**ADAVANCED LEVEL COMPREHENSIVE ASSESSMENT EXAMINATIONS 2019**

**SUBJECT: COMPUTER SCIENCE**

 **CLASS: SENIOR FOUR**

**COMBINATIONS: MATHS-COMPUTER SCIENCE-ECONOMICS: MCE**

 **MATHS-PHYSICS-COMPUTER SCIENCE: MPC**

**DURATION: 3HOURS**

**INSTRUCTIONS:**

This paper consists of **two** sections: **A, B**.

**Section A: Attempt all questions. (50 marks)**

1 Define a Computer **(3 marks)**

*Computer:* A computer is an electronic device capable of receiving raw facts (*data*) and performing a sequence of operations on the data based on special computer instructions (*processing)* to produce desired output (*information*).

2 Discuss the Characteristics of Read Only Memory (ROM) **(3 marks)**

1. One can only read its content but you cannot write on it unless it is a special type of ROM.

2. It is non-volatile i.e. its content is not lost when the computer is switched off.

3. Stores permanent or semipermanent instructions from the manufacturer called **firmware**. It can store semipermanent instructions because some variations of ROM chips can be programmed according to the user’s specification.

3 Outline the procedure you would follow to put out fire in a computer lab that may have been caused by electrical fault. **(3 marks)**

 Ans

Switch off power from main switch or circuit breaker; Use non-water non-powder based extinguisher to put out the fire.

4 State three hardware requirements to be considered when installing application software.

 **(6 marks)**

Memory requirements;

 Processor speed;

Hard disk size

5 Demonstrate and outline steps on how to access the disk management utility. **(4 marks)**

 1. Right click This PC icon/ Computer,

 2. Click on Manage to display Computer management window

 3. Click Disk management under storage

 4. Right click the drive you wish to manage on the right pane

6 Define a Flowchart **(3 marks)**

is a diagrammatic representation that illustrates the sequence of operations to be performed to get the solution of a problem. Is a graphical representation of an algorithm.

7 Give an illustration of the following logic gates: NOT, AND **(4 marks)**

|  |  |
| --- | --- |
| NOT  | NON |
| AND  | ET |

8 State three advantages of using functions. **(6 marks)**

*Advantages*

1. A modular program is easier to understand
2. Easier to debug or modify a modular program
3. Increases programmer productivity
4. Libraries can be used in other programs

9 Convert the following code segment into switch case construct. **(4 marks)**

int ch;

cin>>ch;

If(ch = = 1)

{ cout<<“ Laptop”;

}

else If(ch = = 2)

{

cout<<“Desktop ”;

}

else if(ch= = 3)

{

cout<<“Notebook”;

}

else

{

cout<<“Invalid Choice”;

}

Answer

int ch;

 cin>>ch;

switch(ch)

{

Case 1 : cout<<“ Laptop”; break;

Case 2: cout<<“Desktop ”; break;

Case 3: cout<<“Notebook”;break;

Default : cout<<“Invalid Choice”;

}

10 a. Convert an octal number (345)8 to a binary number **(2 marks)**

 Octal 3 is equivalent to 011

 Octal 4 is equivalent to 100

 Octal 5 is equivalent to 101

 Thus (345)8 is equivalent to (011100101)2

b. Convert binary number (10011101)2 to decimal **(2 marks)**

**Binary to decimal**

Write each value of the binary number times two, from right to left, write the power of

two starting from 0

**1\*27 + 0\*26 + 0\*25 + 1\*24 + 1\*23 + 1\*22 + 0\*21 + 1\*20 = 157**.

(10011101)2 = (157)10

11 To reference storage of a variable in main memory, two operators, namely size of and address of (&) may be used, differentiate between the two operators. **(4 marks)**

Ans

The sizeof() returns memory size allocated to a variable in bytes, while & returns actual address.

12 Write the following acronyms in full: NTFS **(2 marks)**

NTFS: New Technology File System

13 explain two component of CPU **(4 marks)**

The CPU is made up of three distinct components within it:

1. *The Arithmetic Logic Unit (ALU)*: performs all arithmetic and logical operations.

2. *Control Unit*: interprets instructions and controls speed of execution using a clock.

3. *Registers*: special memories within the CPU for holding instructions and data.

**Section B: Attempt all questions. (50 marks)**

14 a. Justify the reason why smartphones need an operating system. **(4 marks)**

Smartphones are special purpose computers. They have similar resources and are used to perform complex tasks similar computers hence the need for an operating system. They have a fast processor, large memory, many user applications, fast access to the internet etc.

 b. List six functions of the operating system. **(6 marks)**

Scheduling

 memory management

 resource control and management

job scheduling

input/output management

job sequencing

 security

15 a. Write the following acronyms in full: **(2 marks)**

(a) HTML

 (b) XHTML

Ans

(a) HTML - Hypertext Markup Lan­guage

 (b) XHTML - Extensible Hypertext Markup Language

b. Write down html code that print the following **(8 marks)**

First Name: 
Last Name: 
Password: 

Ans

<!DOCTYPE html>

<html>

<head>

 <form>

 <body>

 First Name: <input type="text" name="firstname"/> <br/>

 Last Name: <input type="text" name="lastname"/><br/>

<label for="password">Password: </label>

 <input type="password" id="password" name="password"/><br/>

</body>

 </form>

 </head>

16 write program using an array to store 10 integers and show them. **(10 marks)**

#include<iostream.h>

main()

{

**int** my\_arr[5]; // name of array.

cout<<”\nEnter values at: “;

for(**int** i = 0 ; i < 10; i++)

{

cout<<”\n”<<i+1<<” :”;

cin>>my\_arr[ i ]; //stores value at **ith** index**.**

}

for(**int** i = 0 ; i < 10; i++)

{

cout<<”\Number at ”<<i+1<<” :”<<my\_arr[ i ]; //show value at **ith** index**.**

}

}

17 Compare the advantages and disadvantages of high-level languages. **(10 marks)**

Ans

*Advantages and disadvantages of high-level languages:*

Advantages

1. High level languages are portable i.e. they are transferable from one computer to another.
2. High level languages are user friendly and easy to use and learn.
3. High level languages are more flexible, hence they enhance the creativity of the programmer and increase productivity in the workplace.
4. A program in high level languages is easier to debug.

*Disadvantages*

Their nature encourages use of many instructions in a word or statement hence the complexity

of these instructions cause slower program processing.

• They have to be interpreted or compiled to binary form before the computer can execute them.

• They require large computer memory to run.

18 Write an algorithm which receives two numbers and informs the user whether their product is positive or negative. **(10 marks)**

SET a, b As Integer

start

WRITE("enter 1st number")

READ(a)

WRITE("enter 2nd number")

READ(b)

If (a \* b) > 0 Then

WRITE( "The product is positive")

Else If (a \* b) = 0 Then

WRITE( "the product is null")

Else

WRITE( "the product is negative")

End If

end