

**Annual Examinations for Secondary Schools 2015**

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**FORM 3**

**COMPUTING**

**TIME: 1h 30min**

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**Name:** \_\_\_\_\_

**Class:** \_\_\_\_\_

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***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.**

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*For office use only:*

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

## Section A

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

a.	Software refers to programs and data.	[1]
b.	Hardware includes all peripheral devices.	[1]
c.	Computers are less efficient than humans at complex calculations.	[1]
d.	RAM is volatile memory.	[1]
e.	ROM is volatile memory.	[1]

2. Utility software helps maintain our system.

a. Underline the correct answer: [1]

An antivirus is an example of (system software, application software).

b. Name **two** ways in which computer viruses can harm a computer system. [2]

i.

ii.

c. Name **two** ways we can keep our system clean from viruses. [2]

i.

ii.

3. Convert:

		Working	Answer
a.	$38_{10}$ to 8-bit binary		
b.	$38_{10}$ to hexadecimal		
c.	$10011_2$ to decimal		
d.	$1A_{16}$ to binary		

e. Explain the importance of the hexadecimal number system. [1]

\_\_\_\_\_

4. A school library is computerising its database.
- a. Suggest **two advantages** of computerising this system. [2]

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

- b. The library will keep track of all books lent in a Loans File. Suggest **two other** [2]  
files the system could have.

File 1	
File 2	

- c. Give **one** reason why it is advantageous to have a relational database in this case. [1]

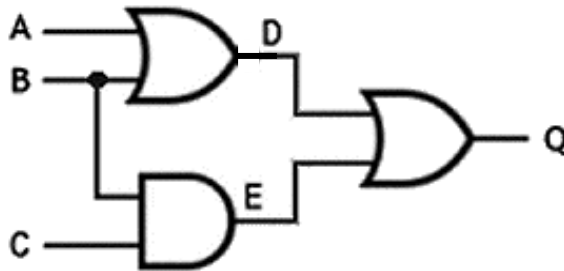
\_\_\_\_\_

5. Logic Gates are at the heart of a computer's decision-making and calculations.

- a. Fill in the blanks with **AND Gate**, **OR Gate** or **NOT Gate**. [2]

i.	A logic gate that has only ONE input.	
ii.	A logic gate that outputs a 1 ONLY if both inputs are 1.	

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



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

6. Wordprocessors are very useful office tools.

- a. Name and briefly explain **two ways** a wordprocessor helps automate office work. [4]

i.	Name	
	Explanation	
ii.	Name	
	Explanation	

- b. When storing our documents we often choose a tree structure of folders. What is the advantage of having a tree structure of folders? [1]
- 

7. Laser printers produce good resolution raster output.

- a. Explain the underlined terms. [3]

i.	Laser Printer	
ii.	Resolution	
iii.	Raster output	

- b. Fill in with the appropriate output device. [2]

	<b>Application</b>	<b>Device</b>
i.	Useful for displaying presentations during business meetings.	
ii.	Used to produce braille hardcopies.	

8. An OMR is often used in the production of lotto tickets. [1]

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

\_\_\_\_\_

b. Name one reason why an OMR is ideal for this application. [1]

\_\_\_\_\_

c. Suggest and briefly explain one other use for OMR. [2]

Use	
Explanation	

d. Name the input/output device that is central to the interface of most smartphones and tablets these days. [1]

\_\_\_\_\_

9. The hard disk is the main storage device found on most PCs. [2]

a. Give **two** reasons why the hard disk is still such a popular storage device. [2]

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b. Name one typical shortcoming of the traditional Hard disk. [1]

\_\_\_\_\_

c. What is the role of a disk filing system? [1]

\_\_\_\_\_

d. Name one filing system that is currently used. [1]

\_\_\_\_\_

10. The Internet is a global network. [2]

a. Fill in the blanks with: **The Internet** or **The World Wide Web** [2]

i.	Links computers all over the world and provides a means of data transport.	
ii.	Refers to websites available online and their content.	

b. How does hypertext improve our experience of the WWW? [1]

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c. Suggest **two advantages** of using e-mail rather than traditional mail. [2]

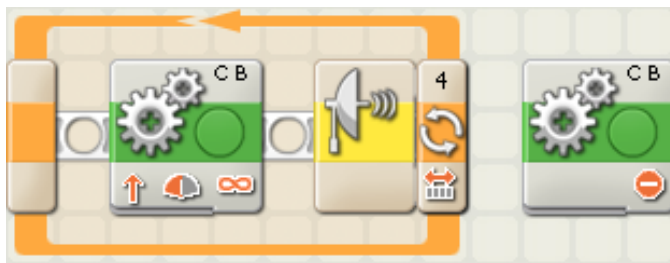
- i. \_\_\_\_\_
- ii. \_\_\_\_\_

11. Lego NXT allows us to build and program simple robots.

a. What sensor would you use to let your robotic device determine: [2]

i.	Its distance from a wall.	
ii.	Whether the device has hit an obstacle.	

b. Below is a simple NXT Program.



i. To which port is the ultrasonic sensor being read in this program attached? [1]

ii. Briefly explain the function of the loop in the above program. [2]

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## Section B

12. A factory's database includes a file of employee records.

- a. Suggest a suitable keyfield for the employee records. Give a reason for your answer. [2]

<b>Keyfield</b>	
<b>Reason</b>	

- b. Give the name of **two** other fields together with their field types and size/format you expect to find in the employee records by filling the table below. [6]

<i>Field name</i>	<i>Field type</i>	<i>Field size/format</i>

- c. Name a suitable storage device for the employee file. \_\_\_\_\_ [1]
- d. The employee file is used when producing the paycheck for each employee. [2]  
Suggest with a reason whether you would opt for direct access or serial access here.

<b>Access Mode</b>	
<b>Reason</b>	

- e. Give one advantage of magnetic tape storage. [1]
- 

- f. Give a reason why magnetic tapes are less commonly used today. [1]
- 

- g. Suggest a suitable device this company may use to store a backup of its data. [1]
- 

- h. State whether the device you mentioned in (g) uses a magnetic, electronic or optical medium. [1]
-

13. Algorithmic problem-solving often involves flowcharts.

a. Fill in the blanks using terms from the following:

[4]

**sequence, loop, flowchart, decision, pseudocode, structure chart**

i.	A _____ is a diagrammatic representation of the steps involved in an algorithm.
ii.	A _____ is a section of a program that will be executed repeatedly usually until a particular end condition is met.
iii.	A _____ is an algorithm construct which takes execution to different parts of the program usually on the basis of the value of one or more variables.
iv.	_____ is a textual description of the steps in an algorithm.

b. An application is being designed to handle school exam results. One function of this application is to output the total number of students who passed and failed an exam.

i. Write the following in their correct flowchart symbols below.

[4]

*Start*  
 $f = f + 1$   
*Output p*  
 $c = 25?$

