

JUNIOR LYCEUM ANNUAL EXAMINATIONS 2007

Educational Assessment Unit – Education Division

FORM 4 (Option)

COMPUTER STUDIES

TIME: 1 hr 30 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 For each of the following situations **name** a computer software application that makes the job easier:

- (a) Design the shape of a car: _____
- (b) To send and receive a letter very quick: _____
- (c) To create the shell of a car: _____
- (d) Helps students to learn better: _____
- (e) To store information on books in a library: _____

[5]

2 (a) An **omission** error is a Data Entry Error occurring when inputting data. Identify the two other types of errors and give an example of each type:

1st Error: _____

1st Example: _____

2nd Error: _____

2nd Example: _____

[2]

(b) **Data Verification, Check Digits** and **Range Checks** are all data checking techniques. Briefly describe the **three** terms:

Data Verification: _____

Check Digits: _____

Range Checks: _____

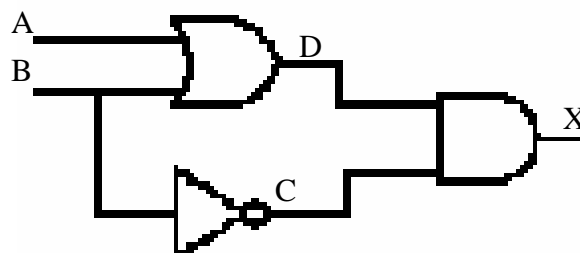
[3]

3 (a) What do you understand by **numeric overflow**?

Numeric Overflow: _____

[1]

(b) The figure below shows a logic circuit with inputs **A** and **B**.



i. Complete the **Truth Table** for **D** and **X**.

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

[2]

ii. Extract the **Boolean Expression** for the circuit above:

X = _____

[2]

- 4 (a) Given the two **binary** numbers $A = 11010111$ and $B = 10000101$, use **twos complement** to find the value of C , where $C = A - B$.
Space for working

_____ **C** = _____

[3]

- (b) Justify your answer by converting A , B and C to **decimal** and perform the subtraction.
Space for working

_____ **A** = _____

_____ **B** = _____

_____ **C** = _____

_____ **A - B** = _____

[2]

5 **Tab, Caps Lock, Shift, Backspace** and **Enter** are all keyboard keys. With relation to **word-processing** explain one of their functions.

Tab: _____
Caps Lock: _____
Shift: _____
Backspace: _____
Enter: _____

[5]

6 (a) What is **Systems Analysis**?

Systems Analysis: _____

[1]

(b) **Feasibility Study** and **Changeover Methods** are two stages of the System Development Life Cycle.

- i. What **important decision** has be taken at the end of the **feasibility study**?
- ii. **Name** and **describe three** changeover methods.

Decision to be taken: _____

1st Changeover: _____

Description: _____

2nd Changeover: _____

Description: _____

3rd Changeover: _____

Description: _____

[4]

7 The use of the computer has now spread throughout the various sectors of society.

- (a) i. Apart from emails mention **two** other areas when a family might use the Internet.
- ii. What is **e-government**?

1st Usage: _____

2nd Usage: _____

E-government: _____

[3]

(b) **Name and briefly describe two** different uses of the computer in the **airline/ travelling** industry.

1st Usage: _____

2nd Usage: _____

[2]

8 Secondary storages may be **magnetic, optical or electronic**.

(a) Give an example of **one medium** found in each category.

Magnetic: _____

Optical: _____

Electronic: _____

[1]

(b) Explain how data is stored on an **Optical** media.

[1]

(c) i. What does the abbreviation **FAT** stand for?

ii. What is the **use** of the FAT?

FAT: _____

Usage: _____

[3]

9 (a) i. **Fields** and **Keyfields** (primary fields) are terms associated with databases. Explain how the two terms differ from each other.

Fields: _____

Keyfield: _____

ii. Give a suitable example of a keyfield when keeping data on people.

Keyfield: _____

[3]

(b) i. Define the term **Query** as used in a database.

Query: _____

ii. Queries can be either **Simple** or **Compound**. What is the difference between the two?

Difference: _____

[2]

10 (a) What are **flowcharts**?

Flowcharts: _____

[1]

(b) A program to check the health of a number of persons has to be written. Each person is asked to enter his/her body temperature (T) and one of the following messages is displayed:

‘You are in good health!’ if $37.5 > T > 36.5$;
‘Your health is not Good!’ if $35.5 > T > 36.5$; and
‘Your temperature is very high!’ if $T > 38.5$.

The program has to terminate when -1 is entered for the temperature. Draw a **flowchart** for this problem.

Space for flowchart

[4]

11 (a) **Var** is a reserved word in Pascal. For what is it used?

Var: _____

[1]

(b) From the following three variables which **one** is NOT permissible and why?
passmark, PassMark, Pass Mark

[1]

(c) Write a Pascal program which asks the user to enter **two integers**, the two numbers are then compared and the smallest number is output on screen.
Space for program.

[3]

Section B – Answer any TWO Questions

12 (a) Draw and label a block diagram of a computer system. Use the following terms to label your diagram and show clearly the **data flow** and **control flow**.
Arithmetic Logic Unit, Control Unit, Central Processing Unit, Central (main) Memory, ROM, RAM, Accumulator, Program Counter, Instruction Register, Input Device, Output Device, Secondary Storage.

[6]

(b) i. What is a **registers**?
ii. Briefly describe the use of the following registers: **Accumulator, Program Counter, Instruction Register, Memory Data Register** and **Memory Address Register.**

[6]

(c) i. What is the difference between the **Data Bus** and the **Address Bus**?
ii. Which of the two buses determines:
(a) the **word length**, and
(b) the **memory space**, of the CPU?

[3]

13 A secretary in a school uses a **word processing** program and a **spreadsheet** program to carry out her work efficiently.

(a) i. What is a **word processing** program?
ii. Give **three** advantages of a word processor when compared to a typewriter.
iii. **Name** and **describe** any 2 functions/features a word processor has and the spreadsheet does NOT have.

[1]

[3]

[2]

- (b) The diagram below shows a sample sheet the secretary uses to insert the students' marks for three examinations. With reference to the diagram, answer the questions below.

	A	B	C	D	E	F	G
1		Maths	English	CS		Total	Average
2	Joe	56	61	77			
3	Mark	67	44	56			
4	John	88	89	92			
5	Marija	90	87	88			
6	Nicole	45	66	78			
7	Suzanne	78	74	73			
8	Steve	83	91	82			
9							
10	Maximum						
11	Minimum						
12							
13							

- i. Write down the **formulas/functions** the secretary has to type in cells:
B10, B11, F2 and G2. [4]
- ii. The secretary decides to illustrate the information from cell A1 to cell D8 as a chart (graph).
 - Which **type** of chart do you think is appropriate to represent this type of data?
 - Sketch the chart mentioned above to justify your answer (you do not need to show the data accurately). [2]
- (c) What is the difference between a **formula** and a **function** in a spreadsheet? [2]
- (d) What is a **label** in spreadsheets? [1]

14 Write a **program** in Pascal which converts an inputted number from:

- Inches to centimeters; or
- Yards to Metres; or
- Miles to Kilometres.

Program requirements:

- The program should initially show the following menu which has to be centered on the screen:
Inches to centimetres....PRESS 1
Yards to metres.....PRESS 2
Miles to Kilometres.....PRESS 3
EXIT.....PRESS 4
- The user is then prompted to **select the menu option** and then to **input the number** to be converted.
- The output of the conversion is shown on the screen to **2 decimal places**.
- Use the following values for the **conversion of the units**:
 $1 \text{ inch} = 2.54 \text{ cm}$; $1 \text{ yard} = 0.914 \text{ m}$; $1 \text{ mile} = 1.609 \text{ km}$
- The menu and appropriate outputs are **repeatedly** shown on the screen until the user selects the last menu option.
- The program should make use of at least three **Procedures** (one for each type of conversion).
- Marks are allocated for good **syntax**, appropriate **prompts** and **in-line remarks**. [15]