



Monday 2 June 2014 – Morning

AS GCE COMPUTING

F451/01 Computer Fundamentals



Candidates answer on the Question Paper.

OCR supplied materials:
None

Other materials required:
None

Duration: 1 hour 30 minutes



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Do **not** write in the bar codes.

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 **100**, the quality of written communication will be assessed where an answer requires a piece of extended writing.
- This document consists of **16** pages. Any blank pages are indicated.

1 The office workers of a large company each use a stand-alone computer.

The company is considering networking the machines.

(a) (i) Describe what is meant by a LAN.

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..... [2]

(ii) State **two** advantages of having a LAN instead of a set of stand-alone machines.

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..... [2]

(b) Describe the following types of data transmission:

(i) Serial data transmission

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(ii) Full duplex

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- (c) The finance manager needs to work on some files at home and also to assess new software for use in the finance department.

State **three** different storage devices that the finance manager would use and describe what each device would be used for.

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[6]

2 A supermarket uses a stock control system.

Details of products are stored on a stock database.

(a) The quantity of a particular product in stock is stored as a binary number using two bytes. There are 312 tins of beans left in stock.

How would this quantity be represented as a binary number in the computer?

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..... [2]

(b) The name of a product is stored using characters from the computer's character set.

(i) Explain what is meant by the character set of a computer.

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(ii) Explain how codes are used to represent a character set.

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(c) When details of a product are input to the system, the data must be verified and validated.

(i) Verification is done using a double entry system.

Explain what is meant by verification using double entry.

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(ii) The data about the price of a product will need to be validated on input.

Describe **two** validation checks that can be carried out on the price of a product.

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(d) Explain how the system used in the supermarket can control the quantity of tins of beans in stock so that the chance of running out is minimised.

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- 3 A systems analyst has been employed by a busy city library to produce a new computerised system.

Explain the stages of the systems life cycle that must be completed after the design stage and describe the documentation that the analyst must produce.

The quality of written communication will be assessed in your answer to this question.

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Question 4 begins on page 8

4 Computer software is used in Geography lessons to teach students about weather systems.

(a) (i) State the purpose of an input device in a computer system when using this software.

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..... [1]

(ii) State the purpose of an output device in a computer system when using this software.

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..... [1]

(b) Describe how the following forms of output will be used by the software.

(i) Animation

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..... [2]

(ii) Interactive presentation

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..... [2]

5 A processor contains a number of special registers.

(a) Explain the need for the Current Instruction Register (CIR) and describe how the data which it holds is used.

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(b) Name and describe **three** buses used to convey information between the special registers.

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- 6 (a) A town council stores details of the people who live in the town. These details are stored in a database on a network. Some people are worried about the storage of their details.

Describe **three** methods that can be used to protect the data about people held in the town council's database.

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[6]

(b) The council uses a knowledge-based system to help in the planning of traffic flows.

State the **four** parts of any knowledge-based system and describe how each part relates to the planning of traffic flows.

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7 (a) Describe how packet switching is used to transmit data from one computer to another computer on a network.

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(b) Explain **two** advantages of using packet switching instead of circuit switching to send a message between two computers on a network.

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(c) When a message is transmitted it is liable to corruption.

(i) A system of transmission uses a parity bit in each byte of data to identify when an error has occurred.

One of the following bytes has been corrupted:

01101101	10101010
10111010	10100010

State which of the bytes has been corrupted and justify your answer.

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(ii) Use the bytes:

01101101 10000001 10001000

to explain how a check sum is used to check data transmissions for errors.

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- 8 (a) Describe the characteristics of a menu-based interface and give an example of where it would be used.

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- (b) State what is meant by a distributed system.

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- (c) One facility of a network operating system is to provide security for users.

Explain **two** other facilities of a network operating system.

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END OF QUESTION PAPER

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