DIRECTORATE FOR QUALITY AND STANDARDS IN EDUCATION
Curriculum Management and eLearning Department
Educational Assessment Unit

Annual Examinations for Secondary Schools 2014

FORM 5  COMPUTING  TIME: 1h 45min

Name: ___________________________________  Class: ____________

Directions to Candidates:

Answer **ALL** questions in **Section A** and **Section B** on this paper;
The use of flow chart template is permitted;
Calculators are **NOT** allowed;

Good English and orderly presentation are important.

For office use only:

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
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<th>13</th>
<th>Paper Total</th>
<th>Course Work</th>
<th>Final Mark</th>
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</table>
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:**

________________________________________________________________________________________________________________________

**GUI:**

________________________________________________________________________________________________________________________

(b)  For each situation below name the most suitable operating system:

i.  Payroll system.  ________________________________________

ii.  Aircraft control systems.  ________________________________________

iii.  Banking system.  ________________________________________

2  (a)  Briefly describe what a utility software is.

**Utility Software:**

________________________________________________________________________________________________________________________

(b)  State which utility software performs the function described below:

i:  This reduces the size of data in order to save space.

________________________________________________________________________________________________________________________

ii:  This utility reduces data access time and allows storage to be used more efficiently.

________________________________________________________________________________________________________________________

iii:  This checks your hard disk for errors and corrects problems found.

________________________________________________________________________________________________________________________

3  (a)  Why is secondary storage required?

**Secondary Storage:**

________________________________________________________________________________________________________________________

(b)  Name the three types of storage technology and for each mention a medium used.

**1st Technology:**  ________________________________________

**Medium:**  ________________________________________

**2nd Technology:**  ________________________________________

**Medium:**  ________________________________________

**3rd Technology:**  ________________________________________

**Medium:**  ________________________________________
The following algorithm is used to generate a check digit used for checking credit card numbers. As an example the code is: 1623 7238 9281
Rules:
   i. Multiply even positioned numbers from the right by 2:
      \[ 1 \times 2 \quad 6 \quad 2 \times 2 \quad 3 \quad 7 \times 2 \quad 2 \quad 3 \times 2 \quad 8 \quad 9 \times 2 \quad 2 \quad 8 \times 2 \quad 1 \]
   ii. Answer of (i):
      \[ 2 \quad 6 \quad 4 \quad 3 \quad 14 \quad 2 \quad 6 \quad 8 \quad 18 \quad 2 \quad 16 \quad 1 \]
   iii. Add together the digits for those numbers >9:
      \[ 2 \quad 6 \quad 4 \quad 3 \quad 5 \quad 2 \quad 6 \quad 8 \quad 9 \quad 2 \quad 7 \quad 1 \]
   iv. Answer for (iii):
      \[ 2 \quad 6 \quad 4 \quad 3 \quad 5 \quad 2 \quad 6 \quad 8 \quad 9 \quad 2 \quad 7 \quad 1 \]
   v. Add all numbers together:
      \[ 2+6+4+3+5+2+6+8+9+2+7+1 = 55 \]
   vi. The check digit is the remainder when the answer of (v) is divided by 10:
      \[ \text{Check digit} = 55/10 = 5 \text{ rem } 5 \]
      So check digit is 5 (the remainder)

What is the check digit for the code: 5629 1234 8768?
(Show ALL your working)

Working space:

Answer:
Five personnel working in an IT department are: *I.T. Trainer*, *Webmaster*, *Computer Engineer*, *Systems Designer* and *Data Entry Clerk*. Give the main duties for each personnel.

**I.T. Trainer:**

**Webmaster:**

**Computer Engineer:**

**Systems Designer:**

**Data Entry:**


**Step 1:**

**Step 2:**

**Step 3:**

**Step 4:**

**Step 5:**

(a) **Define** the terms *LAN*, *MAN* and *WAN*.

**LAN:**

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

WAN: ___________________________________________  [3]
LAN: ____________________________________________

8 (a) While programming, a programmer might encounter three types of programming errors. Name the three errors and for each error give an example to justify your answer.

1st Error: __________________________________________
Example: __________________________________________

2nd Error: __________________________________________
Example: __________________________________________

3rd Error: __________________________________________
Example: __________________________________________

(b) Distinguish between source code and executable code.
Source: ____________________________________________
Executable: ________________________________________

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

Hardware: _________________________________________
Description: _______________________________________

Software: _________________________________________
Description: _______________________________________

(b) What is the main purpose of the data protection act (DPA)?
DPA: _____________________________________________


(c) Distinguish between software piracy and copyright.

Piracy:  

Copyright:  

10 For each of the following Input/Output devices, name the most appropriate application.

Mouse:  

Digital Camera:  

Dot Matrix:  

MICR:  

Light Pen:  

Graphics Tablet:  

Keyboard:  

OMR:  

Braille Printer:  

Barcode Reader:  

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

```
public class MathTable{
    public static void main(String[] args){
        int num = 1;
        System.out.print("Enter which table to calculate: ");
        int table = Keyboard.readInt();
        System.out.println();
        while (num <= 12){
            System.out.println(_________________);
            num--;
        }
    }
}
```

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 (ii) so that the program works as intended.  
v. Fill in Line 8 so that the program displays the answer.

i:  

ii:  


Section B – Answer BOTH Questions

12 (a) The two instructions below form part of an Assembly language program:

\[ LDA \, B \quad ; \quad \text{Load accumulator A with B} \]
\[ NOT \quad ; \quad \text{Logical NOT the contents of accumulator} \]

i. From the code above name an **opcode** and an **operand**.

ii. What would be the value of the accumulator in **decimal** after running the two instructions with \( B=50 \) considering that the accumulator is working in **two’s complement**?

i. Opcode:  
ii. Accumulator =  

\( Working \, Area: \)

(b)  
i. Name **three** registers found in the CPU.

ii. Briefly describe the function of each register.

i. 3 registers:  
ii. 1\(^{st}\) register:  

\[ 2^{nd} \, \text{register:} \]

\[ 3^{rd} \, \text{register:} \]
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:**

**Step 2:**

**Step 3:**

**Step 4:**

**Step 5:**

**Step 6:**  *Go back to step 1.*

---

13 (a) Study the truth table and answer the questions below:

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
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<tbody>
<tr>
<td>0</td>
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<td>0</td>
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</tbody>
</table>

i. Draw the logic circuit which corresponds to the given truth table.

ii. Extract the Boolean expression for the circuit.

i. *Space for logic circuit:*
ii. **Boolean expression:**

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

i. \( 93_{16} \) to binary

ii. \( 10101111_2 \) to decimal

iii. \( 205_{10} \) to binary

iv. \( 11011010_2 \) to hexadecimal

v. \( AB_{16} \) to decimal

vi. \( 195_{10} \) to hexadecimal

\[ \begin{align*}
\text{i. } 93 & = \hspace{2cm} \\
\text{ii. } 10101111 & = \hspace{2cm} \\
\text{iii. } 205 & = \hspace{2cm} \\
\text{iv. } 11011010 & = \hspace{2cm} \\
\text{v. } AB & = \hspace{2cm} \\
\text{vi. } 195 & = \hspace{2cm} \\
\end{align*} \]

**Working Area:**

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

i. **Index creation:**

ii. **Embedded G. O.:**