

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 the **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**.

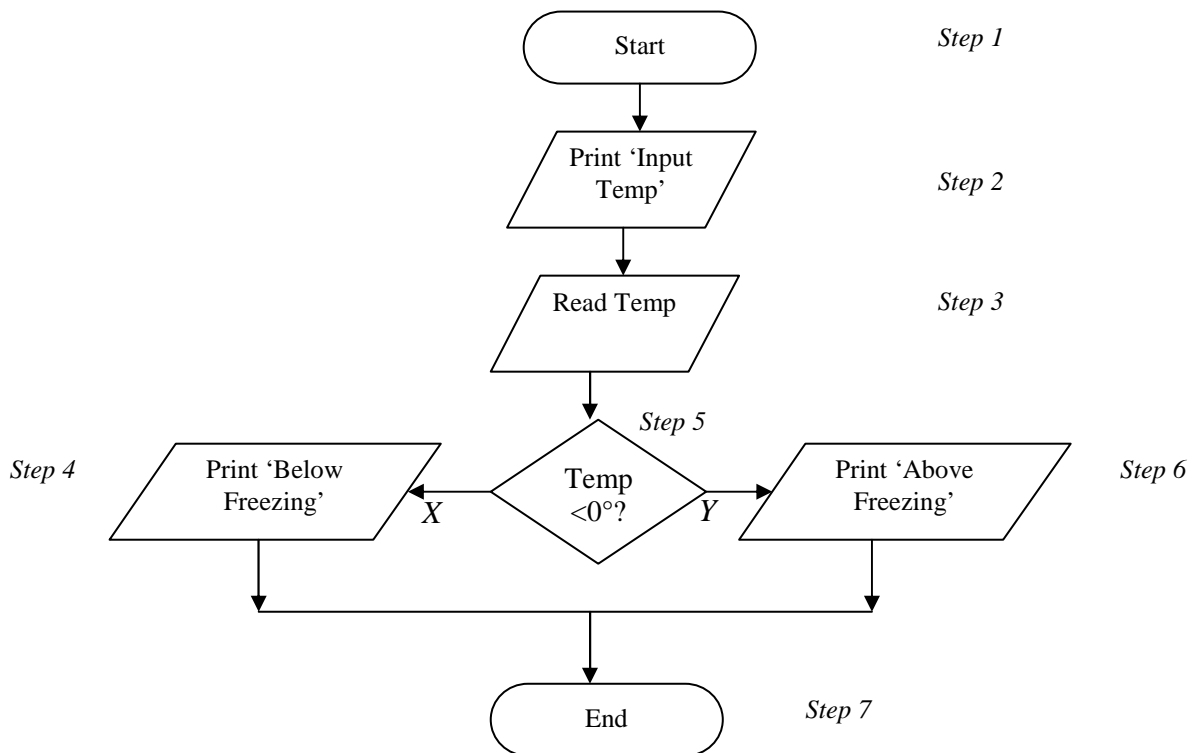
Testing: _____

Method: _____

[2]

Section B – Answer BOTH Questions

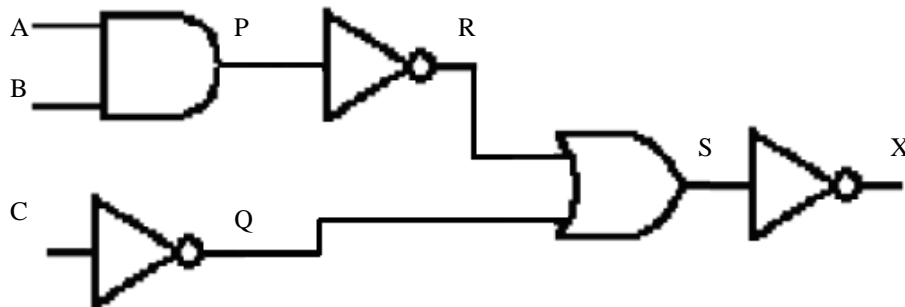
- 12** The flowchart below allows a user to input a temperature and if the temperature is less than 0° a ‘Below Freezing’ message is displayed, otherwise ‘Above Freezing’ is displayed.
 Each step of the flowchart has been numbered and two flowlines have been labeled X and Y.



- (a) Use the step numbers of the flowchart to answer the following questions:
- Which step shows an **output**?
 - Which step shows a **decision**?
 - 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]