SECONDARY SCHOOL ANNUAL EXAMINATIONS 2011

Directorate for Quality and Standards in Education
Educational Assessment Unit

FORM 5 **COMPUTER STUDIES** **TIME: 1h 45min**

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 (a) Convert:

i. The binary number ***10110111*** to **decimal**.
ii. The decimal number ***145*** to **binary**.
iii. The binary number ***101100*** to **hexadecimal**.

10110111 = _____

145 = _____

101100= _____

Working Space

[3]

(b) Give an example of an **8-bit** binary number.

Answer: _____

[1]

(c) Why is $\mathbf{2G_{16}}$ NOT a valid hexadecimal number?

Answer: _____

[1]

2 For each of the statements below, **name** the most appropriate **I/O device**:

i. Inputting text by people with poor eyesight: _____
ii. This output device can produce carbon copies: _____
iii. Commonly found in laptops instead of the mouse: _____
iv. An output device that produces hardcopy vector images: _____
v. Captures the position of a tick (✓) on a multiple-choice answer sheet: _____

[5]

3 The seven **stages** of Systems Analysis, not in the correct order, are:

Design of new computerised system, **Programming and documentation,**
Implementation and changeover methods, **System maintenance**,
Project selection and feasibility study, **Control and review**
Present system study and analysis.

Write down the stages in the correct order.
The first and last stages have already been done for you.

Stage 1: *Project selection and feasibility study.*

Stage 2: _____

Stage 3: _____

Stage 4: _____

Stage 5: _____

Stage 6: _____

Stage 7: *System maintenance.*

[5]

4 **Data Entry Clerk**, **I.T. Trainer**, **Programmer**, **Web Master** and **Computer Technician** are five I.T.-related personnel. Which **person** from the given list does the following **tasks**?

i. Creates and maintains web pages: _____

ii. Installs and updates software applications: _____

iii. Inputs data in the computer for processing: _____

iv. Tests and debugs computer programs: _____

v. Organizes courses for new staff: _____

[5]

5 (a) What do the acronyms **LAN** and **WAN** stand for?

LAN: _____

WAN: _____

[2]

(b) Give **two advantages** of having a LAN system in the school's administration office rather than standalone computers.

1st Advantage: _____

_____

2nd Advantage: _____

_____

[2]

(c) The **Internet** is a typical WAN system. As a student, mention one **use** that you make of the Internet.

Use: _____

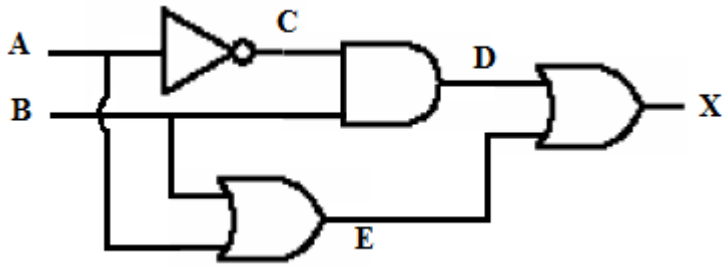
[1]

6 (a) Use the five terms: **serial numbers**, **piracy**, **registration**, **dongle** and **activation keys**, to complete the paragraph below:

_____ refers to the unauthorized copying of computer software. Manufacturers try their best to reduce this form of crime. A hardware device which manufacturers use to reduce such crime is a _____. Two anti-piracy software measures that they may use are _____ and _____. Buyers are also asked to complete a _____ form as proof of the authenticity of the software.

[5]

7 Study the logic circuit below:



i. Complete the **truth table** below for the circuit given above.
ii. Which **single** logic gate could replace the whole circuit?

Truth table:

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

Logic Gate: _____

[5]

8 Write whether the following statements are True (**T**) or False (**F**):

i. **Process control** is the monitoring and controlling of a task by a computer system: _____
ii. The **ABS** (anti-locking braking system) in a car is an example of process control: _____
iii. A **dedicated** computer system is designed to do more than one task: _____
iv. A **GPS** (global positioning system) is an example of a general-purpose computer: _____
v. Your **PC** (personal computer) is a general-purpose computer: _____

[5]

9 (a) Mention two main **functions** of an **operating system**.

1st Function: _____

2nd Function: _____

[2]

(b) For each of the following three statements name the **utility program** which best fits the description:

i. Gathers separate pieces of the same file together in a disk . _____

ii. Prepares a new disk to accept data. _____

iii. A program which monitors, detects and deletes viruses. _____

[3]

10 Below is part of a Pascal program. The program is intended to read a **mark** between 0 and 100 (both these marks being valid marks), and output **Distinction**, **Merit** or **Fail** according to the inputted mark. However it has **one error** in line 3.

Study the program and then answer the questions below.
(Line numbers are included to help you refer to the instructions.)

```
Line 1:  Writeln(`Enter a mark between 0 and 100: `);
Line 2:  Readln(Mark);
Line 3:  If (Mark >= 0) AND (Mark >= 100) Then
Line 4:  Begin
Line 5:      Case Mark Of
Line 6:          75..100     : Writeln(`Distinction`);
Line 7:          50..74      : Writeln(`Merit`);
Line 8:          0..49       : Writeln(`Fail`);
Line 9:      End; {of Case}
Line 10: End {of If}
Line 11: Else
Line 12: Begin
Line 13:      Writeln(`You entered a wrong mark`);
Line 14: End;  {of Else}
```

(a) i. Write the **correct instruction** for line 3.
ii. Write down whether the error is **syntax, run-time** or **logical error**.
iii. If line 3 is corrected, what will be **outputted** if the mark entered is **61**?
iv. Write the **name** of the **variable** used in the program.

i. **Corrected line 3:** _____

ii. **Type of error:** _____

iii. **Output:** _____

iv. **Variable name:** _____

[4]

(b) Which one of the following **constructs** (items) was NOT used in the program above?

Sequence, Condition, Loop

Construct not used: _____ [1]

11 (a) Give the names of the **three translators** used with programming languages.

1st Translator: _____

2nd Translator: _____

3rd Translator: _____

[3]

(b) From the translators you listed in question (a) above:

i. Which one is used for translation of a **low-level** language?

ii. Which one converts and executes **one instruction** at a time?

i: _____

ii: _____

[2]

Section B – Answer BOTH Questions

12 (a) The following **database table** shows information on five employees. Study the table and then answer the questions below.

Name	Surname	ID number	Job	D.O.B.
Peter	Cini	123456 (M)	Clerk	23/5/1956
Mary	Cutajar	34167 (G)	Supervisor	1/3/1967
Linda	Formosa	456781 (M)	Manager	9/8/1981
Melanie	Abela	8278 (G)	Clerk	10/10/1978
Gordon	Hili	901268 (M)	Messenger	4/12/1968

i. Write down one **field name**.

ii. Which field would be a suitable **key field** (primary key)?

iii. What is the **operation** of selecting particular information called?

iv. If the table is used to work out the **weekly employee wages**, what other important **field** should the table contain?

v. If the table above is linked to some other table, what is this **link** called?

i. **Field name:** _____

ii. **Key field:** _____

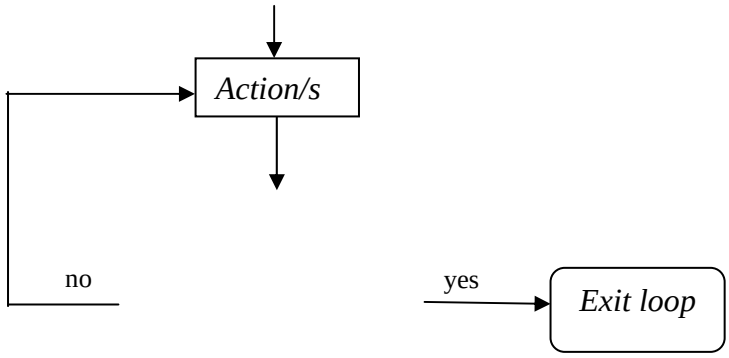
iii. **Operation:** _____

iv. **Other field:** _____

v. **Link:** _____

[5]

(b) The diagram below shows the incomplete generic flowchart of the **Repeat … Until loop**. Complete the diagram by drawing the missing symbol and include the appropriate text inside the symbol that you drew.



[3]

(c) The following is an incomplete Pascal program. It asks the user to **enter** the length of one side of a square, **calculates** its area and **displays** it. The side entered may contain a decimal point (eg: 13.48). The program **repeats** these tasks until the user presses the 'N' key.

i. Study the program and then **complete** it by inserting the missing words in the four dotted empty boxes.

```
Program annual_2011;
Var
    Side, Area : [          ] ;
    Stop : Char;

Begin
Repeat
    Writeln('Enter the side of a square: ');
    Readln ( [          ] );
    Area := Side * Side;
    Writeln ('The area of the square is : ', [          ] );
    Writeln ('Press the N key if you want to stop the program ');
    Readln (Stop);
Until Stop = [          ] ;
End.
```

ii. Write down the Pascal built-in **function** that may be used instead of:

Side * Side

Function: _____ [7]

13 (a) The following are the four main steps of the **Fetch-execute cycle**. However t
steps are NOT in order. Write them down in the **correct order**.

Obey the instruction
Repeat from step 1
Interpret the instruction
Get an instruction from memory

Step 1: _____

Step 2: _____

Step 3: _____

Step 4: _____

[4]

(b) The **ALU**, **RAM**, **CPU** and **ROM** are components of a computer system.

i. What do the **four acronyms** stand for?

ALU: _____

RAM: _____

CPU: _____

ROM: _____

ii. Which of the two types of memory mentioned above is said to be **volatile**?

Volatile memory: _____

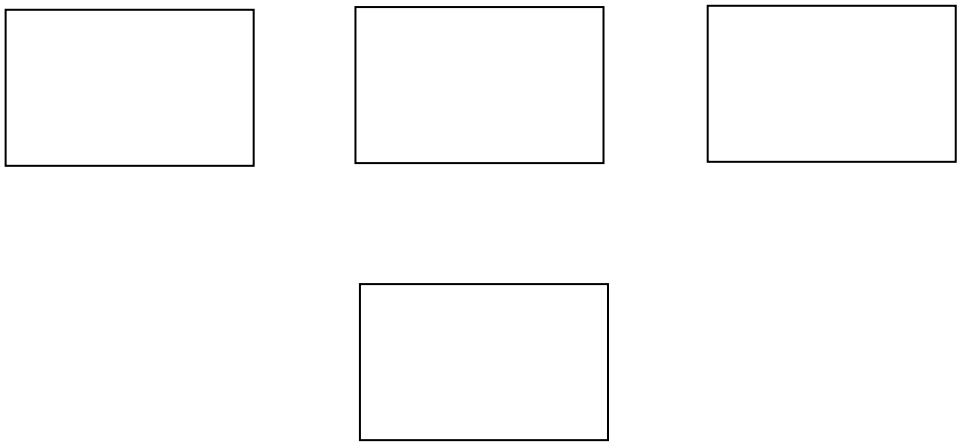
iii. Besides the ALU what other **component** (unit) forms part of the CPU?

Other component: _____

[6]

(c) **Label** the blocks in the diagram below to form a simple computer system. Draw **arrows** between the blocks to clearly show the flow of data.

Diagram:



[5]