DIRECTORATE FOR QUALITY AND STANDARDS IN EDUCATION
Department for Curriculum Management and eLearning
Educational Assessment Unit
Annual Examinations for Secondary Schools 2010

Tra

FORM 4 **COMPUTER STUDIES** **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 – Answer ALL Questions

1. Data validation and data verification can help reduce errors during the entry of data into the computer.

   a. Write whether the following tasks are **Data Validation** or **Data Verification**.

	To reduce data entry errors we can either:	**Data Validation** or **Data Verification**	
i.	Visually compare the inputted data with the original data.		[1]
ii.	Do computerised checks on the data entered to see if it makes sense.		[1]

   b. A clerk typing in 'Mario' may make one of the following mistakes.

omission error, substitution error, transposition error

   Complete the table below by writing the type of error.

	Data entered	**Error type**	
i.	Mrio		[1]
ii.	Mraio		[1]
iii.	Mirio		[1]

2. Errors in a program may either crash a program or give wrong results.

   a. **Name** one tool (or task) that helps us find errors in Pascal programs.

   _____ [1]

   b. Use one of the following **program errors** to complete the description of the errors in the table below.

Runtime error, Syntax error, Logic error

	Description of errors	**Example**	**Type of Error**	
i.	The program crashes due to a division by 0.	X := 134/0;		[1]
ii.	The program does not run because something was not typed.	Writeln ('Hello';		[1]

iii.	The program always outputs a 0 for the area.	length :=3;
		breadth:=5;
		writeln (area);
		area:=length * breadth;
				[1]

   c. **Write** the following instruction correctly: Writeln ('Hello';

   _____ [1]

3. Computers store data in binary.

   a. Convert the binary number **101** to decimal.

   Answer _____ [1]

b. How would the decimal number **20** be represented in an **8-bit register**?

Answer _____ [2]

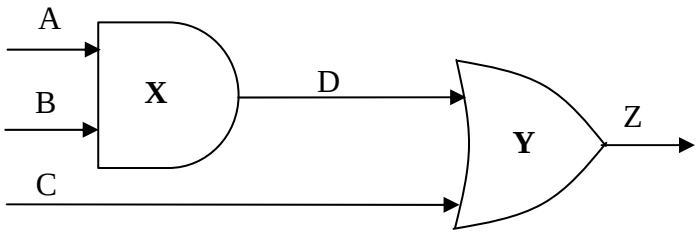
c. Convert the following binary number to hexadecimal: **10001101**

Answer _____ [1]

d. Convert the following binary number to decimal: **10001101**

Answer _____ [1]

4. a. Study the following logic circuit. Then **complete** its truth table below.



A	B	C	D	Z
0	0	0		
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1	0	1		
1	1	0		
1	1	1		

[2]

b. **Name** the logic gates labeled **X** and **Y** above.

X = _____ [1]

Y = _____ [1]

c. **Name** and **draw the symbol** of a logic gate that is not shown in the circuit above.

Name of gate: _____ Symbol of gate:

[1]

5. a. Write down whether each of the following is associated with **tailor-made** or **the-shelf** packages. *The first one has been done for you.*

	Qualities	**Off the shelf** or **Tailor made**	
i.	Software written for the user's specific needs.	Tailor made	
ii.	Readily available to buy and use.		[1]
iii.	More expensive because the software is not mass-produced.		[1]
iv.	One may get the opinion of other users before buying.		[1]
v.	Written to run on the user's current computer system.		[1]
vi.	The spreadsheet program you use at school.		[1]

6. The System Life Cycle can be described in seven steps.

a. **Number** the following steps of the System Life Cycle to put them in the correct order. *The first one has been marked for you.*

	System maintenance
	Control and Review
	Present system study and analysis
	Programming, Testing and Documentation
1	Problem Definition and Feasibility Study
	Design of new system
	Implementation and changeover methods

[3]

b. Underline the **person** responsible for the System Life Cycle:

Systems programmer, Systems designer, Systems analyst [1]

c. **Name** one method that may be used to study the present system.

_____ [1]

7. The CPU of modern computers is normally 64-bit. Write a **True** or **False** for the following statements.

	Statement	**True** or **False**	
a.	64 bits are equivalent to 8 bytes.		[1]
b.	A 64-bit CPU can process 32 bits of data at a time.		[1]
c.	A 64-bit CPU can directly access more RAM than a 32-bit CPU.		[1]
d.	A computer with a 64-bit wordlength can send and receive 64 bits of data at one go.		[1]
e.	A 32-bit CPU would be better at handling very fast games than a 64-bit CPU.		[1]

8. a. Software license sets the conditions for the software's use and distribution. **U** following four types of licenses to complete the descriptions below.

Site License, Freeware, Single-user License, Shareware

	Description	Type of license	
i.	Software that can only be installed on a single computer.		[1]
ii.	Software that can be freely used for a trial period.		[1]
iii.	Software that can be installed on any number of computers within a single location.		[1]
iv.	Software given away for free by the author.		[1]

b. **Underline** the best word in the brackets of the following sentence.

Before using new software that you have bought, you must first (copy, transfer, install) it in your computer system. [1]

9. Two types of software documentation are User and Program documentation. **Tick** (✓) to show whether the following statements apply to the User or Program documentation.

	Statement	User Documentation	Program Documentation	
a.	Not intended for the end-user.			[1]
b.	Explains how to use the software.			[1]
c.	Contains the variable lists and the source code.			[1]
d.	Written in simple English without any technical terms.			[1]
e.	Includes the flowcharts of the program.			[1]

10. CPU registers are volatile, small storage locations inside the CPU.

a. What is the **smallest binary number** that can be stored in an 8-bit register?

_____ [1]

b. What is the **largest binary number** that can be stored in an 8-bit register?

_____ [1]

c. What is the **range of unsigned numbers** (in decimal) that can be stored in an 8-bit register?

[1]

d. The CPU has a number of special purpose registers. **Name** the register used to

i. Hold the current instruction (the one that is being obeyed). _____

ii. Hold the address of the next instruction. _____ [1]

11. Study the following Pascal program and then answer the questions below.

```
Program VRTtest;

Uses crt;
Var
    year: integer;
Begin
    Clrscr;
    Writeln ('Enter year of car registration');
    Readln (year);
    If year > 2008 then
       Writeln ('VRT testing not required')
    else
       Writeln ('VRT testing required.');
    Readln;
End.
```

a. **Name** the variable used in the program.

_____ [1]

b. **Write** one output statement used in the program.

_____ [1]

c. **Write** the input statement used in the program.

_____ [1]

d. Briefly **explain** what this program does.

_____

_____

_____ [2]

Section B – Answer BOTH questions

12. Write **sections of Pascal code** for each of the following tasks.

a. Declare a **variable** called 'name' that can hold a student's name.

_____ [2]

b. Declare a **variable** called 'length' that can hold whole numbers only.

_____ [2]

c. **Display** the message 'Enter length' on the screen.

[2]

d. **Calculate and output** the area of a rectangle. The sides are in variables 'l and 'breadth' and the area will be stored in variable 'area'.

[4]

e. Allow the user to enter **five numbers** and then output their total. The numbers must be entered using a loop.

[5]

13. Computers are useful in various areas of society.

a. The following are five situations.

Business communications, Long distance business meetings, Navigation, School projects, Home entertainment

Write the best situation from the list above for each of the **computer applications** given below.

i. GPS [1]

ii. E-mail [1]

iii. Searching on the WWW [1]

iv. Videoconferencing [1]

v. Gaming [1]

b. What do the following acronyms **stand for**? *The first one has been given as an example.*

i. E-POS *Electronic Point Of Sale*

ii. CAD _____ [1]

iii. CAM _____ [1]

iv. CAL _____ [1]

v. WWW _____ [1]

vi. EFT _____ [1]

c. Two particular computer applications are e-Commerce and flight simulation.

i. What is **e-Commerce**?

_____

_____ [2]

ii. What is a **flight simulator** used for?

_____

_____ [1]

ii. Mention two **advantages** of using the simulator instead of the real airplane.

Advantage 1: _____ [1]

Advantage 2: _____ [1]