TEVETA

Technical Education, Vocational and Entrepreneurship Training Authority

DIPLOMA IN COMPUTER STUDIES

LEVEL 6 EXAMINATIONS

FINAL INTEGRATED SUMMATIVE EXAMINATION

SESSION: NOVEMBER/DECEMBER 2020

ADVANCED PROGRAMMING

TIME: 3 HOURS **TOTAL MARKS: 100**

PASS MARK: 50

INSTRUCTIONS

1. Write your Examination Number and National Registration Card number on the Answer Booklet provided. Ensure to append your signature in the space provided on the answer booklet.
2. Write your answer SCRIPT SERIAL NUMBER on the examination register provided and entry slip.
3. There are SEVEN (7) questions in this paper.
4. Answer any FIVE (5) questions.
5. All questions carry equal marks.
6. Cell phones and programmable calculators are not allowed in the examination room.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO

Question 1

Explain the following terms:

a) Structured programming; **(4 Marks)**
b) Procedural programming; **(4 Marks)**
c) Abstract data types; **(4 Marks)**
d) Typed language; **(4 Marks)**
e) Untyped languages; **(4 Marks)**

[Total: 20 Marks]

Question 2

a) Define compile time polymorphism, and provide a code fragment that implements this concept in an object-oriented programming language of your choice. **(10 Marks)**
b) Define run-time polymorphism, and provide a code fragment that implements this concept in an object-oriented programming language of your choice. **(10 Marks)**

[Total: 20 Marks]

Question 3

Explain the following terms:

a) Object; **(4 Marks)**
b) Class; **(4 Marks)**
c) Instantiation; **(4 Marks)**
d) Garbage collection; **(4 Marks)**
e) Destructor. **(4 Marks)**

[Total: 20 Marks]

Question 4

a) Explain the process of implementing the abstract data types in object oriented languages. **(5 Marks)**
b) Explain the rationale of attempting to simplify memory management for programmers in object-oriented languages **(15 Marks)**

[Total: 20 Marks]

Question 5

Four basic features of object-oriented programming languages are said to be abstraction, polymorphism, encapsulation and inheritance. Expalin each of these terms.

(20 Marks)

[Total: 20 Marks]

Question 6

A stack is a last in, first out linear data structure. A stack can have any object as an element. It is characterized by two fundamental operations, called push and pop. The push operation adds a new item to the top of the stack. If the space allocated to hold the stack is full when the push operation is attempted then an error condition is raised. The pop operation removes an item from the top of the stack. A pop reveals previously concealed items, or results in an empty stack. If the stack is empty when a pop operation is attempted then an error condition is raised.

Using an object-oriented programming language with which you are familiar with, write a code which implements a stack. Your code should store the stack elements in an array and should not make use of a stack class from a class library. **(20 Marks)**

[Total: 20 Marks]

Question 7

Describe the following terms:

a) Parsing. **(4 Marks)**

b) Compiler and interpreter. **(4 Marks)**

c) Data abstraction. **(4 Marks)**

d) Metal symbol. **(4 Marks)**

e) Homogenous array and associative array **(4 Marks)**

[Total: 20 Marks]