INFORMATION AND COMMUNICATIONS TECHNOLOGY 2515

Communications Technology and its Applications

No additional materials are required.
Candidates answer on the question paper.

Candidate Name		Centre Number	Candidate Number

TIME   1 hour 30 minutes

INSTRUCTIONS TO CANDIDATES

- Write your name in the space above.
- Write your Centre number and Candidate number in the boxes above.
- Answer **all** the questions.
- Write your answers, in blue or black ink, in the spaces on the question paper.
- Read each question carefully and make sure you know what you have to do before starting your answer.

INFORMATION FOR CANDIDATES

- The number of marks 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.
- You will be awarded marks for 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		
1		16
2		17
3		11
4		19
5		16
6		7
QWC		4
TOTAL		90

This question paper consists of 16 printed pages, 3 lined pages and 1 blank page.

Answer **all** questions.

1 A company has a number of sites spread over a large geographical area.

The company intends to install a Wide Area Network (WAN) between several sites using a telecommunications link.

(a) Describe the following network components:

(i) Network Interface Card (NIC);

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(ii) Switch.

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(b) Describe the purpose of a set of standards for communications between computers.

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(c) Explain why layering is used in a network system.

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[Turn over

(d) Describe analogue communication, giving an example of how it could be used on the company network.

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(e) Describe digital communication, giving an example of how it could be used on the company network.

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2 A school is having a new ICT centre built. The school will use an intranet to support the teaching of courses.

(a) Describe the characteristics of an intranet.

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(b) Describe how the intranet could be used to help

(i) teach these courses;

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(ii) improve communications between teachers and students.

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(c) (i) State the meaning of the term *bandwidth*.

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(ii) Explain the importance of bandwidth to the delivery of courses via the intranet.

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3 A cable network is planned for a street of houses using a tree and branch structure.

    (a) **(i)** Describe the tree and branch structure that could be used. You may use a diagram to illustrate your answer.

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    (ii) State **one** other suitable structure that could be used.

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(b) Describe **two** interactive television services available from a cable network.

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(c) A consultant has been asked to develop the Human Computer Interface (HCI) for the interactive television system.
Describe how the consultant could use a user-centred approach in the development of the HCI.

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4 A company is planning to allow employees to work from home.

(a) Discuss the facilities available on modern telephone systems that could be used by employees working from home.

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(b) The employees will have access to the company's network system from home.
Describe **two** problems of confidentiality of data that the company might face and, for
each, explain a possible solution.

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(c) Describe **three** possible effects on the employees of working from home.

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5 **(a)** A motoring organisation provides each roadside mechanic with a cellular (mobile) phone.

  (i) Explain how a cellular network operates.

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  (ii) State **two** features of a cellular phone that could be used by a stranded motorist.

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(iii) State **two** limitations of relying on a cellular phone to communicate in an emergency.

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(b) A call centre handles emergency calls. Describe how a modern ICT system could reduce the time taken by a mechanic to reach the stranded motorist.

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(c) The motoring organisation has a number of call centres linked by a computer network. Details about motorists are stored using a distributed database.

Describe the security issues of using a distributed database to store details of motorists.

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6 Discuss the new developments in ICT that have made the use of electronic ID cards possible.

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