

Monday 16 January 2012 – Afternoon

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**.
- This document consists of **16** pages. Any blank pages are indicated.

1 (a) State the purpose of the following parts of a computer system.

(i) Input device

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

(ii) Output device

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

(b) A shop sells lottery tickets. Forms are filled out by customers who shade in the numbers they want. The forms are then read by a machine and a receipt is given to the customer.

State an input device and an output device which will be used in this process, making clear what they are used for.

Input

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.....

Output

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..... [4]

(c) Items bought in the shop are passed over a barcode reader at the checkout.

Describe how the system can use the information collected to control the levels of stock in the shop.

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3

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..... **[6]**

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..... [8]

(b) When data is input manually into a computer it needs to be verified.

Explain why verification is not required when data is read automatically into a computer.

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Explain the double entry method of data verification for data entered manually.

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.....

[4]

(b) The workers are worried because so much information is being stored about them on the computers of the company.

(i) Explain what information would be stored in order for the payroll system to work.

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..... [3]

(ii) Describe the fears that the workers may have and explain what the company can do to allay those fears.

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..... [5]

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

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..... [2]

(ii) When a computer on a network wishes to communicate with another device a handshake is used.

Describe what a handshake is and explain why it is necessary.

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..... [4]

(b) A protocol is a set of rules necessary to ensure that data is properly transferred between devices. Protocols can be divided into two types: logical and physical.

Explain what is meant by each of the terms logical protocol and physical protocol and give an example of each, explaining why it is important.

(i) Logical protocol

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

(ii) Physical protocol

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..... [3]

5 (a) State what is meant by the following terms:

(i) A buffer

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

(ii) An interrupt

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

(b) Describe the transfer of data between primary memory and a hard disk drive.

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..... [5]

6 The signals and points on a section of railway track are controlled from a central control room by a single operator.

(a) Describe **three** forms of output which would be important to the operator as part of the interface.

1.

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2.

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3.

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..... [6]

(b) Explain why it is important to ensure a good interface design in this application.

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..... [6]

(c) The railway company uses systems software and generic applications packages in their computers.

(i) Describe the role of systems software.

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..... [2]

(ii) The marketing department of the railway company uses various generic applications packages, including presentation software to prepare automatic presentations to be shown to passengers while they are on the trains.

State **three** other types of generic applications package which could be used by the marketing department, giving an example of how each may be used.

1.
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2.
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3.
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..... [6]

7 (a) Express the denary number +95 as

(i) a binary number using 8 bits

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

(ii) a number in hexadecimal notation

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

(b) Express the denary number -36 using a single 8 bit byte in

(i) two's complement form

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

(ii) sign and magnitude form

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..... [2]

(c) When data is transmitted between devices on a network it is liable to corruption. One way of checking data for corruption is to carry out a check sum. This involves adding the data bytes together at each end of the transmission to ensure that they give the same result.

(i) In a particular system the following three bytes were transmitted as a block. Add the binary values together showing your working.

01101101
00100111
00101101

[3]

(ii) Explain another method of checking data to ensure that it has been transmitted without corruption.

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..... [3]

8 A new piece of software has been written to control a device which is used to test the reliability of valves in industry.

State what will be included in the user guide.

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..... [5]

15
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