

JUNIOR LYCEUM ANNUAL EXAMINATIONS 2009

Directorate for Quality and Standards in Education
Educational Assessment Unit

FORM 5 (Option)

COMPUTER STUDIES

TIME: 1 hr 45 min

Name: _____

Class: _____

Directions to Candidates:

Answer ALL questions in Section A on this paper;

Answer any TWO questions from Section B on separate foolscaps;

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	14	Paper Total	Course Work	Final Mark
Max	5	5	5	5	5	5	5	5	5	5	5	15	15	15	85%	15%	100%
Mark																	

Section A - Answer all Questions

- 1 (a) Differentiate between **standalone** and **networked** computer systems.

Difference: _____

[1]

- (b) **LAN** and **WAN** are two types of network systems. What is the **main difference** between the two types?

Difference: _____

[1]

- (c) Mention two **advantages** and one **disadvantage** of having a networked computer rather than a standalone computer.

1st Adv.: _____

2nd Adv.: _____

Disad.: _____

[3]

- 2 (a) Why is the **binary number system** used with digital computers?

Answer: _____

[1]

- (b) Convert the Hexadecimal number **A2** to **binary** and then to **decimal**.
Space for working:

Binary: _____

Decimal: _____

[2]

(c) Using **8 bits** show how **-85** is represented in binary using **two's complement**.

Space for working:

-85 = _____

[2]

3 (a) Define **access time** as used in RAM.

Access time: _____

[1]

(b) **FAT** is one type of **disk filing system**.

- i. What does the acronym **FAT stand for**?
- ii. What is this disk filing system **used for**?
- iii. Mention two **items of information** stored in such a filing system.

i. **FAT:** _____

ii. **Used for:** _____

iii. **Item 1:** _____

Item 2: _____

[4]

4 (a) Differentiate between **source code** and **executable code**.

Difference: _____

[1]

(b) i. Why is a **language translator** required when programming in a high-level language?

ii. **Assemblers, Compilers and Interpreters** are three different translators. What makes **each translator different** from the others?

i. **Translators:** _____

ii. **Assembler:** _____

Compiler: _____

Interpreter: _____

[4]

- 5 (a) i. Why is a **structure chart** (structure diagram) important in solving complex problems?
 ii. What is the **name of another graphical tool** used to design the solution to a problem?

Structure chart: _____

Graphical tool: _____

[2]

- (b) The **code** below is supposed to allow the input of ten (10) numbers and then finds the total and the largest of the inputted numbers. However the code has an **error**. *Each instruction has been numbered for ease of identification.*

```

Line 1:   Program example;
Line 2:   Var
Line 3:   k, s, m, n : integer;
Line 4:   Begin
Line 5:   s := 0;
Line 6:   m := 0;
Line 7:   For k := 1 to 10 do
Line 8:   Begin
Line 9:   Write('Enter number: ');
Line 10:  Readln(n);
Line 11:  Writeln;
Line 12:  s := s + n;
Line 13:  If n < m
Line 14:  then m := n;
Line 15:  End;
Line 16:  Write('The total is: ', s, ' and the max is: ',m);
Line 17:  End.
```

- i. Write the **line number** of the instruction where there is the error.
 ii. What **type of programming error** was generated?
 iii. Write down the **corrected instruction**.

i. **Line number:** _____
 ii. **Type of error:** _____
 iii. **Correct instruction:** _____

[3]

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

i. **Process Control:** _____

 ii. **Example:** _____

[2]

- (b) Computers can be classified as either **general-purpose** or **dedicated**.
 i. What is the **difference** between the two classes of computers?
 ii. Give two **examples** of dedicated computers as found in home appliances.

i. **Difference:** _____

- ii. **1st Example:** _____
- 2nd Example:** _____

[3]

7 **Word processing** applications facilitate the work of clerks in an office.

- i. Mention one **reason** why the statement above is true.
- ii. Explain the terms **pagination, indentation** and **multi-columns** as used in word processing.
- iii. Suggest one **good practice** to avoid the loss of large amounts of data in case of an electricity failure.

i. **Reason:** _____

ii. **Pagination:** _____

Indentation: _____

Multi-columns: _____

iii. **Good practice:** _____

[5]

- 8 (a) i. What is a **logic gate**?
- ii. Mention one **use** of logic gates in computers.

i. **Logic gate:** _____

ii. **Use:** _____

[2]

- (b) Using **AND, OR** and **NOT** gates draw the logic circuit which corresponds to the truth table below.

A	B	C
0	0	0
0	1	1
1	0	0
1	1	0

Space for circuit:

[3]

- 9 (a) Network systems are vulnerable to unauthorized access to data. Briefly explain two **security measures** which may be adopted to protect oneself from unauthorized access.

1st security: _____

2nd security: _____

[2]

- (b) Since 2001 Malta adopted the **Data Protection Act**. Mention three important **principles** of this act.

1st Principle: _____

2nd Principle: _____

3rd Principle: _____

[3]

- 10 For each of the following tasks, state the **best application** to use.
The first one is given as an example.

i. Holding information about books: _____ *database*

ii. Designing a kitchen: _____

iii. Preparing the school's magazine: _____

iv. Typing a letter to your friend: _____

v. Preparing an invoice for a shop: _____

vi. Searching for a product on the computer: _____

[5]

11 Mention one **main duty** of each of the following five IT-related staff.

Programmer: _____

I.T. Trainer: _____

Operator: _____

Web Master: _____

Computer Technician: _____

[5]

Section B – Answer any TWO Questions

12 (a) Software may be split into two categories, namely Application software and System software. The **operating system** (OS) is an example of system software.

i. Mention three **main functions** of an operating system. [3]

ii. **Real Time OS, Batch OS** and **Time Sharing OS** are three types of operating systems. **Differentiate** between the three types of OSs and for each type provide a **suitable application**. [6]

(b) Study the following **assembly language program** and then answer the questions set on it. *A semicolon (;) introduces a comment which explains the function of that instruction.*

```
LDA 6           ; Load the number 6 into the accumulator
here : STA D    ; Store the contents of accumulator into D
      DEC D     ; Decrement the contents of D by 1
      LDA D     ; Load the contents of D into the accumulator
      JNZ here  ; Jump to 'here' if contents of accumulator < > 0
      HLT      ; Stop
```

i. A typical assembly language instruction (e.g. LDA 6) consists of two parts. What is each **part** called?

ii. How many **times** will the loop in the program above be repeated?

iii. From the program above write down a **label** and a **mnemonic**. [6]

- 13** Write **instructions in Pascal** that perform the following eight tasks. *You are not required to write complete programs for any task.*
Marks are awarded for the correct Pascal syntax.
- (a) Store the value **23** into variable **NUMBER**. [1]
 - (b) Increment the variable **COUNT** by 2. [1]
 - (c) Store the result of the expression $B^2 + C^2$ in variable **ANSWER**. [2]
 - (d) Swap the values in variables **NUM1** and **NUM2** (that is, the value in NUM1 is moved into NUM2 and the value in NUM2 is placed in NUM1) [2]
 - (e) Display the message **OK** if the value in variable **D** is within the range 1 to 6, otherwise display the message **OUT OF RANGE**. [2]
 - (f) Declare an array **MARKS** to store 20 integers. [1]
 - (g) Use a loop to **input 20 integers** at runtime into the array of part (f) above. [3]
 - (h) Input an examination mark between 0 and 100 and store in variable **MARK**. Accept the mark only if it is within range. Otherwise ask the user to input the mark again. *Hint: use a Repeat...Until loop* [3]
- 14** The librarians in your school have asked you, as a **system analyst**, to investigate their manual procedures with the eventuality of changing to a computerized system.
- (a) For each of the following **six stages**, explain what you would do for the case study mentioned above. [12]
 - 1. Feasibility study
 - 2. Present system study and Analysis
 - 3. Design of new computerized system
 - 4. Programming
 - 5. Change over methods
 - 6. System maintenance
 - (b) As the system analyst for the library system, you have decided on developing **tailor-made programs** rather than buying **off-the-shelf** software. Mention two **advantages** and one **disadvantage** of tailor-made software over off-the-shelf software. [3]
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