DIRECTORATE FOR QUALITY AND STANDARDS IN EDUCATION

Department for Curriculum Management and eLearning Educational Assessment Unit

Annual Examinations for Secondary Schools 2011

Student Bounty.com FORM 4 **COMPUTER STUDIES**

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 – Answer ALL Questions

Err	ction A – Answer ALL Questions ors may arise from mistakes during data entry or mistakes in the program itself me the following errors. A data entry error made when two data items are swapped, E.g. Typing 132 instead of 123.	47
Nai a	me the following errors. A data entry error made when two data items are	1
).	swapped. E.g. Typing 132 instead of 123. A data entry error made when a data item is left out.	_ [1]
	E.g. Typing 'scool' instead of 'school'. A program error resulting when a running program meets a situation it was not designed to handle	_ [1]
Э.	meets a situation it was not designed to handle.	[1]
1.	An error in the grammar of the programming language that does not allow the program to run.	
).	An error in the design of a program that may lead it to hang or give wrong results.	
Dat	ta verification and validation checks are often employed during the entry of data.	_
ì.	Name two types of data validation checks.	
	i	
	ii	_ [1]
) .	Can these checks on the data ensure that all data entered is correct? Why?	
		543
c.	Explain briefly one type of data verification.	_ [1]
		– [1]
Coi	mputers represent values in binary.	
1.	Why is the above statement true ?	
		_ _ [2]
).	Convert the following binary number to decimal: 10001101	
	Answer	_ [1]
с.	Convert the following binary number to hexadecimal: 10001101	
	Answer	_ [1]
d.	Convert the following decimal number to hexadecimal: 45	
		Г 1 1

4. Binary Arithmetic

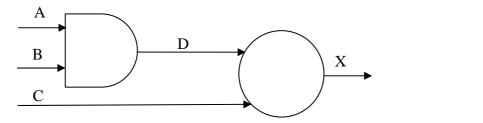
a. i. **Represent** the decimal number 20 in an **8-bit register**.

er.	SHILDERHOUNES	CON
Answer	[1]	13

ii. **Represent** the number 5 in **two's complement** in **8 bits**.

b. **Subtract** 5 from 20 using **two's complement arithmetic**.

5. Consider the following logic circuit and its incomplete truth table below. Note that the circle in the logic circuit is representing an unknown type of gate.



[1]

A	В	C	D	X
0	0	0		
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1	0	1		
1	1	0		1
1	1	1		

[2]

- a. Use the incomplete truth table to help you find the unknown gate. Then **label** the unknown gate in the logic circuit above.
- b. **Complete** the truth table for the above logic circuit.
- c. Give the **Boolean expression** for this circuit.

[2]

	Tailor-made packages	off-the-shelf. made and off-the shelf packages. Off-the shelf packages
ŀ	Tanor-made packages	On-the shell packages
-		
I	Mention two reasons when a comp	any might decide to go for a tailor-ma
	package and not off-the-shelf.	any inight decide to go for a tanor-in-
1		
	· -	
	ii	
	System Life Cycle is associated with the	ha computarization of an arganization
IC	System Life Cycle is associated with the	ne computerization of an organization.
		he System Life Cycle to put them in the
(correct order. <i>The first one has been nu</i>	ımbered for you.
	System maintenance	
	Control and Review	
	Present system study a	nd analysis
	Programming, Testing	
	1 Problem Definition and	
	Design of new system	
	Implementation and ch	
1	Why is 'Analysis' an important phase i	in the System Life Cycle?
_		
I	Mention the three types of documents	tion (manuals) that are generally available
	with software.	tion (manuals) that are generally available
	vitii soitware.	
_		

[1]

c. In which type of documentation of part 'a' above would you expect to find **instructions** on using the software?

a. The use of satellite systems and computer software to help in navigation. GPS GPS
b. The use of computers to train practicing pilots on a virtual plane.
c. The use of computer technology to design prototypes (eg. car models) in industry.
d. The use of software to control tools and related machinery in order to manufacture goods.
e. The use of computer systems to carry out financial transactions electronically in a supermarket.
 f. The buying and selling of services and products over the Internet.
Write a full Pascal program that asks the user to enter the year of registration of his/her car and then outputs either 'VRT testing required' or 'VRT testing not required'. VRT testing is not required if the car has been bought during or after the year 2008.
The ForDo and RepeatUntil are two common looping constructs that are used in most programs. In which situation should you use one and not the other?

Γ11

11.	The	e insta	Allation and use of software is regulated by its license. Mention two things that happen during software installation .)
		a.	Mention two things that happen during software installation .	Í
			i	Ì
			ii	[
		b.	What type of license comes with software that can be installed on any number of computers within a single location?	ſ
		c.	What are the following types of software called?	
			i. Software that is free to use only during a trial period .	[
			ii. Copyrighted software that is given away for free by the author.	. I
	Se	ction	B – Answer BOTH questions	
2.	Wr		section of Pascal code for each of the following tasks.	
	a.	Dec	lare a variable called name that can store a maximum of fifteen characters.	
	b.		ow the user to enter his/her surname in a variable called surname and display first three characters (leftmost) of his/her surname.	-
				-
	c.		lare an array called marks that can hold up to ten marks. Marks can only be ble numbers.	
				-
	d.		ows the user to enter five values and then outputs the largest value entered. values must be entered using a loop.	
				-
				_
				-
				-
				-

e.	Display the following menu and ask the user to enter his/her choice. The menu repeatedly displayed until the user entries are correct, that is, only 1, 2 or 3 are accepted. 1. Play game 2. Pause game 3. Quit Enter your choice?	000
		_
		_
		_
The	e registers within the CPU together with the memory unit carry out most functions. What is a register ?	
a.	What is a register ? Briefly explain the role of the following registers found inside the CPU.	

	ven an 8-bit register : What is the range of unsigned binary numbers that can be represented in this register? Give your answer in decimal.
Giv	ven an 8-bit register :
i.	What is the range of unsigned binary numbers that can be represented in this register? Give your answer in decimal.
ii.	What is the range of two's complement numbers that can be represented in such a register?
Μc	odern CPUs often have a 32-bit or 64-bit wordlength.
i. Y	What is the wordlength of a computer?
	How would a 64-bit CPU be more efficient than a 32-bit CPU when transferring the word 'computer' between the CPU and Main Memory?
Wł	nat is the address space of a computer?
Но	w is the address space relevant to the computer's performance?