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Centre Number						Candidate Number				
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS
ADVANCED SUBSIDIARY GCE**

F451

COMPUTING

Computer Fundamentals

TUESDAY 18 MAY 2010: Afternoon

DURATION: 1 hour 30 minutes

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the Question Paper

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

None

READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

- **Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.**
- **Use 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.**
- **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).**

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.**

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1 A small store currently has two exits for customers. Each exit has a computerised checkout.

(a) Describe the purpose of the following devices that would be used at the checkouts and in each case give an example.

(i) Input device

[2]

(ii) Output device

[2]

(iii) Storage device

[2]

(b) The checkouts will each use systems software and applications packages.

State the function of each of:

(i) Systems software

(ii) Applications packages

[2]

(c) It is decided to put in a central storage facility and to link this with the two checkouts using a LAN.

(i) Describe what is meant by a LAN.

[2]

(ii) State, giving a reason, an extra piece of hardware necessary to connect the LAN to the internet.

Hardware _____

Reason _____

[2]

(d) When data is sent from central storage to one of the checkout computers, it can suffer from corruption.

(i) One error detection method is called a check sum. This involves adding bytes together.

Add the following bytes, showing your working.

$$\begin{array}{r} 01011101 \\ + \underline{01001110} \\ \hline \end{array}$$

[3]

(ii) Another error checking method is to use parity. One of the following bytes has been corrupted in transmission.

00010010 01011101 10101001 11000011

State which the corrupt byte is and explain why it is corrupt.

[3]

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2 Describe four purposes of operating systems.

1 _____

2 _____

3 _____

4 _____

[8]

3 (a) State TWO differences between ROM and RAM.

[2]

(b) A disk recorder for digital TV signals is controlled by an embedded processor.

(i) Explain why the control software is stored on ROM.

[2]

(ii) Explain why it will be necessary to have some RAM.

[2]

(b) State THREE items of content in each of:

(i) the requirements specification of a system

[3]

(ii) the design specification of a system.

[3]

5 (a) Change the denary number 93 into

(i) a binary number in an 8 bit byte

[2]

(ii) an octal number

[2]

(iii) Explain the relationship between the binary and octal representations of a value.

[2]

(b) (i) Using an 8 bit byte change -60 into a two's complement binary number

[2]

(ii) Using 8 bit bytes describe how two's complement can be used by a computer to calculate the answer to $93 - 51$.

[4]

**6 Data can be passed from one device to another using a protocol.
A protocol consists of both logical and physical parts.**

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

[2]

(ii) Explain how communication links are established between devices AND state why this is necessary.

[3]

(b) (i) Describe the logical parts of a protocol.

[3]

(ii) Describe the physical parts of a protocol.

[3]

(c) A major use of data transmission is in communicating with other sources over the internet. Use of the internet can affect the privacy and confidentiality of data held in a computer system.

Describe THREE steps which can be taken to protect data held in a computer system.

1 _____

2 _____

3 _____

[6]

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7 For each of the following user interfaces, give an example of an application of its use, the hardware which would be used with the interface in your application and describe why it is suitable for the application.

(i) Menu based interface.

Application _____

Hardware _____

Suitability _____

_____ [4]

(ii) Natural language interface.

Application _____

Hardware _____

Suitability _____

_____ **[4]**

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9 A computer programmer works from home four days a week, for a large software house. On Fridays she goes into the offices of the company in order to deliver any sensitive material personally and to meet with the rest of her team of programmers.

(a) Describe TWO different types of secondary storage she would use, making it clear how she would use them.

1 _____

2 _____

[6]

(b) The programmer used to go to the office every day and work there.

State an advantage and a disadvantage of working from home for each of:

(i) The programmer.

Advantage _____

Disadvantage _____

(ii) The software house.

Advantage _____

Disadvantage _____

(iii) Society.

Advantage _____

Disadvantage _____

_____ **[6]**



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