DIRECTORATE FOR QUALITY AND STANDARDS IN EDUCATION
Department for Curriculum Management and eLearning
Educational Assessment Unit
Annual Examinations for Secondary Schools 2013

FORM 3 (Option)	COMPUTING	TIME: 1h 30min

Name: _____   Class: _____

Directions to Candidates:

    Answer **ALL** questions in **Section A** and **Section B** on this paper;
    The use of a flow chart template is permitted;
    Calculators are **NOT** allowed;
    Good English and orderly presentation are important.

For office use only:

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	Paper Total	Course Work	Final Mark
Max	5	5	5	5	5	5	5	5	5	5	5	15	15	85%	15%	100%
Mark																

Section A - Answer all Questions

1. Answer **True** or **False**.
   The first one has been done for you.

a.	A computer is an electronic machine.	*True*
b.	Electronic machines have no moving parts.	
c.	People can process large volumes of data faster than computers.	
d.	Computers are better than people at repetitive jobs that need to be done accurately.	
e.	Computers are better than people at jobs that need creativity.	
f.	The CPU can load data from Main Memory and store data to Main Memory.	

2. This question is about System Software.

   a. What does **GUI** stand for? _____ [1]

   b. Give 1 **advantage** of a GUI. _____ [1]

   c. Fill in the blanks with **three** of the words below: [3]

   > *Clipboard, interface, window, utility software*

   i   In a GUI a _____ is a rectangular area of the screen representing a particular application.

   ii.   _____ includes programs that help keep our system healthy (e.g. antivirus) and other programs that help perform basic tasks (e.g. format).

   iii.   A _____ allows users to copy items between applications or locations.

3. Fill in with the following: [5]

   > *Word processor, Spread sheet, E-mail application, Defrag Utility, Antivirus Utility*

a.	Software used to write, send, read and manage messages.	
b.	Software that improves disk access speed by placing parts of the same files on clusters close to each other.	
c.	An application used to create, save and edit documents.	
d.	Application software used for calculating, organising and analysing accounting information.	
e.	Utility used to detect and remove virus infections in a computer system.	

4. Suggest one of these **storage devices** device for each of the following situations:

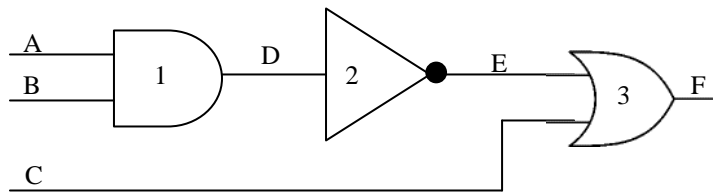| ROM, Pen Drive, DVD/CD, Hard disk, RAM	
a.	Storing frequently used application software.	
b.	Distribution of software – e.g. an office suite.	
c.	Storing the BIOS and other firmware.	
d.	Taking a softcopy of your project to school with you.	
e.	Storing running programs.	

5. Complete the table below by working out the conversions necessary.   [5]

    Clearly show all working in the space provided

Binary	Decimal	Hexadecimal
10011	Answer _____	Answer _____
Answer _____	35	
Answer _____	Answer _____	1A3

6. Consider the logic circuit below:

a. Write the **number** of the gate that: [3]

 i. Is an AND gate

 ii. Is an inverter gate

 iii. Returns a logic 1 only if both inputs are 1

_____

_____

_____

b. **Complete** the truth table for the above logic circuit. [2]

A	B	C	D	E	F
0	0		0	1	
0	0		0	1	
0	1		0	1	
0	1		0	1	
1	0		0	1	
1	0		0	1	
1	1		1	0	
1	1		1	0	

7. **Match** each application with one of the following devices: [5]

   The first one has been done for you.

> *Graphics tablet, dot matrix printer, touchpad, OMR, projector, barcode reader*

	Application	Device
a.	Showing presentations or educational clips in a classroom.	*Projector*
b.	Printing of bills.	
c.	Production of itemised receipts at a POS in a supermarket.	
d.	Correction of multiple choice exam questions.	
e.	Creating interior design room plans.	
f.	Screen selection in a GUI on a portable computer.	

8. Many screens today have a **resolution** of 1024 x 768.

    a. Fill in with 'resolution', 'hardcopy' or 'softcopy':

i.	The number of pixels on the screen.	
ii.	The type of output given by a screen.	

    b. **Tick** (X) as appropriate: [3]

	Pen Plotter	**Ink Jet Printer**
Produces a bitmap image		
Vector Output Device		
Ideal for printing of maps		

9. Technology can improve the quality of life for people with special or different needs.

    a. Give **one example** of how computers, specialised devices and/or the internet can   [1]
        improve the quality of life for a person with motor deficiencies.

        _____

    b. Choose a suitable **input device** or **software feature** for the following situations: [4]

	Spellchecker, Eye sensor reader, Braille keyboard, Braille printer

i.	A visually impaired person who works as a clerk and needs to type in data.	
ii.	A person who has difficulty moving his arms and hands.	
iii.	A student who has problems with spelling.	
iv.	An LSA needing to print material for a visually-impaired student.	

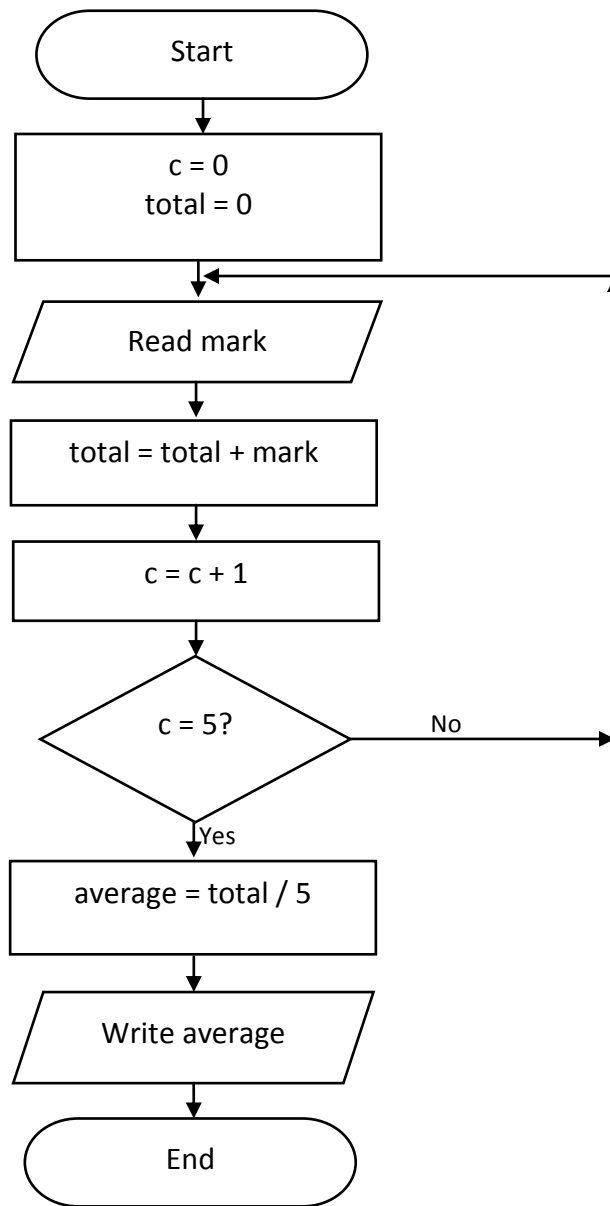10 This question is about the Internet and web browsers.

    a. Answer **True** or **False**.   [2]

i.	WWW stands for World Wide Web.	
ii.	The internet is part of the WWW.	

    b. **Name** the following: [3]

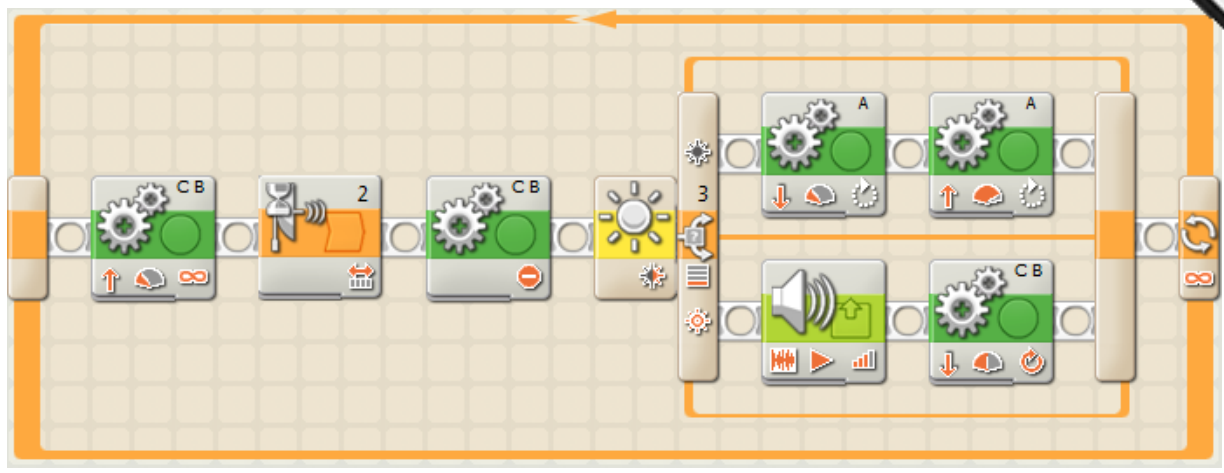 | | | |
    |---|---|---|
    | i. | An application used to locate and display web pages. | |
    | ii. | The address of web pages and other resources on the WWW. | |
    | iii. | A program that searches for information on the WWW. | |

11. Consider the flowchart below and then answer the following questions.

```
                    ┌─────────────────┐
                    │      Start       │
                    └─────────────────┘
                            │
                    ┌───────▼───────┐
                    │    c = 0       │
                    │  total = 0     │
                    └───────┬───────┘
                            ▼
                   ╱─────────────────╲
                  ╱    Read mark       ╲
                  ╲─────────────────────╱
                            │
                    ┌───────▼───────────┐
                    │ total = total + mark│
                    └───────┬───────────┘
                            │
                    ┌───────▼───────┐
                    │   c = c + 1    │
                    └───────┬───────┘
                            │
                       ╱────▼────╲
                      ╱  c = 5?   ╲──── No
                      ╲───────────╱
                            │
                          Yes
                    ┌───────▼────────┐
                    │ average = total / 5│
                    └───────┬────────┘
                            │
                   ╱────────▼─────────╲
                  ╱   Write average     ╲
                  ╲─────────────────────╱
                            │
                    ┌───────▼───────┐
                    │      End       │
                    └───────────────┘
```

a.	How many times does this program loop?	
b.	Name a variable which acts as a counter.	
c.	Write down the instruction in the above flowchart that adds the mark entered to the total of all marks.	
d.	Name a variable that is being used to hold an answer to a calculation.	
e.	What does this program output?	

Section B – Answer BOTH Questions

12. The following is part of a simple NXT program:

The above program makes the NXT move forward until it is close enough to a ball and then it hits the ball only if it is of a particular colour.

a. Name **two** input devices this NXT program makes use of. [2]

    i. _____

    ii. _____

b. Name **one** output device this NXT program makes use of. [1]

_____

c. To which NXT **port** is the motor that makes the device hit the ball attached? [1]

_____

d. There are **three** basic programming constructs. Which **programming construct** is being represented by the following parts of the above program? [2]
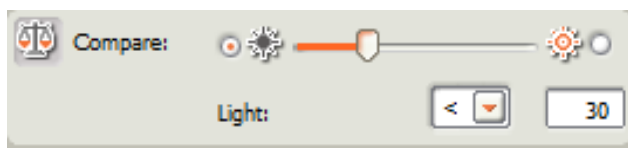
i.		Construct: _____
ii.		Construct: _____

e. **Name** and **briefly explain** the third programming construct.   [2]

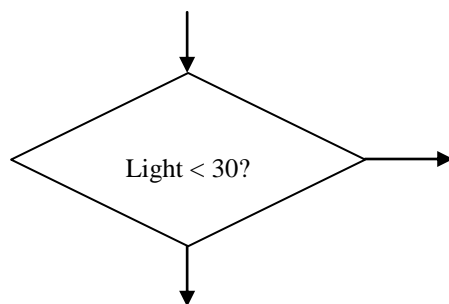| Name	
Explanation	

f. Does the program shown above implement the construct mentioned in [e]?   [1]

_____

g. Draw a **flowchart** to represent the section of the program shown in [d i].   [3]

Consider the comparison details shown below.

The first part of the flowchart has been done for you.

Light < 30?

h. Answer **True** or **False**.   [3]

i.	This is the flowchart symbol for an **input** instruction.		

ii.	This is the flowchart symbol for an **output** instruction.		

iii.	Flowcharts are diagrammatic but pseudocode is more text-based.	

13. A book library makes use of a computerised database to handle library operations better.

   a. Suggest **2 ways** in which computerising the library system is advantageous to the librarian. [2]

     i. _____

     ii. _____

   b. The library system has a book file and a client file.

     i. Suggest a **record structure** for the book file. [5]

Field Name	Field type

     ii. Which of the fields you mentioned in [b i] would be ideal for a **keyfield**? [1]

     iii. Give a reason for your answer in [b ii]. [1]

   c. The mailmerge facility may be useful to the librarian. [3]

     Answer **True** or **False**.

i.	Mailmerge can be used to automatically send letters to all clients with overdue books.	
ii.	Mailmerge is the use of the 'copy' function to copy text.	
iii.	Mailmerge refers to the sending of email to many recipients.	

   d. i. **Tick** the access mode better suited for the library application. [1]

     ☐ Direct access   ☐ Serial access

     ii. Why is the access mode you chose in [d i] above better for the library? [2]