# HALF-YEARLY EXAMINATION 2016

## FORM 3  COMPUTER STUDIES

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
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<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>Global Mark</th>
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</thead>
<tbody>
<tr>
<td>Max. Mark</td>
<td>9</td>
<td>4</td>
<td>5</td>
<td>7</td>
<td>11</td>
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<td>10</td>
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<td>5</td>
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<td>Mark</td>
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</table>

**Instructions:**

- Answer all the questions on this paper.
- Calculators are NOT allowed.
- The use of a flowchart template is permitted.
- Good English and orderly presentation are important.
SECTION A

1. The five main components of a computer system are the: Input devices, Output devices, Main Memory, Central Processing Unit and Backing Storage devices.
   a) Draw a block diagram of a computer system that contains all the above components and show how data and control flows between them.

   b) Briefly describe the function of three of the main computer system components mentioned above.
      (i) ........................................................................................................................................
      (ii) ........................................................................................................................................
      (iii) ........................................................................................................................................

   [6, 3 marks]

2. Data can be digital or analogue.
   a) Give another name for:
      Analogue data: ___________________ Digital data: ___________________

   b) Explain the difference between the analogue and digital data.
      ........................................................................................................................................
      ........................................................................................................................................
      ........................................................................................................................................

   [2, 2 marks]
3. **Utility software** may either come as pre-packed (bundled) with an Operating System or bought separately off-the shelf.
   a) What is a **Utility Program**?

   ________________________________________________________________
   ________________________________________________________________

   b) There are different **Utility programs**. Choose any three and briefly explain their use.
   (i) __________: __________________________________________________
       ____________________________________________________________

   (ii) __________: __________________________________________________
       ____________________________________________________________

   (iii) __________: _______________________________________________
        __________________________________________________________

   [2, 3 marks]

4. The computer’s Main Memory is made up of **RAM** and **ROM**.
   a) What do the terms **RAM** and **ROM** stand for?

          RAM: ______________________________________________________
          ROM: _____________________________________________________

   b) What are **RAM** and **ROM** used for?

                                              ______________________
                                              ______________________
                                              ______________________

   c) What do you understand by the terms **volatile** and **non-volatile** memory?

                                              ______________________
                                              ______________________
                                              ______________________

   d) Which of these terms (volatile or non-volatile) applies to **RAM**?

                                              ________________

   [2, 2, 2, 1 marks]
5. The following question is about spreadsheets.
   a) What makes spreadsheets so useful to businesses?

   b) Mention and briefly explain the word processing feature that allows the user to use spreadsheet data to create the assessment result sheets for 200 students.

   c) The figure below shows part of a spreadsheet which calculates the bill for items bought from a stationary.

   ![Spreadsheet](image)

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Item</td>
<td>Cost Price</td>
<td>Quantity</td>
<td>Price</td>
</tr>
<tr>
<td>2</td>
<td>Book</td>
<td>6.50</td>
<td>1</td>
<td>6.50</td>
</tr>
<tr>
<td>3</td>
<td>Box of Pencils</td>
<td>2.50</td>
<td>3</td>
<td>7.50</td>
</tr>
<tr>
<td>4</td>
<td>File</td>
<td>0.75</td>
<td>2</td>
<td>1.50</td>
</tr>
<tr>
<td>5</td>
<td>Booklet of A4 paper</td>
<td>0.25</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td>TOTAL</td>
</tr>
</tbody>
</table>

   Write down the formulae which must be placed in cells D5 and D6.

   (i) D5: __________________________________________________________
   (ii) D6: __________________________________________________________

   [2, 3, 6 marks]

6. This question is about Storage. Write the name of the item that is being described.

<table>
<thead>
<tr>
<th>Description</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>A secondary storage device that is mostly used for backups and archiving information.</td>
<td></td>
</tr>
<tr>
<td>A removable disk on which data is read through the use of laser beams.</td>
<td></td>
</tr>
<tr>
<td>Data is recorded on a disk in these rings.</td>
<td></td>
</tr>
<tr>
<td>Is a copy of data made in case the original is lost or destroyed.</td>
<td></td>
</tr>
<tr>
<td>A file kept on a backing storage medium that contains the details of where files are stored in the medium.</td>
<td></td>
</tr>
<tr>
<td>Is a backing storage medium made up of metal disk/s coated with a magnetic material.</td>
<td></td>
</tr>
</tbody>
</table>

   [6 marks]
7. **Fill in the blanks.**

To connect to the Internet you need a computer equipped with a _________________. This is used to connect computers to the communication channels like the ________________ lines. You also have to open an account with an ISP which stands for ________________ ________________ ________________.

The WWW is part of the Internet which consists of files and documents called web pages. A group of web pages is called a web ________________. Each web page has its own ________________ which is also called URL. URL stands for ________________ ________________ ________________. To view web pages one needs special software called a web ________________. The one we use at school is called ________________ ________________.

Search engines are special web sites that are used to help you find particular information just by typing ________________.

Sometimes in a web page you can find text that is linked to other text which the user can immediately access by a mouse click. This text is referred to as ________________.

[10 marks]

8. **Write True or False** next to the following statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>True or False</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Clipboard is a temporary memory area that holds the items we Cut or Copy.</td>
<td></td>
</tr>
<tr>
<td>The clipart facility allows users to copy items between programs.</td>
<td></td>
</tr>
<tr>
<td>GUI stands for Graphs User Interface.</td>
<td></td>
</tr>
<tr>
<td>An advantage of a GUI is that different programs can be used at the same time.</td>
<td></td>
</tr>
<tr>
<td>Another advantage of GUI as compared to a CLI is that it is more user friendly so it is easier to use.</td>
<td></td>
</tr>
<tr>
<td>ASCII stands for American Secret Code for Information Interchange.</td>
<td></td>
</tr>
<tr>
<td>UNICODE is preferred to ASCII nowadays.</td>
<td></td>
</tr>
</tbody>
</table>

[7 marks]
9. The **binary number system** plays an important role in computer technology.
   a) **Why** is the **binary number system** used to represent data and instructions in a computer?

   [Blank for answer]

   [Blank for answer]

   b) **Convert**:
   
   (i) $5A_{16}$ to decimal: __________
   
   (ii) $71_{10}$ to hexadecimal: __________

   Working space

   [2, 4 marks]

10. Draw the **flowchart** of a program that first asks the user to input two numbers N1 and N2. Then the program outputs their average.

   Space for flowchart

   [5 marks]
 SECTION B

11. This question is about **Storage**.

   a) What is the **smallest unit of memory** in a computer? ____________________ [1 mark]

   b) How many **bits** are there in a **byte**? ____________________________ [1 mark]

   c) What do the following **abbreviations** stand for?

      (i) BIT: ________________________________________________________________

      (ii) MSB: _____________________________________________________________

      (iii) LSB: ____________________________________________________________ [3 marks]

   d) How many **bits** are there in **10KB**? ________________bits [3 marks]

   e) Mention the three **types of storage media** and give an **example** of each.

      (i) ___________________________ Example: ____________________________

      (ii) ___________________________ Example: ____________________________

      (iii) ___________________________ Example: ____________________________ [3 marks]

   f) What is the **difference** between **serial** and **direct data access**?

      _____________________________________________________________________

      _____________________________________________________________________

      _____________________________________________________________________ [2 marks]

   g) List a **storage medium** that uses serial access and another that uses direct access.

      Serial Access medium: ________________________________________________

      Direct Access medium: _______________________________________________ [2 marks]
12. This question is about logic gates.

a) Mention one use logic gates in computers: ___________________________________  
[1 mark]

b) Define the following terms:

(i) Logic gate: ________________________________________________________________

(ii) Truth table: ______________________________________________________________

[2 marks]

c) Write the name of each of the following gates:

[Diagram of gates]

[3 marks]

d) Here is the truth table of a logic gate. Complete the truth table. Name the logic gate that is being used.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
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<tbody>
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</tbody>
</table>

This is an ________ gate.  
[2 marks]

e) The light-bulb inside a car switches on whenever any of the two front doors is open. What logic gate is being used? ____________________________  
[3 marks]

f) Complete the truth table of the following logic circuit.

[Diagram of logic circuit]

<table>
<thead>
<tr>
<th>A</th>
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</tr>
</thead>
</table>

[4 marks]