10,890
- D** £15,300

(2 marks)

The answer is **D**

Workings

Selling price expected value = (£20 x 25%) + (£25 x 40%) + (£30 x 35%) =	£ 25.50
Variable cost expected value = (£8 x 20%) + (£10 x 50%) + (£12 x 30%) =	<u>10.20</u>
Expected unit contribution	<u>15.30</u>

1,000 units x £15.30 = £15,300

Question 1.3

1.3 The probability of monthly contribution from this new product exceeding £13,500 is

- A** 24.5%
- B** 30.5%
- C** 63.0%
- D** 92.5%

(2 marks)

The answer is **C**

Workings

The total contribution must exceed £13,500, so to achieve this from a volume of 1,000 units, the unit contribution must exceed £13.50. The following combinations of selling price and variable cost and their respective combined probabilities meet this target:

<i>Selling Price</i>	<i>Variable cost</i>	<i>Probability</i>
£	£	
25	8	$0.4 \times 0.2 = 0.08$
25	10	$0.4 \times 0.5 = 0.20$
30	8	{
30	10	{ $0.35 \times 1.0 = 0.35$
30	12	{
Combined probability total		0.63

Question 1.4

PT has discovered that when it employs a new test engineer there is a learning curve with a 75% rate of learning that exists for the first 12 customer assignments. A new test engineer completed her first customer assignment in 6 hours.

Calculate the time that she should take for her 7th assignment to the nearest 0.01 hours.

Note: The index for a 75% learning curve is -0.415.

(2 marks)

Workings

The average time for 7 assignments = $6 \times 7^{-0.415} = 2.6757$ hours

Total time for 7 assignments = 7×2.6757 hours 18.730 hours

The average time for 6 assignments = $6 \times 6^{-0.415} = 2.8525$ hours

Total time for 6 assignments = 6×2.8525 hours 17.115 hours

Time for the 7th assignment 1.615 hours

i.e. 1.62 hours

The following data are to be used when answering questions 1.5 and 1.6

JKL plc has \$1 million available for investment. It has identified three possible investments, J, K and L, which each have a life of three years. The three year period coincides with JKL plc's investment plans. JKL plc uses a 15% cost of capital when appraising investments of this type. Details of these investments are set out below:

	<i>J</i> \$000	<i>K</i> \$000	<i>L</i> \$000
Initial investment	400	500	300
Net positive cashflows:			
Year 1	40	70	50
Year 2	80	90	50
Year 3	510	630	380
Net Present Value	31	43	31

Question 1.5

Assuming that each of the investments is divisible, they are not mutually exclusive and cannot be invested in more than once, state the optimum investment plan for JKL plc.

(2 marks)

Workings

Profitability Index values are:

J	$31/400 = 0.0775$	3rd
K	$43/500 = 0.0860$	2nd
L	$31/300 = 0.1033$	1st

Therefore the investment plan should be to invest:

L in full
 K in full
 J x 50%

Question 1.6

Calculate the Internal Rate of Return of an investment in project K to the nearest 0.01%.

(3 marks)

Workings

The return is greater than 15% so try 20%:

Year	Cashflow \$000	Discount Factor	Present Value \$000
0	(500)	1.000	(500.00)
1	70	0.833	58.31
2	90	0.694	62.46
3	630	0.579	<u>364.77</u>
		NPV	<u>(14.46)</u>

Since the NPV is negative when the cashflows are discounted at 20%, the IRR of the project lies between 15% and 20%.

The IRR = 15% + [(43/57.46) x 5] = 18.74%

Question 1.7

FH is an electronics company that has developed a new product for the video conferencing market. The product has successfully completed its testing phase and FH has now produced the first four production units. The first unit took 3 hours of labour time and the total time for the first four units was 8.3667 hours.

Calculate the learning curve improvement rate (rate of learning) to the nearest 0.1%.

(3 marks)

Workings

The average time per unit for 4 units = 8.3667 / 4 = 2.0917 hours

$$2.0917 / 3 = 0.6972$$

$$\sqrt{0.6972} = 0.835$$

The rate of learning is 83.5%

Question 1.8

A baker is trying to decide the number of batches of a particular type of bread that he should bake each day. Daily demand ranges from 10 batches to 12 batches. Each batch of bread that is baked and sold yields a positive contribution of £50, but each batch of bread baked that is not sold yields a negative contribution of £20.

Assuming the baker adopts the *minimax regret* decision rule, calculate the number of batches of bread that he should bake each day. You must justify your answer.

(4 marks)

Workings

Contribution table (all contribution figures in £):

Make	Sale/Demand		
	10	11	12
10	500	500	500
11	480	550	550
12	460	530	600

Regret table (all contribution figures in £):

Make	Sale/Demand			Maximum Regret
	10	11	12	
10	0	50	100	100
11	20	0	50	50
12	40	20	0	40

The answer is to make 12.

Section B – 30 marks

ANSWER ALL THREE QUESTIONS

Question 2

Advise the company on the optimum replacement cycle for its vehicles and state the net present value of the opportunity cost of making the wrong decision. Use a discount rate of 12% per year. All workings and assumptions should be shown. Ignore taxation.

(10 marks)

Rationale

Question Two requires candidates to determine the optimum replacement cycle for the vehicles of a taxi company and to advise the company accordingly. The question addresses the learning outcome "Evaluate project proposals using the techniques of investment appraisal".

Suggested Approach

- Identify the relevant cashflows arising from each choice of replacement cycle and ignore those that are common to both replacement cycles
- Identify the timing of the relevant cashflows within the six year period
- Discount the relevant cashflows using the discount factor provided
- Compare the net present value of each replacement cycle and advise management to select the replacement cycle having the lowest net present cost
- State the opportunity cost of the incorrect decision

Marking Guide

	Marks
Calculation of the present value of the two-year replacement cycle	4
Calculation of the present value of the three-year replacement cycle	4
Compare present values, advise management and state the opportunity cost of the incorrect decision	2

Examiner's Comments

This was not answered well. The majority of candidates made the first common error listed below and some failed to gain marks from stating the best option and the opportunity cost of the incorrect decision. Presentation was often very poor. In some cases a string of unexplained figures multiplied by different discount factors were summed across the page.

Common Errors

- Discounting the two options over two and three years respectively and then dividing by the cumulative rate to obtain an annualised figure. This does not give the correct answer because of the inflation rates.
- Providing incorrect inflation calculations.
- Including non-relevant figures, namely, the initial purchase cost, the annual revenue from fares and the vehicle running costs. These items are not affected by the decision being taken.

Question 3

With reference to the above scenario

- (i) briefly explain absorption and marginal cost approaches to pricing;
- (ii) discuss the validity of the comment *“any price that exceeds variable costs is better than no work”*.

(10 marks)

Rationale

Question Three requires candidates to interpret a short scenario, briefly explain absorption and marginal cost approaches to pricing and then to discuss a comment made by one of the managers concerning the acceptance of prices which are lower than full cost. This question addresses the learning outcome *“Explain the particular issues that arise in pricing decisions and the conflict between marginal cost principles and the need for full recovery of all costs incurred”*.

Suggested Approach

- Explain the difference between marginal costing and absorption costing
- Explain how the two costing systems are likely to influence managers' pricing decisions
- Discuss the validity of the Managing Director's comment in relation to both short-term and long-term pricing decisions

Marking Guide

Marks

Explain the difference between marginal costing and absorption costing	3
Explain how the two costing systems are likely to influence managers' pricing decisions	2
Discuss the validity of the Managing Director's comment in relation to both short-term and long-term pricing decisions	5

Examiner's Comments

Many answers did not go beyond the most basic points which would have been appropriate in a low level cost accounting exam and many did not address the specific question on pricing but instead dealt with the question in general terms.

Common Errors

- Providing explanations of the approaches to pricing which started with the selling price and then explained how the costs were deducted to arrive at a contribution or profit.
- Providing explanations of pricing under absorption costing which discussed only fixed overheads and the absorption method and failed to mention that variable costs also had to be included in the calculation of mark-up and price.
- Failing to consider the bespoke nature of the business when discussing pricing.

Question 4

Prepare a report addressed to the Management Team of PK plc that explains the changing nature of cost structures in the modern manufacturing environment and the implications for PK plc's

- (i) inventory valuation
- (ii) short term decision making

(10 marks)

Note: There are 2 marks available for format and presentational style

Rationale

Question Four requires candidates to interpret a short scenario and then to prepare a report that explains the changing nature of cost structures in the modern manufacturing environment and its implications for stock valuation and short-term decision making. This question addresses the learning outcome “*Explain the possible conflicts between cost accounting for profit reporting and stock valuation and the convenient availability of information for decision making*”.

Suggested Approach

- Explain traditional cost classifications for management decisions
- Explain the changes in cost structure caused by the modern manufacturing environment
- Explain the importance of understanding cost structures when valuing stock and making short-term decisions

Marking Guide

	Marks
Explain traditional cost classifications and how the modern manufacturing environment has changed cost structures	4
Explain the importance of understanding cost structures when valuing stock and making short-term decisions	4
Report format (headings, numbered paragraphs, introduction and conclusion)	2

Examiner's Comments

This was very badly answered. Candidates did not realise that the crux of the question was how cost structures (i.e. mainly the balance between labour and overhead costs) have changed in recent times. However, most candidates made a reasonable attempt at producing the answer in a report format.

Common Errors

- Advising the company to eliminate inventory and use JIT.
- Misunderstanding the term inventory valuation. It refers to the valuation of an item of stock and not to the total value of inventory, and so reducing the number of units of stock held does not affect the method of inventory valuation.
- Basing the answer on global markets and on general changes in the environment.

Section C – 50 marks

ANSWER TWO QUESTIONS OUT OF THREE

Question 5

(a) Prepare calculations for each combination of the most likely, optimistic and pessimistic cost **and** revenue values to evaluate whether or not the MP Organisation should continue with the production of the film. Discuss your analysis and make a recommendation to MP. (15 marks)

(b) Prepare notes for the management meeting that explain how probabilities can be used

- (i) to calculate the expected NPV; and
- (ii) in a simulation model to evaluate the risk of a long term decision.

(10 marks)

(Total for Question Five = 25 marks)

Rationale

Question Five requires candidates to prepare calculations to enable them to evaluate whether or not the organisation in the scenario should continue with the production of a film in part (a) and then to discuss the use of probabilities in long term decision making in part (b). This question addresses the learning outcomes “Evaluate project proposals using the techniques of investment appraisal” and “Evaluate the impact of uncertainty and risk on decision models that may be based on CVP analysis, relevant cash flows, learning curves, discounting techniques, etc”.

Suggested Approach

(a)

- Identify the relevant production costs that can be determined with certainty
- Identify the relevant production costs that are uncertain and calculate their three possible values
- Calculate the present value of the three possible values of relevant production costs
- Calculate the present value of the relevant non production costs
- Calculate the present value of the revenues that could occur at each of the three possible levels of sales demand
- Prepare a table that shows the nine possible combinations of relevant revenues and relevant costs that could occur and their respective total net present values
- Discuss the analysis and make a recommendation to management

(b)

- Discuss the use of probabilities to evaluate decisions of this type
- Discuss the use of simulation modelling to evaluate decisions of this type

Marking Guide	Marks
(a)	
Calculate the present value of the three possible values of relevant production costs	3
Calculate the present value of the relevant non production costs	2
Calculate the present value of the revenues that could occur at each of the three possible levels of sales demand	4
Prepare a table that shows the nine possible combinations of relevant revenues and relevant costs that could occur and their respective total net present values	4
Discuss the analysis and make a recommendation to management	2
(b)	
Discuss the use of probabilities to evaluate decisions of this type	5
Discuss the use of simulation modelling to evaluate decisions of this type	5
Examiner's Comments	
In part (a) the method of calculation was not always properly thought out resulting in numerous unnecessary duplicated calculations.	
Part (b) was very badly answered and few candidates appeared to have any knowledge of simulation.	
<i>Common Errors</i>	
<ul style="list-style-type: none">Producing figures for only three outcomes: pessimistic, most likely and optimistic and not figures for all nine outcomes as the question required.	

Question 6

- (a) State the principles of throughput accounting and the effects of using it for short-term decision making. (6 marks)
- (b) Prepare calculations to determine the production mix that will maximise the profit of QP plc during the next three months. (10 marks)
- (c) Explain the meaning of each of the values contained in the above solution. (9 marks)
- (Total for Question Six = 25 marks)**

Rationale

Question Six requires candidates to state the principles of throughput accounting in part (a), determine an optimum production mix when there is a single scarce resource in part (b) and explain the meaning of a linear programming solution in part (c). This question addresses the learning outcomes “Discuss the meaning of optimal solutions and show how linear programming methods can be employed for profit maximising, revenue maximising and satisfying objectives” and “Evaluate the impacts of just in time production, the theory of constraints and total quality management on efficiency, inventory and cost”.

Suggested Approach

(a)

- Explain the effect of using throughput accounting on the measurement of contribution
- Explain the effect of using throughput accounting to focus on constraints and how to maximise the benefits from using scarce resources

(b)

- Identify material L as the limiting factor
- Calculate the contribution per kg of material L using the throughput accounting concept of contribution
- Calculate the product mix that maximises the value of contribution

(c)

- Explain the meaning of each of the values provided in the linear programming solution

Marking Guide

Marks

(a)

Explain the effect of using throughput accounting on the measurement of contribution	2
Explain the effect of using throughput accounting to focus on constraints and how to maximise the benefits from using scarce resources	4

(b)

Calculate the contribution per kg of material L using the throughput accounting concept of contribution	5
Calculate the product mix that maximises the value of contribution	5

(c)

Explain the meaning of each of the values provided in the linear programming solution
(1 mark each)

9

Examiner's Comments

This was extremely well answered, but it was disappointing to find that in part (b) a number of candidates failed to read the question properly and made the first error listed below.

Common Errors

- Including labour costs in the calculation of the contribution.
- Describing production processes and bottlenecks in detail, which relates to the Theory Of Constraints rather than to throughput accounting itself.

Question 7

- (a) Prepare calculations to show the cost attributed to each client group using an activity based system of attributing costs. (7 marks)
- (b) Discuss the differences between the costs attributed using activity based costing and those attributed by the current system and advise whether the senior consultant's suggestion should be adopted. (9 marks)
- (c) In a manufacturing environment activity based costing often classifies activities into those that are: unit; batch; product sustaining; and facility sustaining. Discuss, giving examples, how similar classifications may be applied to the use of the technique in consultancy organisations such as ZP plc. (9 marks)

(Total for Question Seven = 25 marks)

Rationale

Question 7 requires candidates to apply the principles of activity based costing to a marketing consultancy in part (a), to discuss the differences between an activity based approach and a traditional overhead absorption approach in part (b) and to explain in part (c) how the classification of activities in activity based costing could be used in consultancy organisations. This question addresses the learning outcomes *“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”* and *“Apply activity based costing ideas to analyse direct customer profitability and extend this analysis to distribution channel profitability”*.

Suggested Approach

(a)

- Calculate the cost driver rates for the travel, accommodation and other costs based on mileage, number of overnight stays, and chargeable hours respectively
- Prepare a table showing the costs attributed to each client profile using these cost driver rates

(b)

- Compare activity based costs for each client profile with those determined using the present costing system
- Discuss the use of activity based costing and whether or not it should be adopted by ZP plc

(c)

- Identify the corresponding classifications of activities that could be used by ZP plc
- Provide examples of activities within ZP plc for each of these classifications
- Provide a conclusion that explains why ZP plc might improve its efficiency by adopting an activity based approach to cost analysis

Marking Guide	Marks
(a)	
Calculation of travel costs for each client profile	2
Calculation of accommodation costs for each client profile	2
Calculation of other costs for each client profile	3
(b)	
Comparison of costs	2
Recognising the similarity of the costs derived by each system	2
Discussion of cost v benefits of using ABC in this scenario	3
Explaining wider theoretical benefits of using ABC	2
(c)	
Identify the corresponding classifications that could be used by ZP plc	4
Provide examples of activities within ZP plc for each of these classifications	4
Conclusion	1
Examiner's Comments	
<p>This should have been a straightforward question, but parts (a) and (c) were not answered well. Examples of the activities of a consultancy which would fit within the four activity classifications were poor and explanations for their inclusion were usually lacking.</p>	
<i>Common Errors</i>	
<ul style="list-style-type: none"> • Failing to read the third bullet point in the question and as a consequence selecting different, and therefore incorrect, cost drivers. • Being unable to use the figures given in the question to calculate the correct cost driver rates. 	