

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

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



General Certificate of Education
Advanced Subsidiary Examination
June 2010

Computing

COMP2

Unit 2 Computer Components, The Stored Program Concept and the Internet

Tuesday 18 May 2010 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. Do not write outside the box around each page or on blank pages.
- 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 11 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.



J U N 1 0 C O M P 2 0 1

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

1 (a) Define the following terms.

1 (a) (i) Hardware:

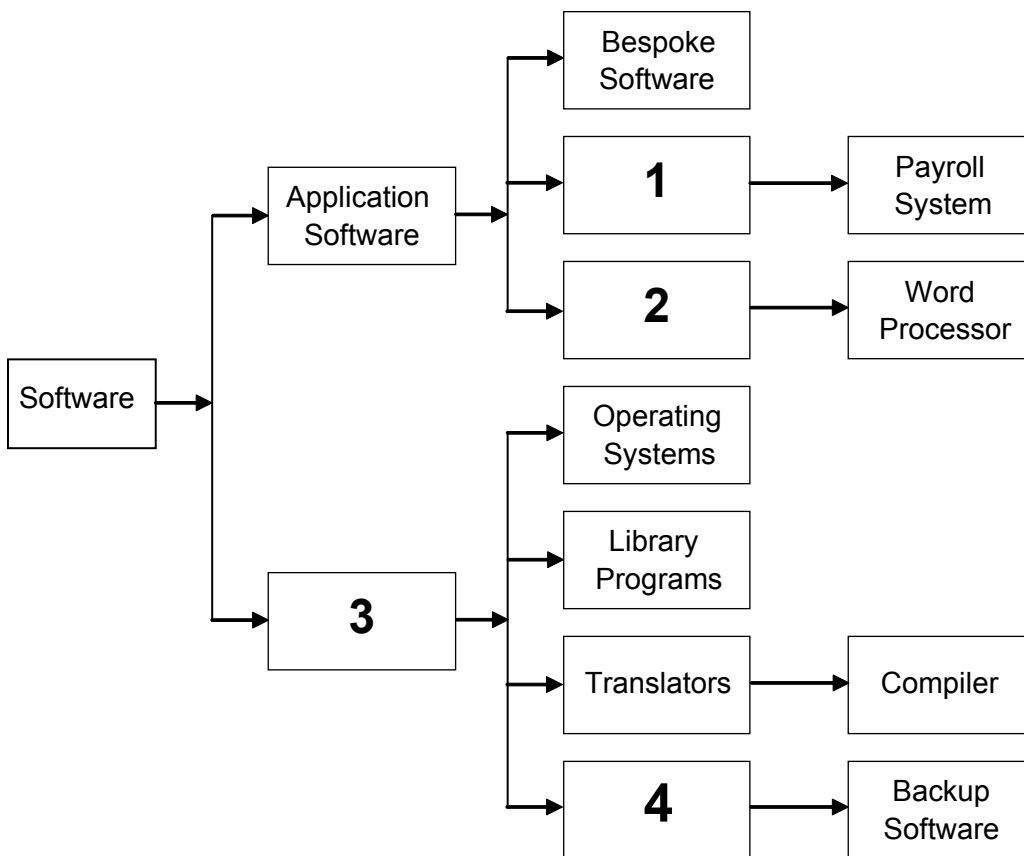
 (1 mark)

1 (a) (ii) Software:

 (1 mark)

1 (b) The diagram in **Figure 1** shows the classification of various types of software used on a computer system and some examples of these types.

Figure 1



Complete the labelling of **Figure 1** by suggesting labels for 1 to 4 in the diagram.

1 2

3 4

(4 marks)

6



2 An Internet user uses a web browser to access the World Wide Web.

2 (a) Web pages can be retrieved from a web server using either the HTTP or the HTTPS protocol.

2 (a) (i) What does HTTP stand for?
(1 mark)

2 (a) (ii) What is the difference between HTTP and HTTPS?
.....
.....
(1 mark)

2 (a) (iii) Describe a typical website that might be accessed using HTTPS.
.....
.....
(1 mark)

2 (b) The computer that is retrieving a web page from a web server is known as a client. It will use a client port for the communication.

What is a *client port*?
.....
.....
(1 mark)

2 (c) A web server uses well known port numbers to provide a service to client computers.

Why must these port numbers be well known?
.....
.....
.....
(2 marks)

6

Turn over ▶



3 Describe the **three** labelled parts of this URL.



A

B

C

(3 marks)

3

4 Some European governments are introducing electronic passports for their citizens. An electronic passport stores data about the passport holder using a Radio Frequency Identification (RFID) tag.

4 (a) An electronic passport stores data about some biometric properties of the passport holder.

4 (a) (i) What is meant by the term *biometric property*?

.....

.....

(1 mark)

4 (a) (ii) Give an example of a specific biometric property that could be stored on a passport to identify the holder.

.....

(1 mark)

4 (b) Explain how the RFID tag could be read at passport control in an airport.

.....

.....

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.....

(2 marks)

4



- 5** CD-ROM, CD-RW, Flash Memory Card and Magnetic Tape are all different types of storage media.

Complete **Table 1**, indicating which of these storage media would be the most suitable to use in the situations described. You should **not** use the same medium more than once.

Table 1

Situation	Suitable Medium
Storing photographs in a compact digital camera, as they are taken	
Making a backup copy of 1,000 gigabytes of data, stored on a network file server	
Distributing a software package to home computer users	

(3 marks)

3

- 6 (a)** State a task that could be carried out by a robot.

.....

.....

(1 mark)

- 6 (b)** Explain why a robot is suited to completing the task that you have identified in part (a).

.....

.....

.....

.....

.....

(2 marks)

3

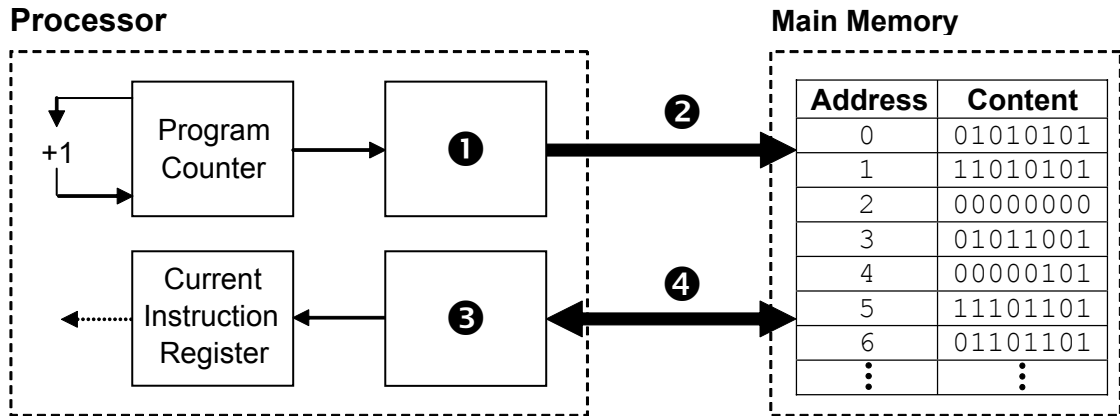
Turn over for the next question

Turn over ▶



7 **Figure 2** shows the processor registers and busses that are used during the fetch part of the fetch-execute cycle, together with the main memory. The values stored in memory locations 0 to 6 in the main memory are machine code instructions.

Figure 2



7 (a) Name the components that are labelled with the numbers ① to ④. In the case of register names, the full names must be stated.

Number	Component Name
①	
②	
③	
④	

(4 marks)

7 (b) Explain what happens during the decode and execute stages of the fetch-execute cycle.

.....

.....

.....

.....

.....

.....

(3 marks)



7 (c) The machine code instructions in the main memory in **Figure 2** are shown in binary. When programmers look at machine code instructions they usually prefer to view them in hexadecimal.

State **one** reason why this is the case.

.....
.....
(1 mark)

7 (d) The machine code instructions in the main memory in **Figure 2** were produced when an assembly language program was translated into machine code.

7 (d) (i) What type of program translator was used to do this?

.....
(1 mark)

7 (d) (ii) Most computer programs are initially written in an imperative high level language rather than assembly language.

Explain why this is the case.

.....
.....
.....
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.....
(3 marks)

12

Turn over for the next question

Turn over ▶



8 **Figure 3** shows a web page that has been displayed in a web browser.

Figure 3

Exams Information

2010 Mock Science Exam Dates

- Chemistry: 13th May
- Physics: 17th May
- Biology: 19th May

Please make a *careful note* of these dates.
All exams start at 9 am.

Figure 4 shows the HTML code that was used to create the web page. Some of the HTML tags have been replaced with the labels <❶> to <❷>.

Figure 4

```

<html>

<❶>
  <title>Exams Information<❷>
</head>

<body>
  <h1>2010 Mock Science Exam Dates</h1>
  <❸>
    <li>Chemistry: 13th May</li>
    <li>Physics: 17th May</li>
    <li>Biology: 19th May</li>
  <❹>
  <p>Please make a <❺>careful note<❻> of these dates.<❼>
    All exams start at 9am.</p>
</body>

</html>

```



Write the missing HTML tags from **Figure 4** in **Table 2** below, next to the number that indicates where they should appear in the code. The first one has been done for you.

Table 2

Number	HTML tag should be
<1>	<head>
<2>	
<3>	
<4>	
<5>	
<6>	
<7>	

(4 marks)

4

Turn over for the next question

Turn over ▶



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

OR Gate		
Input A	Input B	Output Q
0	0	
0	1	
1	0	
1	1	

XOR Gate		
Input A	Input B	Output Q
0	0	
0	1	
1	0	
1	1	

(2 marks)

9 (b) Represent the Boolean equation $Q = A + B \cdot \bar{C}$ as a logic circuit by drawing a diagram of it in the space below.



(3 marks)

9 (c) Simplify the Boolean expression:

$$B \cdot (A + \bar{B})$$

Show your working.

.....

.....

.....

.....

(3 marks)



10 Cascading Style Sheets (CSS) are used to specify how a web page's contents should be presented.

10 (a) **Figure 5** shows a Cascading Style Sheet.

Figure 5

```

body { background-color: #ECE9D8; }

h1 { color: white;
    ↑
    ❶ background-color: blue;
        font-weight: bold;
        font-size: 30pt;
    }
    ↑
    ❷
    ↑
    ❸

p { font-family: arial; }

img { border: 2px solid black; }

.highlight { font-weight: bold;
            ↑
            ❹
            color: red;
            }

#copyright { color: blue;
            ↑
            ❺
            text-align: center;
            font-style: italic;
            }

```

The labels ❶ to ❺ have been placed in **Figure 5** next to particular keywords.

Complete **Table 3** by writing a number from **Figure 5** against the corresponding keyword type. One of the numbers should not be used.

As an example, ❶ has already been put in the table for you against Type Selector. This is because `h1` is an instance of a type selector.

Table 3

Type of Keyword	Number
Type Selector	❶
ID Selector	
Value	
Property	

(3 marks)

Question 10 continues on the next page

Turn over ▶



10 (b) What is the difference between a type selector and a class selector?

.....
.....
.....

(2 marks)

5

11 Discuss the arguments for and against the use of Digital Rights Management (DRM) to protect digital music and videos.

In this question you will also be assessed on your ability to use good English and to organise your answer clearly in complete sentences, using specialist vocabulary where appropriate.

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(6 marks)

6

END OF QUESTIONS

