



Annual Examinations for Secondary Schools 2014

FORM 5 COMPUTING MARKING SCHEME

Section A - Answer all Questions

- 1 (a) Two types of **interfaces** in operating systems are CLI and GUI. What do the acronyms CLI and GUI stand for?

CLI: Command Line Interface [1]

GUI: Graphical User Interface [1]

- (b) For each of the following statements, write if it is **True (T)** or **False (F)**:

i. A GUI is less user-friendly than a CLI: F [1]

ii. CLI is the operating system most used at home: F [1]

iii. System software operates and controls computer hardware: T [1]

- 2 Write the following terms next to their correct definition / function.

Defragmentation, URL, Home Page, Scandisk, Compression Software. [5]

i. Another term for a web address. URL

ii. This reduces the size of data in order to save space. Compression Software

iii. This is the first page of a website. Home Page

iv. This utility reduces data access time and allows storage to be used more efficiently. Defragmentation

v. This checks your hard disk for errors and corrects problems found. Scandisk

- 3 For each of the media below tick (✓) which technology they use:

	Magnetic	Optical	Electronic	
Pendrive			✓	[1]
CD		✓		[1]
DVD		✓		[1]
Tapes	✓			[1]
Hard Disks	✓			[1]

- 4 (a) While typing a document, Pauline made some typing errors. The table below shows the mistakes. Next to each mistake write the name of the typing error:

What Pauline typed	Error Name	
COMPTER instead of COMPUTER	<i>Omission</i>	[1]
TABEL instead of TABLE	<i>Transposition</i>	[1]
CHEIR instead of CHAIR	<i>Substitution</i>	[1]

- (b) i. What is a **range check**?
 ii. Justify your answer by a suitable example.

Range Check: Checking data is within certain limits [1]

Example: Exam mark from 0 to 100 (Accept relevant example) [1]

- 5 Five personnel working in an IT department are: ***I.T. Trainer, Webmaster, Computer Engineer, Systems Analyst and Data Entry Clerk***. For each duty in the table below, state which person performs such duty.

Duty	Person	
Performs feasibility study:	<i>Systems Analyst</i>	[1]
Checks if the input data is correct:	<i>Data Entry Clerk</i>	[1]
Teaches new employees how to use the system:	<i>I.T. Trainer</i>	[1]
Sets up hardware of a new system:	<i>Computer Engineer</i>	[1]
Maintains the website of the company:	<i>Web Master</i>	[1]

- 6 The process of analyzing a system with the view to computerization is known as **Systems Analysis**. The first five unordered steps of Systems Analysis are: ***Programming and documentation, Project selection and feasibility study, Design of new computerized system, Present system study and analysis and Implementation and changeover methods***. Write the five steps in order.

Step 1: Project selection and feasibility study [1]

Step 2: Present system study and analysis [1]

Step 3: Design of new computerized system [1]

Step 4: Programming and documentation [1]

Step 5: Implementation and changeover methods [1]

- 7 (a) The statements below describe three different types of networks. For each statement give the name of the network usually used.

Group of computers and network devices connected together, usually within the same building: LAN [1]

Usually this type of network is not restricted to a geographical area: WAN [1]

Usually this network spans several buildings in the same city or town: MAN [1]

- (b) E-mail is an application used in WAN. Give another example of a use for WAN and another for LAN.

WAN: Allocate 1 mark for relevant example e.g. videoconferencing [1]

LAN: Allocate 1 mark for relevant example e.g. sharing files in a lab [1]

- 8 (a) While programming, a programmer might encounter **three** types of programming errors. For each error below, indicate which type of error was done.

price + vat = cost; Syntax [1]

y = 1/x; //where x = 0 Run-time [1]

a = length + length; (a is area of square) Logic [1]

- (b) Distinguish between **source code** and **executable code**.

Source: The code written by a programmer [1]

Executable: The translated code which runs (executes) [1]

- 9 (a) Software manufacturers try their best to provide software which cannot be copied. Name a **hardware** and **software** safeguard.

Hardware: Ex. Dongle (or relevant) [1]

Software: Ex. Serial Numbers (or relevant) [1]

- (b) What is the main purpose of the **data protection act (DPA)**?

DPA: Law which protects how personal data is processed [1]

- (c) Distinguish between **software piracy** and **copyright**.

Piracy: Illegal copying of software [1]

Copyright: Giving the creator of an original work exclusive rights [1]

- 10 Use the given term/s to name the most appropriate application for each of the following **Input/Output** devices (some applications may be used more than once):

Word processing, Bank Applications, CAD, Correction of multiple choice questions, DTP, Menu selection, POS and Invoices.

Mouse: Menu selection [½]

Digital Camera: DTP [½]

Dot Matrix Printer: Invoices [½]

MICR: Bank Applications [½]

Light Pen: CAD [½]

Graphics Tablet: CAD [½]

Keyboard: Word processing [½]

OMR:	<u>Correction of multiple choice questions</u>	[½]
Braille Printer:	<u>Word processing</u>	[½]
Barcode Reader:	<u>POS</u>	[½]

11 Study the program below, which is supposed to display a mathematical table from 1 to 12, and then answer the questions:

Line 1	public class MathTable{
Line 2	public static void main(String[] args){
Line 3	int num = 1;
Line 4	System.out.print("Enter which table to calculate: ");
Line 5	int table = Keyboard.readInt();
Line 6	System.out.println();
Line 7	while (num <= 12){
Line 8	System.out.println(_____);
Line 9	num--;
Line 10	}
Line 11	}
Line 12	}

- i. What is the concept found in line 3 called?
- ii. The program uses one type of iteration, mention another one used in Java.
- iii. As it is the program has an error. In which line number is this error?
- iv. Fix the error found in (iii) so that the program works as intended.
- v. Fill in Line 8 so that the program displays the answer.

- | | | |
|-------------|------------------------|-----|
| i: | <u>Initialization</u> | [1] |
| ii: | <u>do-while or for</u> | [1] |
| iii: | <u>Line 9</u> | [1] |
| iv: | <u>num++</u> | [1] |
| v: | <u>num*table</u> | [1] |

Section B – Answer BOTH Questions

12 (a) Draw a block diagram showing the main hardware units of a computer system. Your diagram should at least include the: *CU, ALU, Main Memory (MU), Input, I/O Subsystem, Output* and *Secondary Storage*.
Space for diagram:

Deduct 1 mark each if the mentioned units are not included and if there are any missing connections.

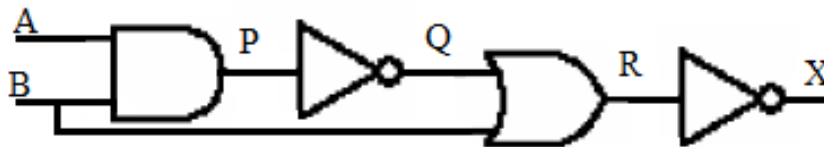
[6]

- (b) i. Name **three** registers found in the CPU.
 ii. Briefly describe the function of each register.
- i. **3 registers:** Accumulator, IR, PC [1]
Accumulator: working area for CPU operations & holds results of calculations
- ii. **1st register:** IR: stores a copy of the instruction that the computer is about to execute [1]
- 2nd register:** PC: hold the address of the next instruction to be executed [1]
- 3rd register:** PC: hold the address of the next instruction to be executed [1]

(c) The process by which a computer retrieves a program instruction from its memory, decodes it and executes it is known as the **fetch execute cycle**. Usually, this cycle is done in six steps. Write the first five steps (the last one is ready).

- Step 1:** Control unit fetches the opcode from the memory location indicated by the Program Counter [1]
- Step 2:** Control unit places opcode in Instruction Register [1]
- Step 3:** Control unit fetches any required operand [1]
Control unit increments the Program Counter to point to the next instruction [1]
- Step 4:** Control unit activates necessary circuits to execute the instruction [1]
- Step 5:** Control unit activates necessary circuits to execute the instruction [1]
- Step 6:** Go back to step 1.

13 (a) Draw the **truth table** for the logic circuit below:



Space for truth table:

A	B	P	Q	R	X
0	0	0	1	1	0
0	1	0	1	1	0
1	0	0	1	1	0
1	1	1	0	1	0

(1 mark for each column A, B, P, Q and R and 2 marks for X)

[7]

(b) Convert the given numbers to the required number system:

- 93₁₆ to binary
- 10101111₂ to decimal
- 205₁₀ to binary
- 11011010₂ to hexadecimal
- AB₁₆ to decimal
- 195₁₀ to hexadecimal

- i. **93** = 10010011 [1]
- ii. **10101111** = 175 [1]
- iii. **205** = 11001101 [1]
- iv. **11011010** = DA [1]
- v. **AB** = 171 [1]
- vi. **195** = C3 [1]

(c) **Index creation** and **embedded graphic objects** are two features of a DTP. Briefly explain both features.

- i. **Index creation:** Creating a 'table' with important words and their corresponding page number [1]
- ii. **Embedded G. O.:** Technology that allows embedding and linking to documents and other objects [1]