

Candidate forename						Candidate surname					
Centre number						Candidate number					

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GCSE
A451/01
COMPUTING

Computer Systems and Programming

THURSDAY 17 MAY 2012: Afternoon
DURATION: 1 hour 30 minutes
plus your additional time allowance

MODIFIED ENLARGED

Candidates answer on the Question Paper.

OCR SUPPLIED MATERIALS:

A separate Data Booklet

OTHER MATERIALS REQUIRED:

None

READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

- **Write your name, centre number and candidate number in the boxes on the first page. 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).**

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 80.**
- **Your Quality of Written Communication is assessed in questions marked with an asterisk (*).**

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1 A tablet computer can be used to surf the Internet, read and reply to emails and watch on-line movies.

(a) In the table below, tick ONE box in each row to show whether each of the following is an output device or not.

	is an output device	is NOT an output device
Screen		
USB Port		
Speaker		

[3]

(b) A tablet computer has built-in input devices.

Identify TWO input devices that can be built into a tablet computer and for each state how it could be used to input data.

Device 1 _____

How it could be used _____

Device 2 _____

How it could be used _____

_____ **[4]**

2 Look at the diagram for Question 2 in the separate Data Booklet.

The diagram shows how the computers in Mr Singh's office are connected to each other to form a LAN.

(a) State the correct name for this network topology.

_____ [1]

(b) State the name of the Device A which connects the server to the internet.

_____ [1]

(c) Give THREE functions of the server in this network.

1 _____

2 _____

3 _____

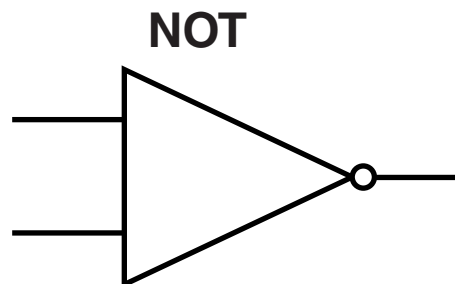
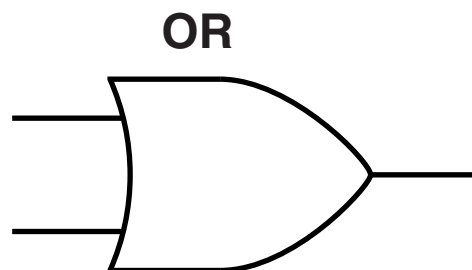
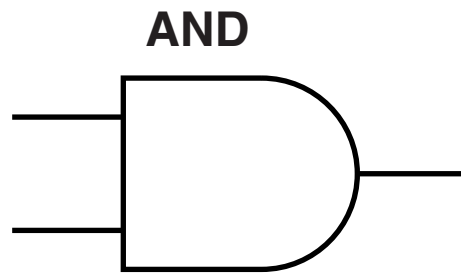
_____ [3]

(d) In his home, Mr Singh has a peer-to-peer network.

Explain what is meant by a peer-to-peer network.

[2]

- 3 The following symbols are used to create logic circuits.**



Look at the diagrams for Question 3 in the separate Data Booklet.

Complete the logic circuit by filling in the blanks. The first one has been done for you. [4]

- 4 The table below shows different standard file formats that are used to transmit media files on the internet.**

Tick ONE box in each row to show whether the format is used to transmit an image file, a sound file or a video file.

	image file	sound file	video file
AVI			
BMP			
JPG			
MP3			

[4]

5 Describe how the following system maintenance utilities are used.

System cleanup

Automatic update

[4]

- 6 (a) Convert the denary number 55 to an 8 bit binary number.**

[2]

- (b) Convert the denary number 55 to hexadecimal.**

[2]

7 The CPU is the component which does most of the data processing in a computer.

(a) State TWO tasks which are carried out by the CPU when processing data.

1 _____

2 _____

_____ **[2]**

(b) Explain how the clock speed and the cache size of a CPU affect its performance.

Clock speed

Cache size

_____ **[4]**

- 8 Look at the diagram for Question 8 in the separate Data Booklet.**

The diagram shows a flow diagram.

A school uses a computer program to give every new pupil a username for logging onto computers.

The algorithm used to choose the username is shown.

- (a) Mark Johnson joins the school in 2012. No other pupil called Johnson joins the school in the same year.**

State the username which Mark will be given and explain how you obtained your answer from the flow diagram.

Username _____

Explanation _____

_____ **[3]**

(b) A pupil has the username 2010alim###.

State FOUR facts that we can work out from this username.

1 _____

2 _____

3 _____

4 _____

_____ **[4]**

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9 A DBMS is used to create customised data handling applications.

(a) State what the initials DBMS stand for.

_____ [1]

***(b) Describe the features of a DBMS that can be used to create customised data handling applications and explain why using a DBMS is desirable.**

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

[illegible]

[6]

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10 The memory of a computer contains data and instructions in binary.

(a) Explain why computers use binary.

[2]

(b) Describe how instructions are stored in binary.

[3]

11 A games developer is developing an online game that can be played on games consoles, desktop computers or mobile phones.

(a) The program is written in high-level code and then translated to machine code.

Describe TWO differences between high-level code and machine code.

1 _____

2 _____

[4]

(b) One type of translator which can be used is an interpreter.

(i) Describe how an interpreter translates the high-level code to machine code.

[2]

(ii) State the name of A DIFFERENT TYPE of translator, other than an interpreter, which can be used to translate high-level code to machine code.

[1]

*** (c) The online game is developed by a large team of programmers.**

Explain, with examples, why a large team of programmers need to agree standards when developing the game.

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

[illegible]

[6]

12 A taxi uses a computer to communicate with central office and to calculate customers' fares.

(a) The program in the computer uses sequence, selection and iteration.

State whether the operations below use SEQUENCE, SELECTION or ITERATION.

Performing a series of different set-up operations when the computer is switched on.

Beeping repeatedly after a message is sent, until the driver presses a button to show that the message has been read.

Deciding whether to use the DayTimeRate or the EveningRate functions to calculate a customer's fare.

[3]

- (b) The computer measures the distance travelled as a real number and then rounds it up to the next integer.

State what is meant by a real number and an integer.

a real number

an integer

[2]

- (c) The cost of a day-time journey is £3 for the first kilometre and £2 for every kilometre after that. If there are five or more passengers in the taxi, an extra 50% is added to the charge.

Write an algorithm to calculate the cost of a day-time journey.

Your algorithm should:

- allow the number of passengers and the distance of the journey to be input as whole numbers,
- calculate the cost of the journey,
- output the cost that has been calculated.

[7]

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