MOCK EXAM

GCSE COMPUTING A451

A451 – Hardware, Software and Binary Representation

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 |  |  |  |  |

INSTRUCTIONS TO CANDIDATES

|  |  |  |
| --- | --- | --- |
| For Examiner’s Use | | |
|  | Max | Mark |
| 1 | 8 |  |
| 2 | 4 |  |
| 3 | 4 |  |
| 4 | 9 |  |
| 5 | 9 |  |
| 6 | 6 |  |
| 7 | 8 |  |
| 8 | 6 |  |
| 9 | 14 |  |
| 10 | 5 |  |
| 11 | 7 |  |
| TOTAL | 80 |  |

 Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.

 Use black ink. HB oencil may be used for graphs and diagrams only.

 Answer all the questions.

 Read each question carefully. Make sure that you know what you have to do before starting your answer.

 Write your answer to each question in the space provided.

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 (\*).

1. Look at the following advert for a computer system





a) How much memory does this computer come with?

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…............................................................................................ **[1]**

b) What does the “320GB” mean?

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…............................................................................................ **[1]**

2. Complete the following table, marking which category each of the following devices falls into.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Device | Input | Output | Storage | Processing | Communication |
| Keyboard |  |  |  |  |  |
| Touchscreen |  |  |  |  |  |
| USB stick |  |  |  |  |  |
| Modem |  |  |  |  |  |
| CPU |  |  |  |  |  |
| Scanner |  |  |  |  |  |

**[4]**

3. Paul takes his computer to a local computer shop complaining that it is too slow when playing games. The computer has an 800MHz processor, 512MB of RAM, a CD-ROM drive and a 40GB hard disc.

a) Explain the purpose of RAM.

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…...............…....…......................................................................................... **[3]**

b) Suggest two components Paul could upgrade to make his computer run faster and explain how it will make the computer run quicker:

i. Component: ……………………………………………………………………..

Reason: ………………………………………………………………………....

ii. Component: ……………………………………………………………………..

Reason: ………………………………………………………………………....

**[4]**

c) The computer shop recommends that Paul buys a new computer instead, but Paul is concerned about the environmental impact of throwing his old computer away.

Discuss the advantages and disadvantages of buying a new computer instead of upgrading an old one and advise Paul what he should do. You should focus on the environmental impact and the cost.

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

4. Phyllis is learning about the CPU

a) Explain the purpose of the CPU.

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…...............…....…......................................................................................... **[2]**

b) Explain why increasing each of the following will make a computer system faster.

i. Clock speed.

…...............…....…...................................................................................   
ii. Cache size.

…...............…....…...................................................................................

iii. Number of cores.

…...............…....…................................................................................... **[3]**

5.

a) Give 2 differences between RAM and ROM.

i. …...............…....…...................................................................................

ii. …...............…....…................................................................................... **[2]**

b) A computer system has an 8MB cache and 2GB of memory. i. Does the computer have more cache or more memory?

…...............…....…................................................................................... ii. Explain the purpose of the cache

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…...............…....…................................................................................... iii. Explain what is meant by “Virtual Memory”

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6. Kevin needs to make a backup of his photography portfolio. He also needs to be able to send copies of his work to potential clients.

a) Explain why keeping a backup is important.

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…...............…....…......................................................................................

…...............…....…...................................................................................... **[2]**

b) Give 1 example for each of the following storage technologies. i. Optical

…...............…....…................................................................................... ii. Magnetic

…...............…....…................................................................................... iii. Solid State

…...............…....…................................................................................... **[3]**

c) Discuss the advantages and disadvantages of the storage technologies above and advise Kevin on what storage method to use for each of his two problems.

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7. A shopkeeper needs software to manage the accounts of her shop. She decides to use off-the-shelf software instead of custom written software.

Describe **two** advantages to the shopkeeper of off-the-shelf software, compared to custom written software

Advantage 1

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Advantage 2

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8. Describe the following types of common utility programs.

**(a)**Antivirus

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**(b)**Disk defragmenter

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9. One of the functions of an operating system is multi-tasking.

Explain **one** reason why multi-tasking is needed in an operating system.

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10. John buys a new computer with an operating system and some utilities.

**(a)** State **two** functions of the operating system.

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2.......................................................................................................................................

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**(b)** The table below shows some of the utilities in John’s computer. Tick **one** box in each row to show whether the utility is used for security or disk organisation.

|  |  |  |
| --- | --- | --- |
| **Utility** | **Used for security** | **Used for disk organisation** |
| Antivirus |  |  |
| Defragmenter |  |  |
| File transfer |  |  |
| Firewall |  |  |

**[4]**

**(c)** Some of the software in John’s computer is open source. Describe what is meant by open source software.

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11. Data stored in computers can be measured in bits, bytes and kilobytes.

(a) State what is meant by

(i) a nibble

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(ii) a byte

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

(b) A file contains 2048 bytes. Calculate the size of the file in kilobytes.

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12

(a) Calculate the denary value of the 8-bit binary number 1001 0111. You must show your working.

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

**(b) Add the following two 8-bit binary numbers **and** explain the result. You must show your working.

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13

(a) Convert the denary number 108 into an 8 bit binary number.

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(b) Convert the denary number 108 into Hexadecimal.

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(c) Convert the hexadecimal number 6C to denary. You must show your working.

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(d) Convert the hexadecimal number 6C to binary. You must show your working.

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(e) Convert the binary number 00111101 to hexadecimal. You must show your working.

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(f) Explain why hexadecimal numbers are often used to represent binary numbers.

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

Explain why computers use binary.

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