SECONDARY SCHOOL ANNUAL EXAMINATIONS 2010

Directorate for Quality and Standards in Education
Educational Assessment Unit

FORM 5 (Option) **COMPUTER STUDIES** **TIME: 1h 45min**

Name: _____ **Class: _____**

***Directions to Candidates**:*

*Answer **ALL** questions in **Section A** on this paper;*
*Answer **BOTH** questions in **Section B** on separate foolscaps;*
The use of a 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) What is the difference between **syntax** and **logical** errors in programming?

Syntax: _____

Logical: _____

[2]

(b) The program below allows the **input** of the radius of a circle (r) and then **finds** and **displays** the area of the circle (A). However the program has **one** error.

i. Write down the **instruction** that has the error;
ii. Write the **correct** instruction; and
iii. Write down whether the error is **syntax** or **logical**.

```
Program Circle;

Const
 pi = 22/7;

Var
 A, r : Real;

Begin
 Write('Enter the radius: ');
 Readln(r);
 A := pi*sqr(l);
 Writeln('The area of the circle is: ', A);
 Readln;
End.
```

Error: _____

Correct: _____

Syntax/logical: _____

[3]

2 (a) i. What is **Process Control**?
ii. Give an **example** where process control is used.

Process Control: _____

_____

Example: _____

[2]

(b) Write down whether the following are **dedicated** (embedded) computer systems or **general-purpose** computer systems.

i. The computer used by the school's secretary: _____

ii. The computer in an air conditioning system: _____

iii. The computer of the auto pilot in an airplane: _____

[3]

3 (a) i. What is a **computer network**?
ii. What is the purpose of a **modem** in networking?
iii. **Satellite links** and **twisted pair cable** are two communication media used in networking. Give another example of a medium.

Network: _____

_____

Modem: _____

_____

Example: _____

[3]

(b) Write down whether a **LAN** or a **WAN** are required for the following tasks:

Sending an email to your friend in another country: _____

Transferring a file to your teacher's computer during the ICT lesson: _____

[2]

4 (a) Software publishers use various methods to protect their software against **piracy**. One such **method** is the Activation key.
i. What is **software piracy**?
ii. Mention one other anti-piracy **method** used by publishers.

Piracy: _____

_____

Method: _____

_____

[2]

(b) Write down whether the following are **True** or **False** in accordance with the **Data Protection Act.**

		True/False
i.	Personal data may be given to anyone.	_____
ii.	Personal data must be kept forever.	_____

[2]

(c) What is the **job** of the **Data Controller** as mentioned in the Data Protection Act?

Job: _____

_____

[1]

5 (a) System Analysts spend time investigating problems in the present system. Give three **methods** they may use to investigate a system.

1st Method: _____

2nd Method: _____

3rd Method: _____

[3]

(b) Mention two **design tools** that the analyst/programmer may use when designing the solution to a problem.

1st Tool: _____

2nd Tool: _____

[2]

6 (a) Differentiate between data **verification** and data **validation**.

Verification: _____

_____

Validation: _____

_____

[2]

(b) Two of the following are methods that are used to check the **validity of the data** that is entering a computer. Write them down in the spaces provided below:

Number check, Range check, Keyboard Check, Check digit

Method 1: _____

Method 2: _____

[2]

(c) What is a **backup**?

Backup: _____

_____

[1]

7 The Database Management System (DBMS) is a powerful package to hold and manipulate data.

(a) i. A flat database (file) is one consisting from only one table. What is a **relational database**?

ii. Give a practical **example** where a relational database can be used?

Relational: _____

_____

Example: _____

[2]

(b) The following table shows part of the student's file in a particular school. Study the table and then answer the questions below.

Name	Surname	Form	Town
John	Abela	3	Siggiewi
Patrick	Farrugia	4	Naxxar
Tania	Curmi	5	Munxar
Marija	Farrugia	4	Siggiewi
Tonio	Zammit	3	Qrendi
Vanessa	Portelli	5	Qrendi

i. The file is **sorted** in ascending order by the 'Name' field. Write th **names** in the correct order.
ii. What is a **Query**?
iii. Write down the **surname/s** of the student/s that would be displayed if the following query is run:

Form <= 4 and Town = Qrendi

Sorted by name:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

_____

Query: _____

_____

Surname/s: _____

[3]

8 (a) Give the names of **two registers** found in the **Control Unit** and explain their use.

1st Register: _____

Use: _____

_____

2nd Register: _____

Use: _____

_____

[4]

(b) What is the purpose of the **accumulator** in the ALU?

Accumulator: _____

_____

[1]

9 (a) **Format** and **Antivirus** are two important utilities in computers.

i. What is meant by **formatting** a hard disk?
ii. What will **happen** to a file in a hard disk, if the hard disk is formatted?
iii. Give one **function** of an antivirus program.

Formatting: _____

_____

Happens: _____

Function: _____

_____

[3]

(b) Use two of the following words to **complete** the sentences below:

Computer, Program, Defragmentation, Spreadsheet.

Another utility is_____. It is used to put together the various parts of a _____ stored in a hard disk so that it will run faster.

[2]

10 The following six steps explain the **Fetch Execute Cycle**. However the steps are not in the correct order. Use numbers to show the correct sequence of steps. *(The last step has been numbered as help.)*

	Control Unit (CU) activates circuits to execute instruction.
	CU fetches the opcode from the memory location indicated by the program counter.
6	Go back to the first step.
	CU increments to point to next instruction.
	CU places opcode in the instruction register.
	CU fetches the required operand.

[5]

11 (a) Natalie, Maria and Jake work in the IT Department. **Natalie** is a data input clerk. **Maria** has to modify the flowcharts. **Jake** needs to upgrade the hardware. Write the **name** of the person who may want to use the following documentation.

Program Documentation: _____

Technical Documentation: _____

User Documentation: _____

[3]

(b) i. Why is it important to **test** a program?

ii. A dry run is one method of testing a program. Write down one other **method**.

Testing: _____

_____

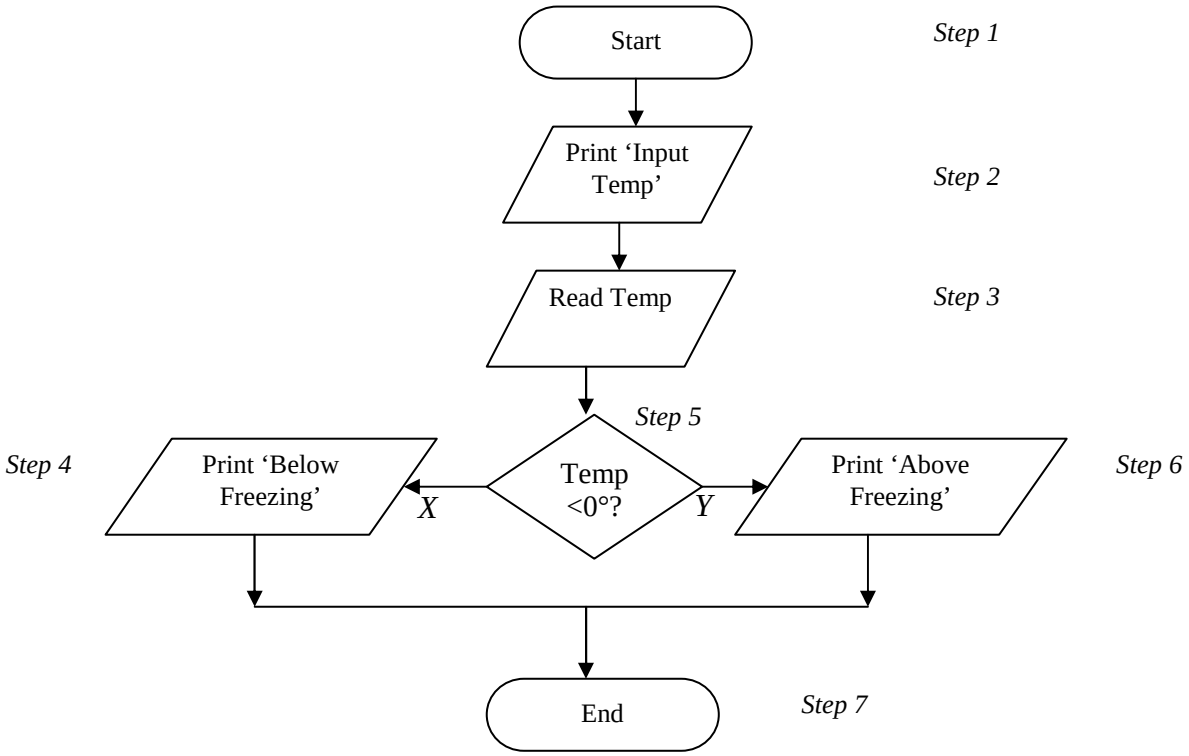
Method: _____

_____

[2]

Section B – Answer BOTH Questions

12 The flowchart below allows a user to input a temperature and if the temperature is less than 0° a 'Below Freezing' message is displayed, otherwise 'Above Freezing' is displayed.
Each step of the flowchart has been numbered and two flowlines have been labeled X and Y.



(a) Use the step numbers of the flowchart to answer the following questions:
  i. Which step shows an **output**?
  ii. Which step shows a **decision**?
  iii. Which step is called a **terminator**? [3]

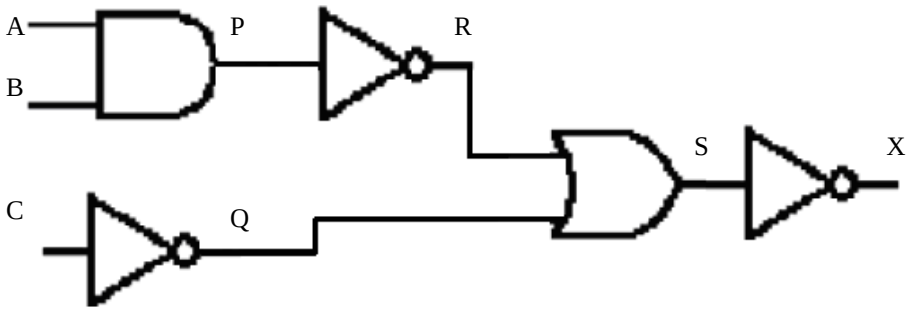
(b) The flowlines (arrows) at X and Y are usually labeled. Write down an appropriate **label** for each flowline. [2]

(c) Write the **program** in Pascal for the flowchart above. (Marks are awarded for good syntax). [8]

(d) A flowchart symbol that is not found in the flowchart above is the **rectangle**. Explain what it is **used** for. [2]

Question 13 on next page…

13 (a) The following is a logic circuit and its incomplete truth table. Copy and complete the **truth table**.



A	B	C	P	Q	R	S	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**					

[5]

(b) Copy and complete the table below to show each number in **Binary** (8 bits), **Decimal** and **Hexadecimal**.

Binary									**Decimal**		**Hexadecimal**
1	**0**	**1**	**1**	**0**	**1**	**1**	**1**	=		=	
								=	**85**	=	
								=		=	**2A**

[8]

(c) A particular computer has a **character set** consisting of:

- The English alphabet (26 letters)
- The digits 0 to 9, and
- The four punctuation symbols: . (period), ; (semi-colon), ! (exclamation mark) and ? (question mark).

What is the **minimum** number of bits required to store this character set?

[2]