

DIRECTORATE FOR QUALITY AND STANDARDS IN EDUCATION
Department for Curriculum Management and eLearning
Educational Assessment Unit
Annual Examinations for Secondary Schools 2012

Track 2

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 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

1. This question is about Computer Systems.

a. Answer with **True** or **False**.

		True/False	[3]
i.	Keyboard, mouse, hard disk and RAM are all examples of hardware.		
ii.	Computers deal with information and not with data.		
iii.	All computers have a processor.		

b. In which of the following type/s of jobs would you expect **computers to be better suited** than humans? [2]

Tick (✓) as appropriate. *The first one has been done for you.*

	Statement	Answer
i.	Jobs requiring complex calculations	✓
ii.	Jobs requiring creativity	
iii.	High precision repetitive jobs	

2. Most modern operating systems use a **graphics interface**.

a. Fill in the blanks in the sentences below with the following words. [3]

<i>desktop</i>	<i>folders</i>	<i>clipboard</i>
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i. When we cut a piece of text it is temporarily stored on the _____

ii. The screen at the back of all our programs in a graphics interface is called _____

iii. The Operating System lets us organize our files in _____

b. Formatting removes all files and folders from a disk. Mention **TWO** other things that take place during disk formatting: [2]

i. _____

ii. _____

3. **Wordprocessors, Spreadsheets and Graphics Package** are application software.

a. Which of the above application software is **most suitable** for the following jobs?

i. Keeping a family budget.

ii. Writing a letter.

iii. Making a poster to advertise a school activity.

b. Fill in with a **wordprocessing feature** that one uses for the following tasks:

[2]

(The first one has been done for you)

i.	Tabulating a study plan.	Tables
ii.	Check one's work for spelling mistakes.	
iii.	Inserting your name automatically at the bottom of each page.	

4. **Utility software** is useful in keeping our system in good working order and performing other common tasks. [5]

Name the utility software you would use to carry out the following tasks:

(The first one has been done for you)

a. Avoid getting spyware onto your computer.

Anti-spyware software

b. Make files smaller before sending them via email.

c. Improve file access in a disk that had become fragmented.

d. Check a disk for physical errors.

e. Delete everything on a hard disk and prepare it for reuse.

f. Avoid getting infected by viruses when using the internet.

5.

a. Complete the table below with a suitable Input Device.

[3]

(The first one has been done for you)

	Application	Device
i.	Designing a logo	Graphics Tablet
ii.	Selecting items in a GUI	
iii.		OMR
iv.	Obtaining the item price for bill production	

b. Insurance companies often use OCR for the input of details on forms.

i. What does OCR stand for?

ii. Suggest **ONE** advantage of using OCR rather than manually inputting data. [1]

6. Different types of printers have different uses in industry.

a. A **Dot matrix printer** has a very **low resolution**. [1]

i. What do you understand by 'low resolution'?

ii. Printer resolution is measured in **DPI**. What does DPI stand for? [1]

iii. Suggest **ONE use** for dot matrix printers. [1]

c. Most people have either **inkjet** or **laser printers** at home. [2]

Suggest **TWO ways** in which inkjet printers and laser printers are different.

	Inkjet Printers	Laser Printers
i.		
ii.		

7. **Underline** the correct answer. (*The first one has been done for you*) [5]

Which of the following storage devices:

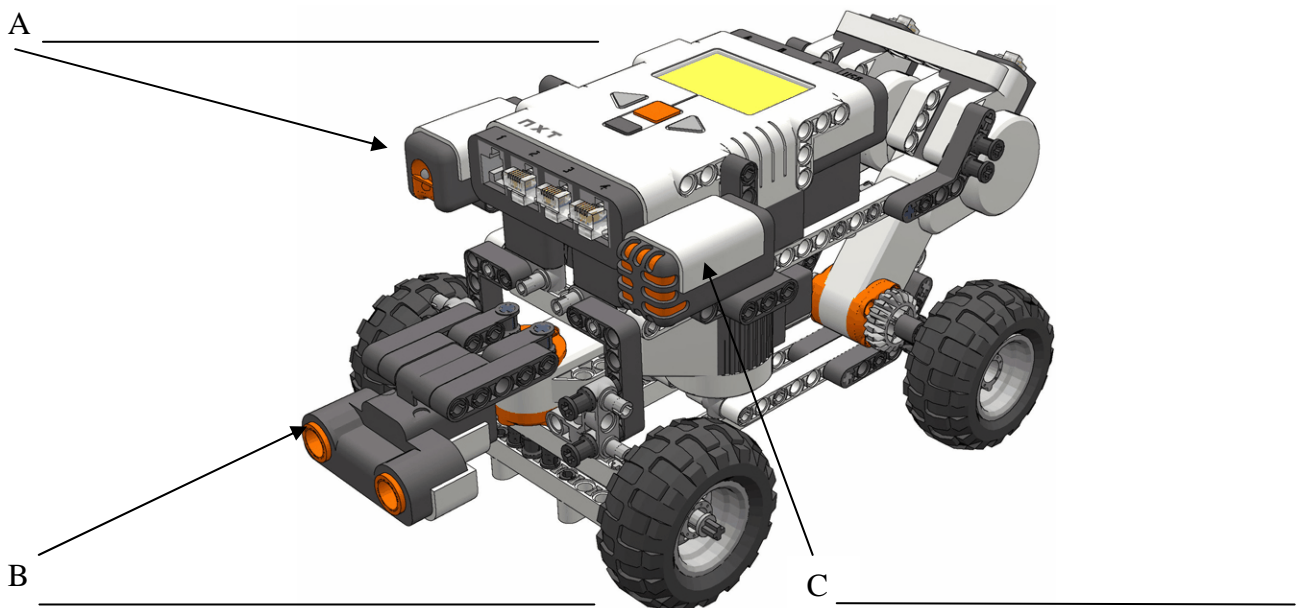
	Property	Answer choices		
a.	Is volatile?	ROM	<u>RAM</u>	hard disk
b.	Is slowest to access?	hard disk	ROM	RAM
c.	Has the highest capacity?	CD	DVD	hard disk
d.	Is an optical medium?	hard disk	CD	RAM
e.	Is part of main memory?	RAM	hard disk	CD
f.	Is ideal for backing up large files?	DVD	Floppy Disk	RAM

8. **Fill in** the blanks in the sentences below with the following terms:

bookmarks search engine hypertext log in web browser

- a. A _____ is application software which we use to locate and display web pages.
- b. When one wants to use the World Wide Web to look up information on a particular subject one uses a _____.
- c. If one finds a webpage that s/he needs to access often, one should add it to her/his _____.
- d. One normally needs to enter her/his username and password before one can _____ to her/his web-based e-mail account.
- e. Some text on a website can be clicked on to take you to another page; this type of text is called _____.

9. The diagram shows a simple NXT robotic device.



- a. Label the sensors A, B and C above. [3]
- b. Which of the **sensors** A, B, C would you use to: [2]
(The first one has been done for you)
 - i. Allow the device to realize when it's approaching a wall **B**
 - ii. Make the device start moving only when someone claps _____
 - iii. Differentiate between a white wall and a black wall _____

10. This question is about character sets.

a. ASCII is a **7 bit** character set. Therefore how many characters can it represent?

b. In ASCII the letter 'a' is represented by the binary pattern 1000001. Convert 1000001 to decimal. [2]

c. Express the binary pattern 1000001 in hexadecimal. [2]

11. Logic circuits are at the heart of decision making inside our computer.

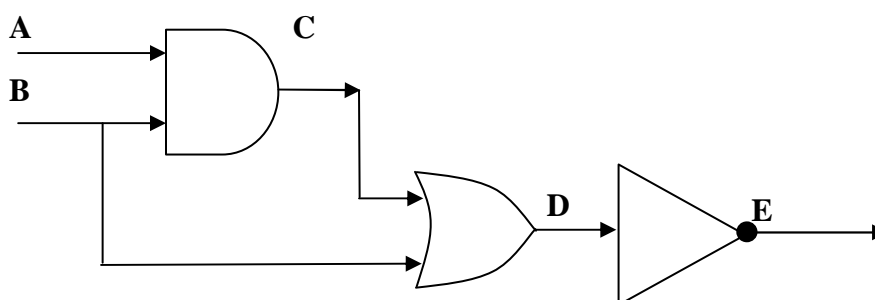
a. Draw the symbol and complete the truth table for an OR gate. [2]

Symbol

Truth Table

A	B	X
0	0	
0	1	
1	0	
1	1	

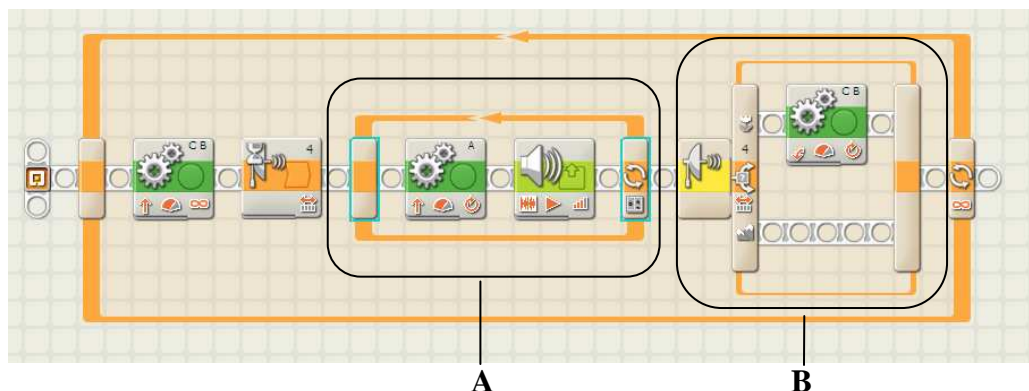
b. Complete the truth table for the following logic circuit. [3]



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

Section B

12. Programs like the one shown below can be created to make robotic devices perform specific tasks.



- a. Programs involve three basic constructs.

- i. Fill in the table with the three programming constructs.
(The first one has been done for you)

[4]

Construct	Explanation
<i>Sequence</i>	A number of instructions that will be executed in succession.
	Branching instruction that determines which option will be executed on the basis of one or more values/inputs.
	An instruction that causes one or more lines to be executed a number of times.

- ii. The picture of the program above has two constructs labelled A and B. Use two of the constructs you mentioned in part (i) above to identify A and B.

[2]

A

B

- b. Look carefully at the properties of the move block shown below. Then answer the questions that follow by placing the numbers 'i' to 'iv' in the correct boxes in the picture.

[3]

The first one has been done for you.



- Mark (i) the section responsible for making the robotic car **move forward**.
- Mark (ii) the section responsible for the **speed** with which the robotic car moves.
- Mark (iii) the section responsible for determining **which motors** are being controlled by this move block.
- Mark (iv) the section responsible for how much the motor turns.

c. Programs can be represented in terms of flowcharts.

i. What is a **flowchart**?

ii. **Underline** the correct terms:

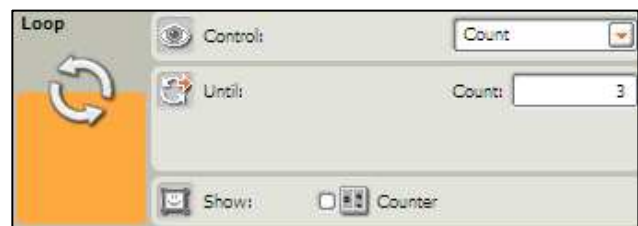
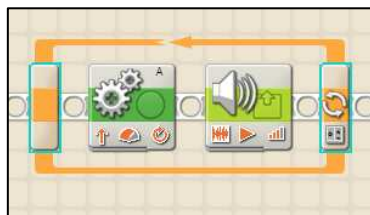
[2]

In a flowchart

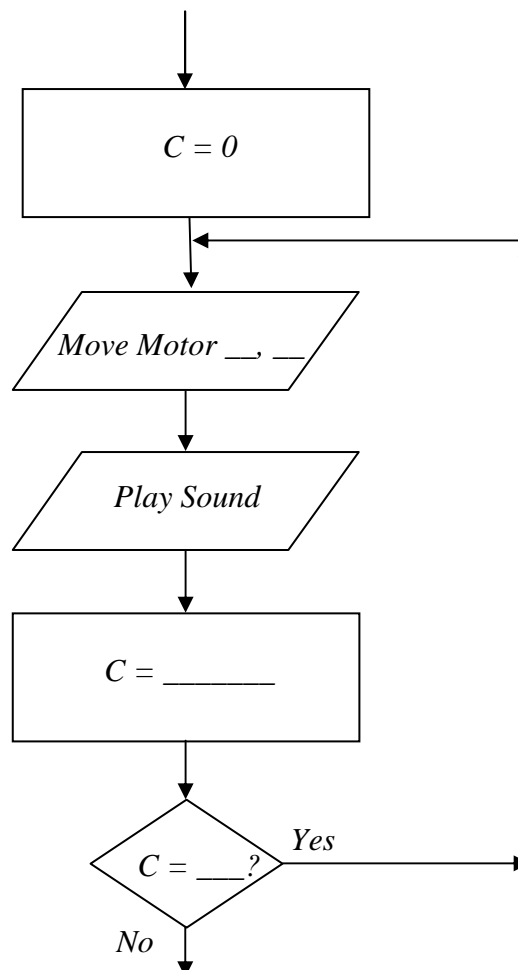
- A move block is represented by (a process, an output, a decision) symbol.
- A sound block is represented by (a process, an output, a decision) symbol.

iii. The following pictures show part of a looping block. The image on the right shows the properties of the block.

[3]



The incomplete flowchart below represents the looping block above. Complete the flowchart.



13. A new computerized system is going to be developed for a **school library**.

a. The System will involve 3 main **files**:

Student File	Including student details: Name, Surname, etc
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Book File	Including the fields: BookID, Name, Author, Year of publication, Shelf mark, Available
------------------	---

Loans File	Including details about each loan: Who borrowed a book, which book was borrowed, when etc.
-------------------	---

i. List **THREE** fields you would expect to find in the Student File (other than 'Name' and 'Surname'). [3]

Field 1:

Field 2:

Field 3:

ii. Identify the field you would use as **keyfield** in the Student File and justify your answer. [2]

Field:

Reason:

iii. Suggest a suitable data type for the fields in Book File. [2]
(Some have been done for you)

Field	Data Type
BookID	
Name	Text
Author	
Year of publication	
Shelf mark	Text
Available	

b. The new system will be a **relational database**.

Give **ONE advantage** of a relational database when compared to a system of separate files. [1]

- c. Use the following terms, to fill in the blanks next to the descriptions below.

query sorting searching field record

- i. A number of items of information about a single object or person. _____
- ii. A question to the database. _____
- iii. Organising records in a particular order. _____
- iv. A single data item of a specified type. _____
- v. Looking through a database for a particular data item. _____
- d. At the end of every month the librarian needs to run a query for students who have overdue books that should have been returned that month and were not. The system needs to issue these students a fine. [2]

Use the following information to draw a **flowchart** for the part of the database program that will **calculate** and **output** this fine.

- The student will be charged 10c for every day since the due date.
- Assume that the due date is stored in a variable called dateIn and that the last day of the month is stored in a variable called lastDay.