

**ADVANCED GCE**  
**INFORMATION AND COMMUNICATION TECHNOLOGY**

**2515**

Communications Technology and its Applications

**WEDNESDAY 23 JANUARY 2008**

Morning

Time: 1 hour 30 minutes

Candidates answer on the question paper

**Additional materials:** No additional materials are required



Candidate  
Forename

Candidate  
Surname

Centre  
Number

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Candidate  
Number

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**INSTRUCTIONS TO CANDIDATES**

- Write your name in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use blue or black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Do **not** write outside the box bordering each page.
- Write your answer to each question in the space provided.

**INFORMATION FOR CANDIDATES**

- The number of marks for each question is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is **90**, of which 4 marks are allocated to the assessment of the quality of written communication where an answer requires a piece of extended writing.
- No marks will be awarded for using brand names of software packages or hardware.

**FOR EXAMINER'S USE**

<b>1</b>		<b>12</b>
<b>2</b>		<b>14</b>
<b>3</b>		<b>22</b>
<b>4</b>		<b>16</b>
<b>5</b>		<b>8</b>
<b>6</b>		<b>14</b>
<b>QWC</b>		<b>4</b>
<b>TOTAL</b>		<b>90</b>

This document consists of **14** printed pages and **2** blank pages.

1 Satellite navigation systems have become common in cars.

(a) Explain **two** limitations of satellite navigation systems and how improvements in technology are overcoming them.

Limitation 1 .....

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.....

.....

Improvement .....

.....

Limitation 2 .....

.....

.....

.....

Improvement .....

..... [6]



2 A company provides after-sales support via a website. This allows customers to read frequently asked questions (FAQs) and to submit their own questions.

(a) Customers can access the FAQs through the use of menus and submenus.

(i) Explain **two** advantages to customers of the use of menus and submenus.

Advantage 1 .....

.....

.....

.....

Advantage 2 .....

.....

.....

..... [4]

(ii) Explain **one** disadvantage to customers of the use of menus and submenus.

Disadvantage .....

..... [2]

(b) If customers choose to submit their own questions, they can do this using natural language.

(i) Describe what is meant by natural language.

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..... [2]

(ii) Explain **two** advantages to the customer of being able to submit their questions using natural language.

Advantage 1 .....

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Advantage 2 .....

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.....

..... [4]

(iii) Explain **one** disadvantage to **the company** of using natural language.

Disadvantage .....

..... [2]

3 A company has offices across England.

The company plans to introduce a video conferencing system to hold meetings between offices.

(a) Staff will be trained in the use of the video conferencing system. Some, but not all, of this training will be on the technical aspects of the system.

(i) State **two** technical aspects of the use of video conferencing for which training would be required.

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..... [2]

(ii) Describe how video conferencing changes working practices.

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..... [4]

(b) One stage of the systems cycle is monitoring.

Describe how the management of the company can monitor the use of the video conferencing system.

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.....  
..... [3]

(c) The company purchases headsets with microphones and earphones.

Explain why the company has purchased headsets rather than using the computers' built-in microphones and speakers.

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.....  
..... [2]

The company has a head office consisting of several buildings on one site. A variety of networking methods are used around the site. These include fibre optic cabling, optical communication between buildings and the use of network bridges and hubs.

(d) Describe **two** advantages of fibre optic cabling compared to copper cabling.

Advantage 1 .....  
.....  
.....  
.....

Advantage 2 .....  
.....  
.....  
..... [4]

(e) Describe **one** advantage and **one** disadvantage of using optical (laser) communication between buildings rather than cabling.

Advantage .....  
.....  
.....  
.....

Disadvantage .....  
.....  
.....  
..... [4]

(f) Describe the purpose of a network bridge.

.....  
..... [1]

(g) Describe the purpose of a hub.

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.....  
..... [2]



4 When computer systems are connected, standards are applied.

(a) Explain the importance of standards when connecting computer systems.

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..... [4]

(b) Explain the role of layers when connecting computer systems.

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..... [4]

(c) Errors may occur during data transmission between computer systems.

Describe **two** methods of detecting errors that have occurred during data transmission.

Method 1 .....

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..... [4]

(d) Explain what is meant by encryption of data.

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..... [2]

(e) Explain why authentication techniques are used when data is transmitted between computer systems.

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..... [2]





(c) Describe **three** other services that may be provided by a local government website.

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..... [6]

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