

General Comments

This paper was generally well attempted by candidates, as evidenced by the overall pass rate. The one question which posed a significant challenge was Question 3, where candidates had to consider the resale value of digital equipment. Many candidates failed to take note of the considerable savings that would be made through the use of a digital X-ray machine, thereby avoiding the cost of photographic film. Some candidates were also disturbed by their calculation of a negative NPV and what this would mean in terms of the decision they would make.

Section A – 20 marks

ANSWER ALL EIGHT SUB-QUESTIONS IN THIS SECTION

Question 1.1

Invoice discounting is:

- A** Reducing or discounting the amount owed by a customer in order to ensure payment.
- B** Using invoices as security to borrow money.
- C** Selling invoices to a finance company that then collects the cash from the customer.
- D** Writing off a debt because the customer is not expected to pay.

(2 marks)

The correct answer is B.

Question 1.2

A decision maker who makes decisions using the maximin criterion would be classified as:

- A** Pessimistic
- B** Optimistic
- C** Risk neutral
- D** Risk spreading

(2 marks)

The correct answer is A.

Question 1.3

A company operates a standard costing system. Details of budgeted and actual figures for September are given below:

	<i>Budget</i>	<i>Actual</i>
Production (units)	29,000	30,500
Direct labour hours per unit	3.0	3.2
Direct labour cost per hour	\$10.00	\$10.80

The direct labour rate variance for the period was:

- A \$4,880 adverse
- B \$51,840 adverse
- C \$78,080 adverse
- D \$97,600 adverse

(2 marks)

The correct answer is C.

Question 1.4

A company operates a standard absorption costing system based on direct labour hours. Details for October are given below:

	Budget	Actual
Output (units)	10,000	9,500
Direct labour hours	5,000	5,100
Fixed production overhead	\$40,000	\$42,000

During October fixed production overhead was:

- A over absorbed by \$2,000
- B over absorbed by \$800
- C under absorbed by \$1,200
- D under absorbed by \$4,000

(2 marks)

The correct answer is D.

Question 1.5

A company can choose from four mutually exclusive investment projects. The net present value of the projects will depend on market conditions.

The table below shows the net present value for each possible outcome:

Market conditions	Projects			
	A	B	C	D
Poor	\$750,000	\$680,000	\$375,000	\$400,000
Moderate	\$600,000	\$550,000	\$510,000	\$400,000
Good	\$775,000	\$320,000	\$800,000	\$580,000

If the company applies the maximax rule it will invest in:

- A Project A
- B Project B
- C Project C
- D Project D

(2 marks)

The correct answer is C.

Question 1.6

EF has budgeted production for the next budget year of 14,000 units. Each unit of production requires 6 labour hours and the budgeted labour rate is \$14 per hour. Idle time is expected to be 4% of total hours paid i.e. including idle time. Due to labour shortages it is expected that 12% of the hours paid, including idle time, will be paid at an overtime rate of time and a third.

Required:

Calculate the labour cost budget for the year.

(3 marks)

Workings

Labour hours for production: 14,000 units x 6 hours = 84,000 hours
 Idle time = 4% of total paid hours, therefore total paid hours need to be:
 84,000 hours / 0.96 = 87,500 hours

Labour cost budget (\$)

87,500 hours x 12% = 10,500 hours x (\$14 x 1.333) = \$196,000
 87,500 hours x 88% = 77,000 hours x \$14 = \$1,078,000
 Total labour cost budget = \$1,274,000

Question 1.7

A company has forecast the following information for this year and next year:

This year: purchases \$386,000. Trade payables at the end of this year: 40 days

Next year: purchases will be 20% higher than this year.

The company is under pressure from its suppliers to reduce the payables days. It has therefore budgeted that at the end of next year the trade payables amount will, despite the budgeted increase in purchases, be the same as at the end of this year.

Required:

Calculate the budgeted trade payable days at the end of next year.

(3 marks)

Workings

Trade payables outstanding at end of this year = $(\$386,000 / 365) \times 40 = \$42,301$

Purchases budget for next year = $\$386,000 \times 1.2 = \$463,200$

Trade payable days at end of next year = $(\$42,301 / \$463,200) \times 365 = 33.33$ days

Question 1.8

A company is estimating its quarterly sales budgets for Year 3. Past experience has shown that the trend for sales is represented by the following relationship:

$y = a + bx$ where
 y = number of sales units in the quarter
 $a = 8,000$
 $b = 2,000$
 x = the quarter number, where 1 = quarter 1 of Year 1

Sales are affected by seasonal variations. The actual sales in each quarter of Year 1 were as follows:

Quarter 1: 10,000 units
 Quarter 2: 12,000 units
 Quarter 3: 12,500 units
 Quarter 4: 17,500 units

Required:

Calculate the expected sales (in units) for each quarter of Year 3, after adjusting for seasonal variations using the additive model.

(4 marks)

Workings

Quarter	Trend sales units	Actual sales units	Variation units
1	10,000	10,000	0
2	12,000	12,000	0
3	14,000	12,500	-1,500
4	16,000	17,500	+1,500

Year 3 Quarter 1 = $8,000 + (2,000 \times 9) = 26,000 + 0 = 26,000$ units
 Year 3 Quarter 2 = $8,000 + (2,000 \times 10) = 28,000 + 0 = 28,000$ units
 Year 3 Quarter 3 = $8,000 + (2,000 \times 11) = 30,000 - 1,500 = 28,500$ units
 Year 3 Quarter 4 = $8,000 + (2,000 \times 12) = 32,000 + 1,500 = 33,500$ units

Section B – 30 marks

ANSWER ALL SIX SUB-QUESTIONS. YOU SHOULD SHOW YOUR WORKINGS AS MARKS ARE AVAILABLE FOR THE METHOD YOU USE

Question 2(a)

(i) **Prepare** an age analysis of trade receivables, for customer M, at 31 October 2012 showing the outstanding balance analysed by month. (3 marks)

(ii) **State** TWO benefits of preparing an age analysis of trade receivables. (2 marks)

(Total for sub-question (a) = 5 marks)

Rationale

The question examines candidates' ability to prepare an age analysis of outstanding trade receivables and to state the benefits of this process.

Suggested Approach

Candidates should firstly establish which invoices have been paid and those that still remain outstanding at the end of the period. The outstanding invoices should then be analysed by month and an analysis prepared. Two benefits of this type of analysis should then be identified.

A good answer will clearly show each outstanding invoice analysed by month and will identify separately two benefits of the process.

(i)

	< 1 month \$	1-2 months \$	2-3 months \$	>3 months \$	Balance \$
Invoice no.523			50		
Invoice no.514				210	
Invoice no.601			278		
Invoice no.666		103			
Invoice no.715		64			
Invoice no.725	83				
	83	167	328	210	788

(ii)

Examples of points that would be rewarded are given below:

- (a) Can be used to help decide what action should be taken about debts that have been outstanding for longer than the specified credit period.
- (b) Provides information about the efficiency of cash collection.
- (c) Can provide information to assist in setting and monitoring collection targets for the credit control section.
- (d) Provides information that can be used in setting a bad debt provision.

Marking Guide		Marks
(i) Each correct figure matched to time		0.5 mark
(ii) Each benefit		1 mark
Maximum marks awarded		5 marks
Examiner's comments		
Generally well done. Some candidates showed weakness in the following areas:		
<ol style="list-style-type: none">1. Poor layout of answers2. Failure to deduct the credit note from the relevant invoice.3. Restatement of the information in the question showing the balances at the end of each month.4. Incorrect aging of invoices/receipts.		

Question 2(b)

Explain the decision that the hospital management is likely to make, based on the probability distribution and the current cost of \$17.25 per journey, if the managers are:

- (i) Risk neutral
- (ii) Risk averse
- (iii) Risk seeking

(5 marks)

Rationale

The question assesses learning outcome D1(c) *analyse risk and uncertainty by calculating expected values and standard deviations together with probability tables and histograms*. It examines candidates' ability to explain the likely decision that would be made by decision makers with different attitudes to risk when given a probability distribution of the possible outcomes.

Suggested Approach

(i) A risk neutral decision maker will tend to ignore risk and choose the course of action that gives the best expected value. The probability distribution results in an expected value of \$17.00 which less than the current cost of \$17.25 per journey and therefore the risk neutral decision maker choose to set up the PTS.

(ii) A risk averse decision maker is one that focuses on the poor results and seeks to avoid a high degree of risk. A risk averse decision maker will focus on the 56% chance that journey costs will be higher than the current cost of \$17.25. They will ignore the fact that there is also a 44% probability that the cost per journey will be lower than the current cost. A risk averse decision maker will want to remain with the taxi service.

(iii) A risk-seeker is a decision maker that is interested in the best possible outcomes no matter how unlikely they are to occur. They are not put off by the low probability of an outcome but choose to focus on potential large returns instead. A risk-seeker will focus on the 44% probability that the journey cost will be \$16.20 or lower and will want to set up the PTS. A risk-seeker will ignore the fact that there is a 56% chance that journey costs will be higher than they are now.

Marking Guide

Marks

Up to 2 marks for explanation of attitude (neutral/averse/risk seeking),
 1 mark for explaining using the numbers given.

Maximum marks awarded

5 marks

Examiner's comments

This question was reasonably well done with some candidates achieving full marks. The most disappointing error was that many candidates believed that the decision maker could select a cost and did not appreciate that the data provided was only the probabilities of incurring those costs. It would help candidates if they read through their answers to check that what they have written makes sense. Other candidates chose not to use the table of costs and probabilities at all despite the fact that the question asked for an explanation of the decision that each manager would take based on the probability distribution. Candidates who chose to define the three attitudes to risk struggled to explain a risk neutral decision maker.

Some areas of weakness:

1. Stating the decision that would be made without explaining why this would be the case.
2. Selecting a cost that the decision maker would choose.
3. Not explaining the different attitudes to risk.
4. Inability to explain the term 'risk neutral'.
5. Failure to refer to the probability distribution.

Question 2(c)

(i) **Demonstrate**, using a decision tree, which size of unit RR should lease.

(3 marks)

(ii) RR could commission a market research survey that will give an accurate prediction of the level of demand.

Calculate the maximum price that RR should pay for the market research survey.

(2 marks)

(Total for sub-question (c) = 5 marks)

Rationale

The question assesses learning outcome D1(f) *apply decision trees*. It examines candidates' ability to use decision trees to evaluate a decision where there is uncertainty regarding expected cash flows.

Suggested Approach

Candidates should firstly establish the decision that has to be made and then draw the decision tree showing the possible outcomes. The expected value of the possible outcomes should then be calculated. Candidates should then clearly indicate the most profitable decision.

(i)

Decision tree outcomes:

Expected value with small shop = \$370,000

Expected value with medium shop = \$400,000

Therefore, based on expected value, RR would open a lease a medium sized unit.

(ii)

If the consultants were hired:

There is a 60% chance that they would predict high demand. RR would then open a medium sized unit.

The pay off would be = $0.6 * \$1,200,000 = \$720,000$.

There is a 40% chance they would predict low demand. If low demand was predicted RR would not lease any of the units because both sizes make a loss when demand is low.

Expected value with the survey = \$720,000

Expected value without the survey = \$400,000 (see decision tree above)

Therefore maximum worth of the survey = \$320,000

Marking Guide	Marks
(i)	
Expected value with small shop	1 mark
Expected value with medium shop	1 mark
Logical tree	0.5 mark
Decision	0.5 mark
(ii)	
Expected value with survey	0.5 mark each
Expected value without survey	0.5 mark
Logical answer	0.5 mark
Maximum marks awarded	5 marks
Examiner's comments	
Part (i) was well answered with most candidates scoring full marks. However part (ii) was not well answered by some candidates through lack of understanding of what they were trying to calculate.	

Question 2(d)

The customers of a trade warehouse are exceeding their credit terms. They are taking an average of 63 days to pay. In an effort to reduce the level of trade receivables, the warehouse is considering offering a 2.5% discount to customers who pay within 30 days.

Required:

- (i) **Calculate** the effective annual interest rate to the warehouse of offering this discount. You should assume a 365 day year and use compound interest methodology.

(3 marks)

- (ii) **State** TWO methods, other than asking for trade references, that companies can use to assess the credit worthiness of new customers.

(2 marks)

(Total for sub-question (d) = 5 marks)

Rationale

The question assesses learning outcome E1(f) *analyse the impacts of alternative debtor and credit policies*. Part (i) assesses candidates' ability to calculate the effective annual interest rate of an early settlement discount offered to customers. Part (ii) examines candidates' ability to identify potential sources of information that can be used when assessing a customer's creditworthiness.

Suggested Approach

(i)

The payment period will reduce by 33 days. This is $365/33 = 11.06$ times per year.

\$97.5 is the equivalent of \$100 discounted at x% for a 33 day period

$$\begin{aligned}97.5 &= 100/(1+x) \\(1+x) &= 1.025641 \\x &= 0.025641\end{aligned}$$

There are 11.06 such periods in a year. Therefore if A = annual interest rate, then:

$$\begin{aligned}(1+A) &= (1+0.025641)^{11.06} \\(1+A) &= 1.3232\end{aligned}$$

The effective annual interest rate is 32.32%

(ii)

Examiner's note: the question asks for two methods. Examples of methods that would be rewarded are given below.

- Bank references - These may be provided by the prospective customer's bank to indicate the customer's financial standing.
- Financial statements - The most recent financial statements of the prospective customer can be

- obtained either direct from the customer, or for limited companies, from Companies House.
- Personal contact - A representative might visit the business premises of the prospective customer.

Marking Guide	Marks
(i)	
11.06 times per year	1 mark
2.56% per 33 days	1 mark
$(1 + 2.56\%)/11.06$	0.5 mark for each value.
(ii)	
Two relevant points	1 mark each
Maximum marks awarded	5 marks
Examiner's comments	
This question was generally well done.	
<i>Common errors</i>	
Incorrect application of the formula e.g. forgetting to deduct 1 or not multiplying the answer by 100.	

Question 2(e)	
<p>Explain THREE factors that a company should consider before deciding how to invest short term cash surpluses.</p> <p style="text-align: right;"><i>(Total for sub-question (e) = 5 marks)</i></p>	
Rationale	
<p>The question assesses learning outcome E2(b) <i>identify alternatives for investment of short term cash surpluses</i>. It examines candidates' ability to explain the factors that a company should consider before deciding how to invest short term surplus funds.</p>	
Suggested Approach	
<p>Three factors that would need to be considered when deciding how to invest short term cash surpluses are:</p> <p>Maturity A short term investment will involve investing the money for a specified period of time and receiving interest and the payment of the capital at a specified future date. The maturity date of the investment should be no longer than the duration of the cash surplus. If the cash is required before the maturity of the investment and the investment is 'cashed in' early, there will be the risk of loss of interest or capital value.</p> <p>Risk v Return Risk refers to the possibility that the investment might fall in value or that there may be some doubt about the eventual payment of interest or repayment of capital. Generally a higher risk investment will offer a higher return. For example, investing in equities is high risk since the value of the equities depends on the profitability and future prospects of the company and stock market movements. Share prices can fall by a large amount in a short period of time therefore equities are generally regarded as an unsuitable form of short-term investment.</p> <p>Liquidity Liquidity refers to the ease with which an investment can be 'cashed in' without any significant loss of value or interest. All short-term investments are less liquid than cash in a bank current account but some are more liquid than others. For example, many savings accounts or deposit accounts are reasonably liquid and a depositor can withdraw cash immediately without penalty or for the loss of only several days' interest.</p>	
Marking Guide	Marks
Maturity	Up to 2 marks per factor: 1 for stating and up to 2 for explaining
Risk v Return	
Liquidity	
Maximum marks awarded	5 marks
Examiner's comments	
<p>Common errors included assuming that return was not dependent on other factors and lack of consideration of liquidity and maturity.</p>	

Question 2(f)

A bond has a coupon rate of 9% and will repay its nominal value of \$100 when it matures. The bond will mature in almost 5 years time and will next pay interest in almost one year's time.

The bond can be purchased today for \$87.

Required:

Calculate, to 0.01%, the yield to maturity for the bond based on today's purchase price.

(5 marks)

Rationale

The question assesses learning outcome E2(d) *Illustrate numerically the financial impact of short-term funding and investment methods*. It examines candidates' ability to calculate the yield to maturity on a bond given the current market value and the coupon rate of the bond.

Suggested Approach

Year(s)	Description	Cash flow \$	Discount factor (10%)	Present value \$	Discount factor (15%)	Present value \$
0	Purchase	(87)	1.000	(87.00)	1.000	(87.00)
1-5	Interest	9	3.791	34.12	3.352	30.17
5	Redemption	100	0.621	62.10	0.497	49.70
NPV				9.22		(7.13)

By interpolation

$$10\% + ((9.22 / (9.22 + 7.13)) \times 5) = 12.82\%$$

The bond's yield to maturity is 12.82%

Marking Guide

Marks

Correct cash flows in correct years	0.5 mark each
Correct use of 2 discount factors	1 mark each
Correct use of interpolation	1 mark
Follow through to answer	0.5 mark

Maximum marks awarded

5 marks

Examiner's comments

Generally this question was well done although candidates continue to make simple mistakes. Most candidates recognised the need to perform two net present value calculations and then use interpolation to calculate the IRR.

Section C – 50 marks
ANSWER BOTH QUESTIONS

Question 3

Required:

- (a) **Prepare** calculations, using net present value, to show whether the hospital should buy the new x-ray machine. (9 marks)
- (b) **Calculate** the sensitivity of your decision to a change in the number of x-rays forecast for next year. (You should assume that all of the other factors, including the annual growth of 5%, will not change). (4 marks)
- (c) **Explain** THREE non-financial factors that the management team of the hospital should consider before they make a decision about the new x-ray machine. (6 marks)
- (d) Assume that the hospital has bought the new digital x-ray machine.

The supplier has now offered the hospital a maintenance contract. The contract would extend the life of the new machine to seven years. The machine would have the same resale value after seven years as it would have after five years. The maintenance contract would cost \$450,000 each year and the payments would be made at the start of each year.

Required:

Produce calculations to show from a financial perspective if the maintenance contract should be accepted. (You should assume that the machine would be constantly replaced every 5 or 7 years as applicable).

(6 marks)

(Total for Question Three = 25 marks)

Rationale

Part (a) assesses learning outcomes C1(b) *apply the principles of relevant cash flow analysis to long-run projects that continue for several years* and learning outcome C2(a) *evaluate project proposals using the techniques of investment appraisal*. It examines candidates' ability to identify the relevant cash flows of a project and then apply discounted cash flow analysis to calculate the net present value of the project. Part (b) assesses learning outcome C1(f) *apply sensitivity analysis to cash flow parameters to identify those to which net present value is particularly sensitive*. Part (c) assesses learning outcome C1(g) *prepare decision support information for management, integrating financial and non-financial information*. Part (d) further looks at project proposals from the viewpoint of periodic replacement.

Suggested Approach

(a)

Factors to consider: In the first year 40,000 patients will need X-rays, but 20% X-rays need to be taken again, therefore $40,000/0.8 = 50,000$ X-rays need to be taken. The need for X-rays will grow by 5% per year. The new machine will not use X-ray film, therefore there is a saving of \$25 per X-ray.

Calculate Present value for each of years 0,1,2,3,4 and 5.

Calculate Net Present Value = -\$1,302,058

Deduce from the negative NPV that the new machine should NOT be purchased.

(b)

Present value of film savings = \$5,474,812.

Current net present value if investment in the new machine = -\$1,302,058

Sensitivity = $(1,302,508/5,474,812)/100 = 23.8\%$

(c)

Three factors:

Increased demand for x-rays: how accurate is the forecast.

Capacity of the machines.

Speed of patients and consultants getting results and distribution in digital form e.g. e-mail attachments.

Less anxiety caused by repeat x-rays for patients

(d)

Calculate the NPV, Annuity and Equivalent annual cost for a 5 year cycle and a 7 year cycle and compare. Cash flows needed to be correct to gain full marks:

Five year cycle:

NPV: \$9,986,380

Annuity factor: 3.993

Equivalent annual cost: \$2,500,972

Seven year cycle:

NPV: \$-12,518,690

Annuity factor: 5.206

Equivalent annual cost: \$-2,404,665

A seven year replacement cycle is cheaper and therefore the maintenance contract should be purchased.

Marking Guide

Marks

Part (a)

New machine valuation: year 0 and 5

0.5 mark each

Old machine valuation: year 0

0.5 mark

Film save: years 0 to 5

1 mark + 1 mark
for inflating

Redundancy: years 0 to 5

1 mark (initial) + 1
mark (annual)

Present value: each year – 0 to 5

2 marks for
application of
correct discount
factor

Net Present Value

0.5 mark

Decision

1 mark

Part (b)	
Present Value of Film savings	2 marks
NPV of project	1 mark
NPV/film PV	1 mark
Part (c)	
Three relevant non-financial factors	1 mark per factor, 1 mark for explanation
Part (d)	
For each option:	
Correct cash flows	1 mark
Use of correct discount factors	0.5 mark
Use of EAC	0.5 mark
Correct annuity	0.5 mark
Logical decision outcome	1 mark
Maximum marks awarded	25 marks
Examiner's comments	
Some candidates were confused regarding the value of digital equipment. As digital technology, the resale value would be negligible . Candidates also needed to consider the saving in film cost, through the use of digital machines.	

Question 4

Required:

- (a) **Prepare** a statement that reconciles the standard material cost to the actual material cost for the output in October. Your statement should include the individual material price variances, the individual material mix variances and the total material yield variance.
(10 marks)
- (b) **Explain** the conditions that must exist for management to benefit from the calculation of the materials mix variance.
(3 marks)
- (c)
- (i) **Calculate** the labour efficiency **planning** variance for October.
(2 marks)
- (ii) **Calculate** the operational labour rate variance and the operational labour efficiency variance for October.
(4 marks)
- (d) **Explain** the importance of separating variances into their planning and operational components. You should use the figures calculated in part (c) to illustrate your answer.
(6 marks)

(Total for Question Four = 25 marks)

Rationale

The question assesses a number of learning outcomes. Part (a) assesses learning outcome A1(d) *apply standard costing methods, within costing systems, including the reconciliation of budgeted and actual profit margins*. It examines candidates' ability to calculate material variances including material mix and yield variances. Part (b) assesses learning outcome A1(f) *interpret material, labour, variable overhead, fixed overhead and sales variances, distinguishing between planning and operational variances*. It examines candidates ability to identify the factors that a company should consider before deciding whether to investigate variances. Part (c) also assesses learning outcome A1(f) *interpret material, labour, variable overhead, fixed overhead and sales variances, distinguishing between planning and operational variances*. It examines candidates' ability to calculate planning and operational variances.

Suggested Approach

(a)

Calculate Standard cost based on actual output = $775 \times \$430/50 = \6665

Calculate Price variance for A,B and C: **$((\text{Actual unit cost} - \text{Standard unit cost}) \times \text{Actual Quantity Purchased})$**

Calculate Individual Material Mix Variance: **$(\text{SM}-\text{AQ}) \times \text{SP}$**

where,

SM is the standard mix quantity of direct material

AQ is the actual quantity of material used

SP is the standard price per unit of direct material used

Calculate the yield variance Calculate the total variance Calculate the actual cost: Standard cost of actual output – total variance (Adv).	
Marking Guide	Marks
Part (a)	
Standard cost calculation	0.5 mark
Price & Mix variance for A, B, C	1 mark each
Yield variance	2 marks
Actual cost	0.5 mark
Clear layout	1 mark
Part (b)	
Controllability	1 mark each
Substitutability	
Impact on quality	
Part (c)	
(i)	
Labour hours for October	1 mark
Labour rate	0.5 mark
Adverse/Favourable deduction	0.5 mark
(ii)	
Operational rate variance	2 marks
Operational efficiency variance	2 marks
Maximum marks awarded	25 marks
Examiner's comments	
Generally well done.	