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	
TOTAL	

General Certificate of Education
Advanced Subsidiary Examination
June 2011

Computing COMP2

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

Tuesday 7 June 2011 9.00 am to 10.00 am

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.
- 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 5 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 Software can be categorised as either system software or application software.

1 (a) The table shown below lists three different examples of application software.

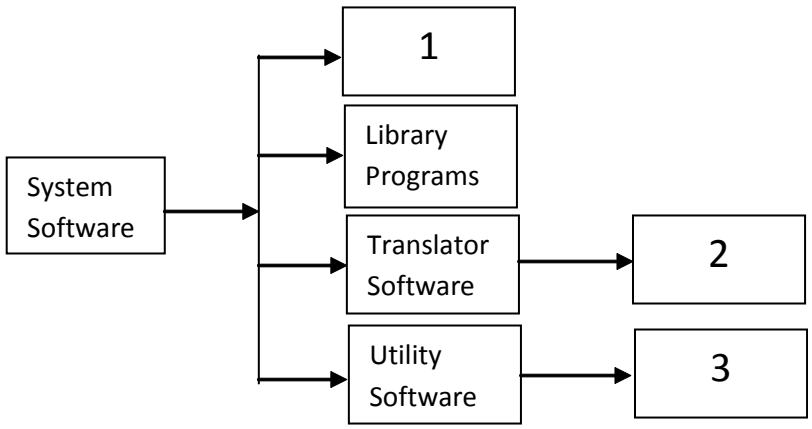
Put **one** tick in each row of the table to show which category each software program belongs to.

	General Purpose Software	**Special Purpose Software**	**Bespoke Software**
Word Processor			
Payroll Software			
Flight Control Software			

(3 marks)

1 (b) **Figure 1** shows an incomplete classification of system software.

Figure 1



Suggest suitable labels for boxes **1** to **3** in **Figure 1**.

1 .....

2 .....

3 .....

(3 marks)

6

2 Below is the Uniform Resource Locator (URL) of a web page.

`http://www.aqa.org.uk`

Explain what each of these parts of the URL mean.

`http://` .....

.....

`www` .....

.....

`uk` .....

.....

(3 marks)

3

Turn over for the next question

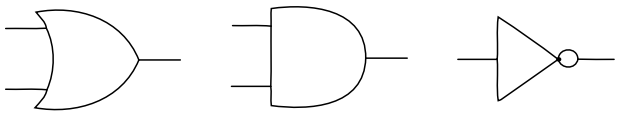
3 (a) Complete the truth tables for the following logic gates.

NAND Gate		
Input X	**Input Y**	**Output Q**
0	0	
0	1	
1	0	
1	1	

NOR Gate		
Input X	**Input Y**	**Output Q**
0	0	
0	1	
1	0	
1	1	

(2 marks)

3 (b) Represent the Boolean equation $Z = \overline{A} \,.\, \overline{B} + C$ in the form of a logic circuit by drawing a diagram in the space below using the following symbols.



OR AND NOT

(3 marks)

3 (c) Simplify the Boolean expression below.

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

Show each stage of your working.

.....

.....

.....

.....

.....

(3 marks)

Final answer .....

(1 mark)

9

Turn over for the next question

4 **Figure 2** and **Figure 3** show different versions of the same program.

Figure 2

(x)	(y)	(z)
200	LOAD	7
201	ADD	3
202	ADD	6
203	STORE	255

Figure 3

(x)	(y)	(z)
200	01010110	00000111
201	11010000	00000011
202	11010000	00000110
203	11110000	11111111

4 (a) What generation of programming language is shown in **Figure 2**?

.....

(1 mark)

4 (b) In both figures there is a column labelled **(x)**.

What would be a suitable heading for this column?

.....

(1 mark)

4 (c) In both figures the instruction is split into two parts.

What are the names of the instruction parts in columns **(y)** and **(z)**?

(**y**).....

(**z**).....

(2 marks)

4 (d) What is the relationship between the instructions in **Figure 2** and **Figure 3**?

.....

.....

(1 mark)

5

5 All Internet communications use the TCP/IP protocol stack, which is considered to have **four** layers – the application, transport, network and link layers.

Describe the roles of each layer when two devices are communicating over the Internet.

In your answer 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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(8 marks)

8

6 (a) What is an intranet?

.....

(1 mark)

6 (b) A page from a university intranet is shown in **Figure 4**.

Figure 4

Public Lectures 2011

Lecture Titles

- The Flamsteed Lecture
- The Arkwright Lecture
- The Denning Lecture

All places are Free

Tickets **MUST** be booked in advance

6 (b) Complete the HTML code below by adding the additional statements required to produce the web page in **Figure 4**.

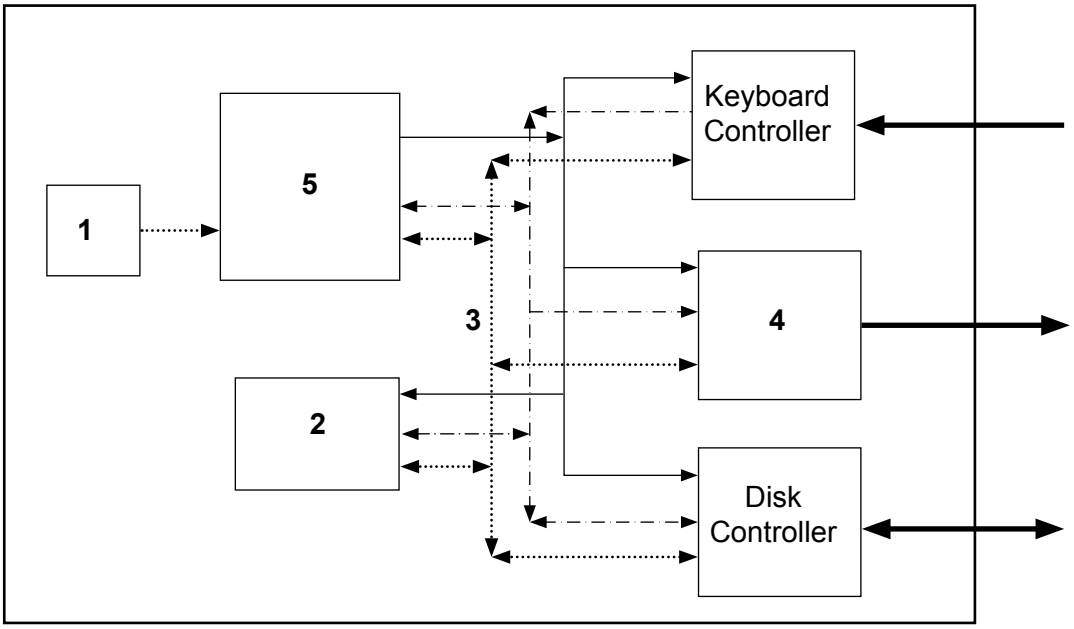
```
<html>
  <head>
    <title>                                                    </title>
  </head>
  <body>

  </body>
</html>
```

(6 marks)

7

7 **Figure 5** shows some of the components of a computer system.

Figure 5



7 (a) Suggest names for the components numbered **1** to **5** in **Figure 5** by completing the table below.

Number	Component Name
1	
2	
3	
4	
5	

(5 marks)

7 (b) In the first step of the Fetch-Execute Cycle the contents of the Program Counter are copied into another register.

State the **full name** of this register.

.....

(1 mark)

7 (c) An item of data or an instruction fetched into the processor is initially loaded into a register.

State the **full name** of this register.

.....

(1 mark)

7 (d) Modern computers often have a *64-bit address bus*.

Explain what this means.

.....

.....

(1 mark)

8

Turn over for the next question

8 (a) **Table 1** lists the approximate storage capacities of various secondary storage media.

Complete **Table 1**, indicating which of the storage media from the list most closely matches the given storage capacities. You should **not** use the same medium more than once.

Blu-ray, Magnetic Hard Disk, Flash Memory Card, DVD+R, CD-R.

Table 1

Typical Capacities	Storage Medium
40 gigabytes – 2 terabytes	
4.7 – 8.5 gigabytes	
512 megabytes – 128 gigabytes	
600 – 800 megabytes	

(4 marks)

8 (b) Explain why a customer may prefer to buy software on DVD medium rather than downloading it.

.....

.....

.....

(2 marks)

8 (c) DVD disks are the same physical size as a CD.

Why is the storage capacity for a DVD disk far larger than that of a CD?

.....

.....

.....

(1 mark)

Question 8 continues on the next page

8 (d) An online booking system uses Digital Audio Tape (DAT) as a backup medium and a magnetic hard disk for interactive booking.

Why is DAT not suitable for the interactive booking?

.....

.....

(1 mark)

8

9 A large bank has a Data Controller who determines how personal data collected by the bank is processed.

9 (a) Under the Data Protection Act, who should the Data Controller register the bank's data use with?

.....

(1 mark)

9 (b) State if each of the following data sets, held by the bank, are covered by the Data Protection Act. Give a reason for each answer.

9 (b) (i) Details of the different types of loan that the bank sells.

.....

.....

(1 mark)

9 (b) (ii) The names and addresses of all of the bank's customers.

.....

.....

(1 mark)

9 (c) (i) The bank posts a letter to an ex-customer using an address that the customer has not lived at for five years.

Which principle of the Data Protection Act has been broken?

.....

.....

(1 mark)

9 (c) (ii) There is a bug in the computer program that the bank uses to operate its online banking system. This allows Internet users to view the bank account details of any bank customer.

Which principle of the Data Protection Act has been broken?

.....

.....

(1 mark)

9 (d) Customers who use the bank's online banking system communicate with the bank's web server over the Internet. Interception of these messages is illegal except by certain organisations under specific circumstances.

Under which Act is the interception of these messages illegal?

.....

(1 mark)

6

END OF QUESTIONS

There are no questions printed on this page

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