Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
TOTAL	

General Certificate of Education
Advanced Subsidiary Examination
January 2009

Computing COMP2

Comp 2 Computer Components, The Stored Program Concept and The Internet

Monday 12 January 2009 1.30 pm to 2.30 pm

You will need no other materials.
You must **not** use a calculator.

Time allowed
- 1 hour

Instructions
- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Answers written in margins or on blank pages will not be marked.
- All working must be shown.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 60.
- The use of brand names will **not** gain credit.
- Question 7 should be answered in continuous prose. In this question you will be marked on your ability to:
  – use good English
  – organise information clearly
  – use specialist vocabulary where appropriate.

Answer **all** questions in the spaces provided.

1 A computer system consists of hardware and software.

1 (a) What is meant by *hardware*?

.....

.....

(1 mark)

1 (b) What is meant by *software*?

.....

.....

(1 mark)

2

2 **Table 1** lists a number of items of software. You are asked to show which software category each item belongs to.

Write in the appropriate cells in **Table 1** the letter of the category which best fits each item of software. No letter should be used more than **once**.

Table 1

Software	Category (letter only)
Spreadsheet Software	
Anti-virus Software	
Operating System	
Air Traffic Control Software	

(4 marks)

A – System Software

B – Bespoke Software

C – Utility Software

D – General Purpose Software

E – Special Purpose Software

4

3 (a) The high-level language statement

```
A := B + 5
```

is to be written in assembly language.

Complete the following assembly language statements, which are to be the equivalent of the above high level language statement. The `Load` and `Store` instructions imply the use of the accumulator register.

```
Load ..........

..... #5

Store .........
```

(3 marks)

3 (b) (i) What type of translator is required to translate assembly code statements into machine code?

.....

(1 mark)

3 (b) (ii) What type of translator is required to translate a high-level language statement into machine code?

.....

(1 mark)

5

Turn over for the next question

4 **Figure 1** shows the HTML for a web page.

Figure 1

```
<html>
  <head>
    <title>A-Level Computing</title>
    <style type="text/css">
      h1{

        }
    </style>
  </head>

  <!************>

  <body>
    <h1>The New Assessment Structure</h1>
    <ol>
      <li> The Practical Exercise </li>
      <li> AS Theory Exam </li>
      <li> A2 Theory Exam </li>
      <li> The Project </li>
    </ol>
    <a href="www.aqa.org.uk">More information</a>
  </body>
</html>
```

4 (a) With reference to the contents of **Figure 1**, draw a diagram to show the appearance of the web page when viewed through a web browser. Use labels to clarify your layout, where necessary.

(6 marks)

4 (b) (i) Write a style rule to be added to the embedded style sheet to centre the heading text and set the text to blue.

.....

(2 marks)

4 (b) (ii) Indicate with an X in **Figure 1** where the style rule should be added.

(1 mark)

9

5 The Fetch-Execute cycle can be described in register-transfer language as follows:

MAR ← [PC]
PC ← [PC] + 1; MBR ← $[\text{Memory}]_{\text{addressed}}$
CIR ← [MBR]
[CIR] decoded and executed

where [ ] means *contents of*.

Describe the Fetch-Execute cycle in your own words.

.....

.....

.....

.....

.....

.....

.....

.....

.....

(6 marks)

6

6 A Uniform Resource Locator (URL) is the address of a resource on the Internet. For example, http://www.aqa.org.uk/qual/gce/computing_new.php.

Explain the different parts of this address.

6 (i) http://.....

6 (ii) www.aqa.org.uk .....

6 (iii) /qual/gce/computing_new.php .....

.....

(3 marks)

3

7 Explain the difference between the World Wide Web, the Internet and an intranet.

Your answer to this question will also be assessed on your ability to organise your answer clearly and coherently in complete sentences, using specialist vocabulary where appropriate.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(6 marks)

6

8 (a) Write in the appropriate cells in **Table 2**, the names of the secondary storage media listed below that most closely match the given typical storage capacities. You may use each medium more than once.

DVD-R flash memory card magnetic hard disk CD-ROM magnetic tape cartridge

Table 2

Typical Capacity	**Storage Medium**
10 Gigabytes – 2 Terabytes	
10 Gigabytes – 800 Gigabytes	
128 Megabytes – 8 Gigabytes	
2.8 Gigabytes – 4.7 Gigabytes	
600 Megabytes – 700 Megabytes	

(5 marks)

8 (b) Which of the **above** storage media would be most suitable to

8 (b) (i) distribute software? .....

(1 mark)

8 (b) (ii) backup large data files? .....

(1 mark)

7

9 One principle of the Data Protection Act refers to 'internal data security'. It states that, 'Appropriate technical and organisational measures shall be taken against unauthorised or unlawful processing of *personal data* and against accidental loss or destruction of, or damage to, personal data.'

9 (a) What is personal data?

.....

.....

.....

(1 mark)

9 (b) Imagine you are working for an organisation that uses personal data.

Describe **three** measures you would propose that will contribute to the organisation complying with the above principle of the Data Protection Act.

1 .....

.....

.....

2 .....

.....

.....

3 .....

.....

.....

(3 marks)

4

Turn over for the next question

10 (a) Complete the truth tables for the following logic gates.

OR gate

Input A	Input B	Output
0	0	
0	1	
1	0	
1	1	

AND gate

Input A	Input B	Output
0	0	
0	1	
1	0	
1	1	

(2 marks)

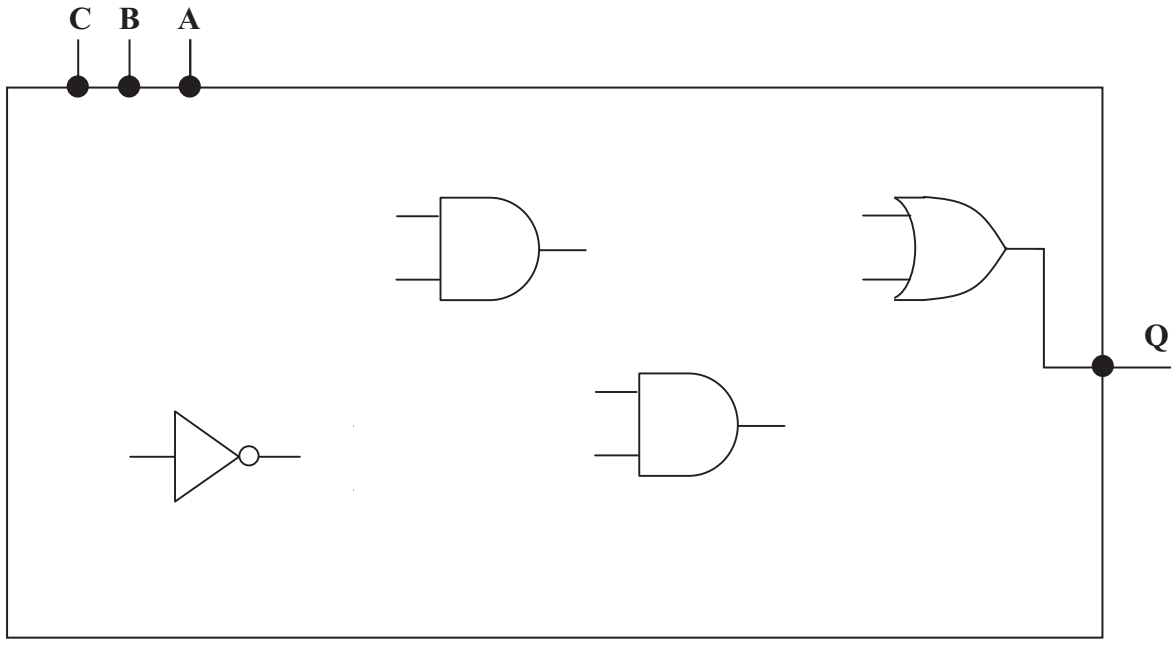
10 (b) (i) A single output Q is produced from three inputs A, B and C. Output Q is required to be 1 only if inputs A and B are 1, or input C is 1 and input B is 0.

Express this as a Boolean equation.

Q = ...

(2 marks)

10 (b) (ii) Represent this Boolean equation diagrammatically by completing the logic gate diagram below.



(4 marks)

8

11 A Radio Frequency Identification (RFID) system is made up of a transponder built into an RFID tag and an interrogator or reader. One example of use is to detect unauthorised removal of library books from a library.

Explain the principles of operation of this RFID system.

.....

.....

.....

.....

(2 marks)

2

12 (a) Describe what is meant by a robot.

.....

.....

.....

(2 marks)

12 (b) Illustrate your answer to part (a) with an example application of where robots are used and why.

Application: .....

Why: .....

.....

.....

.....

(2 marks)

4

END OF QUESTIONS

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED