

General Certificate of Education (A-level)
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ICT INFO3

(Specification 2520)

Unit 3: The Use of ICT in the Digital World

Final

Mark Scheme

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SECTION A

1(a) MOTS will provide an Internet facility for customers and an extranet facility for participating taxi companies.

Describe a difference between the Internet and extranet services that would be provided by MOTS.

(2 marks)

Guidance for examiners on how to mark this question

1 mark for Internet in context, 1 mark for extranet in context.

Example answer

The Internet service will be accessible by the general public (1), whilst the extranet service will only be accessible to the participating taxi companies. (1)

1(b) MOTS will provide an Internet facility for customers and an extranet facility for participating taxi companies.

Explain how Mulcastor could provide secure access to the extranet service.

(2 marks)

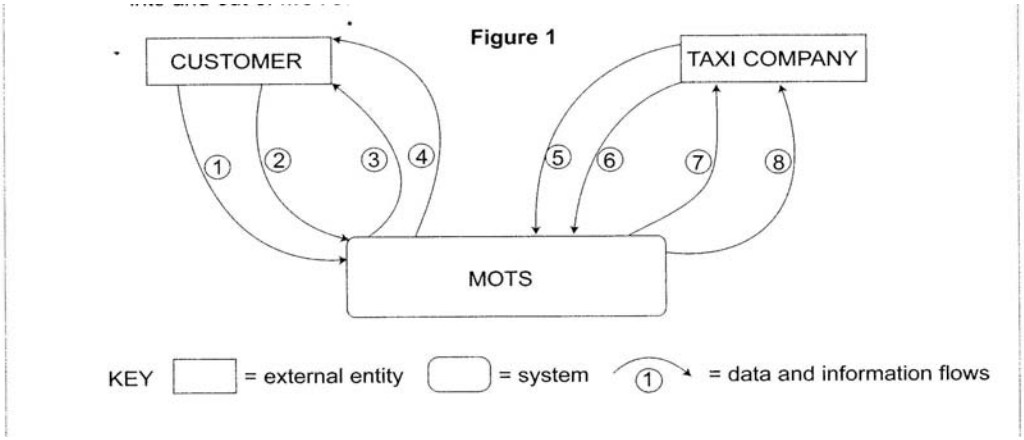
Guidance for examiners on how to mark this question

1 mark for simple statement of how, 1 mark for expansion (in context).

Example answer

Mulcastor can control access by providing the taxi companies with logon and password facilities. (1) Access will only be provided to those parts of the extranet relevant to the taxi companies. (1)

2(a) **Figure 1** below shows a partial context diagram. Label the data and information flows into and out of MOTS.



(8 marks)

Guidance for examiners on how to mark this question
See particularly page 4 of the pre-release Candidate Booklet.
Wording used to describe information flows may be different – give credit if meaning is clear.

Example answer

Flows 1 and 2: Customer to MOTS • *Booking request* • *Customer details* • *Payment details*
Flows 3 and 4: MOTS to Customer • *Cost of journey* • *Request for customer details* • *Request for payment details* • *Payment confirmation* • *E-mail confirming booking*
Flows 5 and 6: Taxi to MOTS • *Journey availability confirmation* • *Vehicle availability confirmation* • *Request for access to past journeys, log or future bookings*
Flows 7 and 8: MOTS to Taxi • *Vehicle availability request* • *E-mail confirming booking* • *Details of journey booked* • *Printed statement* • *Log of journeys and future bookings*

2(b) **Figure 2** below shows an incomplete Entity-Relationship Diagram.

Complete the diagram to show and describe the relationships between customers, bookings and vehicles.

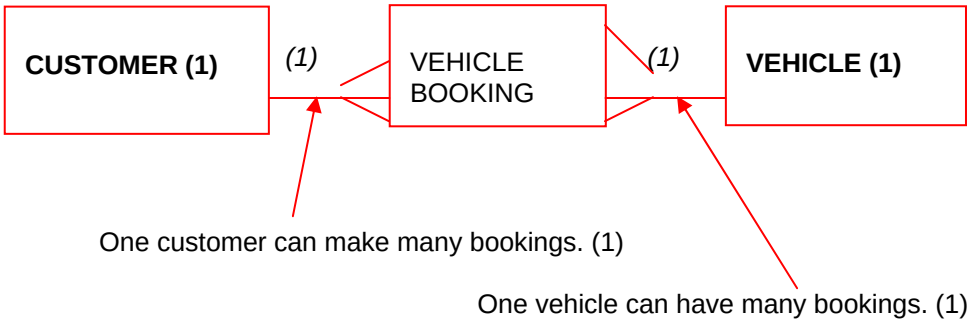


(6 marks)

Guidance for examiners on how to mark this question

2 marks for customer and vehicle entities (1 for each).
2 marks for showing correct relationships - crowsfeet (1 for each).
2 marks for describing the relationships (1 for each).

Example answer



3 The Memorandum following the survey suggested that a security consultant be employed to advise Mulcastor.

Identify the security issues that could affect Mulcastor, its customers and the taxi companies, and describe the security measures that could be taken to prevent them.

(9 marks)

Guidance for examiners on how to mark this question

Depth and/or breadth answers can apply.
1 mark for each security issue identified in context. 1 mark for an expansion point.
1 mark for each measure described and 1 mark for an expansion point.

Max 6 if just security issues and no measures.

Example answer

Mulcastor's systems could be vulnerable to external access by hackers (1) or internal access by fraudulent staff. (1) External access could be prevented by the use of firewalls (1) and internal access by the use of an access control system where staff are only allowed access to specific parts of the ICT system. (1)

MOTS could become infected with computer viruses. (1) This could be avoided by using virus scan software (1) kept up-to-date. (1)

Mulcastor will also need to consider the issues of physical security (1) and information security. (1)

4 Identify the different groups of users of MOTS and suggest and justify an appropriate method of training for each group.

(9 marks)

Guidance for examiners on how to mark this question

Depth or breadth answers acceptable.
Any answer must be in the context of MOTS.

1 mark for identification of group.
1 mark for each training method, 1 mark for expansion.
1 mark for a justification, 1 mark for expansion.
Two methods for one group are not allowed.
Max 7 if no justification.

Example answer

Customers who require taxi services. (1) This group will require guidance at the point of input. (1) This could be provided by detailed instructions or examples (1). This is a suitable method, as it would be available for both new and returning customers. (1)

Taxi companies. (1) CBT training (1) would be appropriate, as the cost of producing the training material would be justified by the expected large numbers of taxi companies using MOTS. (1). Also, the taxi company staff would be able to train at a time convenient to them. (1)

Mulcastor's internal staff (1) would also require training.

5 The author of the memorandum to the Mulcastor Company Executive suggested that iterative, rather than linear, development methods be used to reduce the development time.

Compare iterative and linear development methods. Recommend and justify the method most suitable for the development of MOTS.

(7 marks)

Guidance for examiners on how to mark this question

1. Examiners must first look for a recommendation (1) and a justification (1).
2. Examiners must then review the full answer to determine if comparative language has been used.
3. If comparative language has been used up to 5 further marks for comparative sentences and/or for descriptions of linear and iterative methodologies.
4. If comparative language has not been used up to 4 further marks can be given for descriptions of linear and iterative methodologies.

For full marks there must be a recommendation, a justification and a comparison between both methods.

Example answer

Iterative development methods include prototyping (1), which could be used to involve some of the larger taxi companies in the development of MOTS. (1) This would help them understand the system prior to implementation and may increase their commitment to using MOTS. (1)

For linear development methods, the requirements and proposed system have to be specified and agreed before program development commences. (1) A linear approach is suitable where there is a fixed and understood business requirement (1) but may be less suitable for MOTS where the precise system functions are possibly evolving. (1) For this reason, I would recommend that an iterative development method be used for MOTS. (1)

SECTION B

6 For many companies a Chief Information Officer (CIO) is also a member of the Company Executive.

Describe the role of a CIO.

(4 marks)

Guidance for examiners on how to mark this question

1 mark for each valid point.

Example answer

A CIO should manage the ICT departments (1), contribute to business strategy (1) and advise the other executives of future ICT hardware and software developments that might be beneficial to the business. (1)

The CIO should also be the champion of ICT within the organisation. (1)

7(a) Part of a large organisation's ICT strategy should cover the technology required for ICT systems.

Using examples, describe what technology issues should be covered in the ICT strategy.

(9 marks)

Guidance for examiners on how to mark this question

At least 2 issues for full marks.
1 mark for each valid point.
1 mark for identifying an issue, 1 mark for each extension/example to a max 4 marks per issue.

Example answer

An organisation should consider how it can future proof its ICT. (1) It would not want to purchase a particular type of storage device, for example either new technology that may fail and be withdrawn (1), or old technology that is about to become obsolete. (1) In either case, future support may become an issue. (1)

Most new technologies follow a lifecycle, which has a finite life from the initial product launch until eventual decline and withdrawal (1) as new technologies replace the old. (1) For any purchased technology product, organisations should understand at what stage of the technology lifecycle the product is. (1)

An organisation should also take account of people considerations. (1) For example, there would be no point in an organisation purchasing a stock control package if the functions were too complex for their staff to understand. (1)

7(b) Discuss the benefits and/or drawbacks to an organisation of purchasing an established software product that is already being widely used by other organisations.

(6 marks)

Guidance for examiners on how to mark this question

Can have benefits AND/OR drawbacks.
Looking for breadth or depth answers.

Example answers

Example answer 1 – All benefits:
The software product is likely to have few errors (1), as extensive use by other organisations would have resulted in the correction of most common faults. (1) There may be established training facilities (1) and staff experienced in the software product will be available for recruitment. (1) User groups of users from other companies will exist (1) and these can be used to put pressure on software companies for improved facilities. (1)

Example answer 2 – All drawbacks:
If the product is already widely used, it could be at the "decline" stage of the technology lifecycle (1) and may be replaced by a new generation of software. (1) This could mean that the organisation would be left with obsolete software (1) which may be difficult to maintain (1) and which could restrict future ICT developments or business growth. (1) Staff may not want to work on old technology and may seek employment elsewhere. (1)

Example answer 3 – Combined benefits and drawbacks.
The software product is likely to have few errors (1), as extensive use by other organisations would have resulted in the correction of most common faults. (1) There may be established training facilities. (1)

However, If the product is already widely used, it could be at the "decline" stage of the technology lifecycle (1) and may soon be replaced by a new generation of software. (1) This could mean that the organisation is left with obsolete software. (1)

8 Discuss the implications of current legislation on ICT policies and how the legislation will impact on procedures within organisations.

(18 marks)

Guidance for examiners on how to mark this question

Credit to be given for any valid legislation/regulation.

Low mark range
Candidate only describes legislation, showing little or no understanding.

0 – 5 marks

Medium mark range
Candidate suggests possible implications and/or impacts on organisations, showing some understanding.

6 – 10 marks

Good mark range
Candidate describes possible implications/impacts on organisations. Mention made of policies and/or procedures, showing understand.

11–15 marks

High mark range
Candidate discusses the implications of current legislation on policies and describes the impact on procedures demonstrating a clear understanding of the issues.

16–18 marks

9 Gordon Brown, former British Prime Minister, in January 2009, said:

> "Our digital networks will be the backbone of our economy in the decades ahead, just as roads and rails were the backbone of our physical infrastructure, and still are. And we know that every aspect of our lives in local communities, every school, every hospital, every workplace and even every home will be dependent on the services that the digital network provides."

Discuss the extent to which you agree or disagree with this statement. Use relevant examples to support your argument.

(20 marks)

Guidance for examiners on how to mark this question

- The mark awarded must not be dependent solely on the number of relevant issues discussed and the quality of the arguments used.
- No ticks or other annotation to be used on the script, just the final total.
- Start at the bottom band and work up.

Low mark range

Candidate identifies at least one example that partly illustrates the issues raised in the quotation. Candidate has used a form and style of writing barely appropriate for its purpose. Candidate has expressed simple ideas clearly but may be imprecise and awkward in dealing with complex or subtle concepts. Information or arguments may be of doubtful relevance or be obscurely presented. Errors in spelling, punctuation and grammar may be noticeable and intrusive to understanding, suggesting weaknesses in those areas. Text is barely legible.

0 – 5 marks

Medium mark range

Candidate identifies relevant examples that illustrate the issues raised in the quotation. Candidate has used a form and style of writing sometimes appropriate for its purpose but with many deficiencies. Candidate has expressed straightforward ideas clearly, if not always fluently. Sentences and paragraphs may not always be well-connected. Information or arguments may sometimes stray from the point or information may be weakly presented. There may be some errors of spelling, punctuation and grammar but not such as to cause problems in the reader's understanding and not such as to suggest a weakness in those areas. Text is legible.

6 – 10 marks

Good mark range

Candidate uses some relevant examples to discuss the issues raised in the quotation and may draw a conclusion. Meaning is clear. Candidate has in the main used a form and style of writing appropriate for its purpose, with only occasional lapses. Candidate has expressed moderately complex ideas clearly and reasonably fluently. Candidate has used well-linked sentences and paragraphs. Information or arguments are generally relevant and well structured. There may be occasional errors of spelling, punctuation and grammar. Text is legible.

11 – 15 marks

High mark range

Candidate discusses the issues raised in the quotation using appropriate examples to support their arguments and draws firm conclusions. Meaning is clear. Candidate has selected and used a form and style of writing appropriate for its purpose and has expressed complex ideas clearly and fluently. Sentences and paragraphs follow on from one another clearly and coherently and arguments are relevant to the quotation. Specialist vocabulary has been used appropriately. There are few, if any, errors of spelling, punctuation and grammar. Text is legible.

16 – 20 marks