OCR
RECOGNISING ACHIEVEMENT

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

GCSE Computing – A451 Mock

Candidate Forename		Candidate Surname	

Centre Number						Candidate Number				

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 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 (*).

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	

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1. Look at the following advert for a computer system

Dell Inspiron 570,Sempron 140, 4GB,320GB,Int X4500, Win 7 Desktop

a) How much memory does this computer come with?

…….

……. **[1]**

b) What does the “320GB” mean?

…….

……. **[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.

   ……

   ……

   …… **[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.

   ……

   ……

   ……

   ……

   ……

   …… **[6]**

4. Phyllis is learning about the CPU

   a) Explain the purpose of the CPU.

   ….....….....….....

   ….....….....….....

   ….....….....…..... **[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

      ….....….....….....

      ….....….....….....

      iii. Explain what is meant by “Virtual Memory”

      ….....….....….....

      ….....….....….....

      ….....….....…..... **[3]**

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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.

…….

…….

……. **[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.

…….

…….

…….

…….

…….

…….

…….

…….

……. **[6]**

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

   .....

   .....

   .....

   .....

   Advantage 2

   .....

   .....

   .....

   ..... **[4]**

8. Describe the following types of common utility programs.

   (a) Antivirus

   .....

   .....

   .....

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

   (b) Disk defragmenter

   .....

   .....

   .....

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

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

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

   .....

   .....

   .....

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

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

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

   1.....

   .....

   2.....

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

   (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.

   .....

   .....

   .....

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

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

(a) State what is meant by

(i) a nibble

.....

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

(ii) a byte

.....

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

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

.....

.....

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

12

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

.....

.....

.....

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

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

```
  1 0 0 1 0 1 1 1
+ 1 1 0 1 1 0 0 0
-----------------
-----------------
```

.....

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

13

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

.....

.....

.....

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

(b) Convert the denary number 108 into Hexadecimal.

.....

.....

.....

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

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

.....

.....

.....

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

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

.....

.....

.....

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

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

.....

.....

.....

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

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

.....

.....

.....

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

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

Explain why computers use binary.

.....

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