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

Tra...

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**.

a.	Data is the representation of information.	
b.	Computers process and store information (as opposed to data).	
c.	Computers are better suited than humans at repetitive jobs requiring precision.	
d.	Computers are better suited than humans at jobs requiring creativity and judgement.	
e.	The computer's CPU can both retrieve data from and save data to Main Memory.	

2. System software is very important in a computer.

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

   b. **Explain** how an Operating System using a GUI provides a better user-experience. [2]

   c. Briefly **explain** how a clipboard feature improves the user's experience of an   [1]
      Operating System.

   d. Give the **generic name** for system software that helps to keep our system clean from   [1]
      malware (like viruses) and to keep it generally healthy (e.g. by solving disk
      fragmentation issues).

3. Suggest **one use** an office may need to make of the following software: [5]

a.	Word processor	
b.	Spread sheet	
c.	E-mail application	
d.	Defrag Utility	
e.	Antivirus Utility	

4. a. Suggest a suitable **storage device** for each of the following situations:

i.	Storing frequently used application software.	
ii.	Distribution of software – e.g. an office suite.	
iii.	Storing the BIOS and other firmware.	
iv.	Taking a softcopy of your project to school with you.	

b. 'Cloud computing' lets us store our files on online servers rather than on our own PCs. We can then access our files by entering a user name and password to log into our account. Suggest **1 advantage** of storing our files in this way, i.e. 'in the cloud'.   [1]

_____

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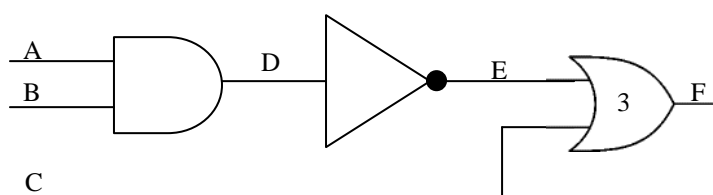
a.   Write **the number** of the gate that: [3]

   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.   This question is about peripheral devices.

a.   Give a suitable **application** for the following devices.   [3]

i.	Graphics tablet	
ii.	Dot-matrix Printer	
iii.	Pen plotter	

b.   An OMR is often used in lotto offices.

   i.   Give a use for an **OMR** in a lotto office.   [1]

   ii.   Give an **advantage** of using an OMR for this purpose.   [1]

8. CRT Screens often have a resolution of **1024 x 768** and a **16 million** colour depth. have a refresh rate of **100Hz** or over.

    a. **Explain** the following terms.

i.	Monitor resolution	
ii.	Colour depth	
iii.	Refresh rate	

    b. Computer screens come in different sizes.

        i. Do you expect to see a difference in **output quality** if the same number of pixels is produced on a 13 inch screen rather than on a 16 inch screen? [1]

        ii. **Explain** your answer to [b i] [1]

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

    a. Suggest **one** way in which computers, specialised devices and/or the Internet can improve the quality of life for a person with motor deficiencies. [1]

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

i.	A visually-impaired person who works as a clerk and so needs to type in a lot of data.	
ii.	A person who is unable to move his arms and hands.	
iii.	A student who has some 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.	The Internet provides the infrastructure for the WWW.	
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 term given to the address of web pages and other resources on the WWW.	
iii.	A program designed to search for information on the WWW.	

11. Draw a **flowchart** for a program that allows the user to enter five marks and then out[...] average.
    (Hint: Your flowchart should implement a loop)

Section B - Answer all Questions

12. The following is part a simple NXT program:
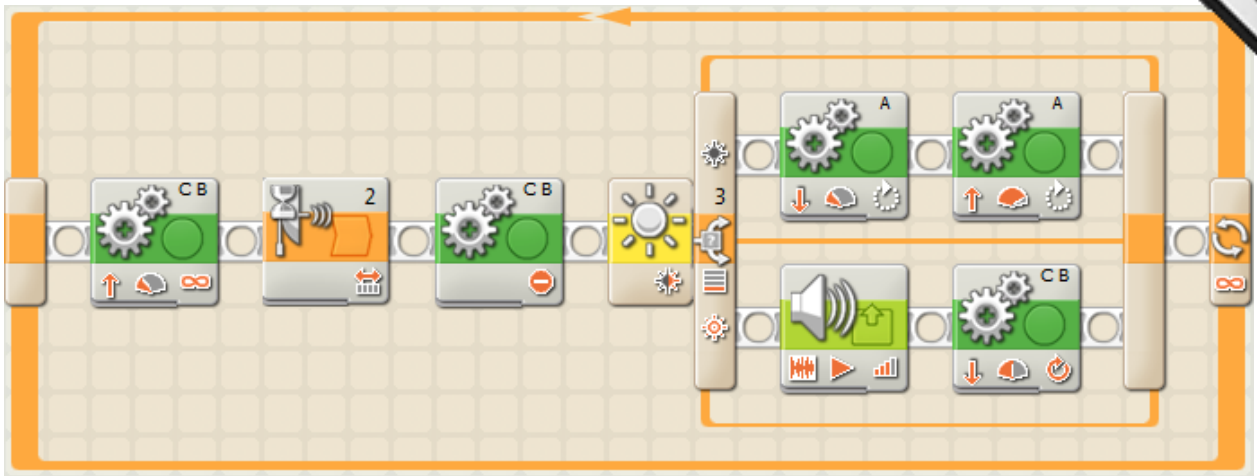
The above program causes the NXT to move forward until it is close enough to a ball and then it hits this ball only if it is of a particular colour.

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

i. _____

ii. _____

b. Name an **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** [2] is being represented by the following parts of the above program?

i.		Construct: _____
ii.		Construct: _____

e. **Name** and **briefly explain** the third programming construct.

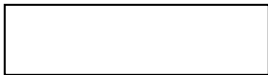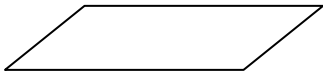| Name	
Explanation	

f. Does the above program 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.

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.

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

       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.

       i.   Briefly explain **mail-merging**.   [2]

          _____

          _____

       ii.   Suggest a **task** the librarian may need to do for which the mail-merging facility [1]
            can be useful.

          _____

    d. i.   **Tick** the access mode best suited for the above application.   [1]

            ☐   Direct access

            ☐   Serial access

       ii.   **Explain** your answer to [d i] above.   [2]

          _____

          _____