WALTER SISULU UNIVERSITY

DIPLOMA IN INFORMATION TECHNOLOGY
FINAL EXAMINATION
NOVEMBER 2016

SUBJECT	: DEVELOPMENT SOFTWARE 1 MAINSTREAM
SUBJECT CODE	: DEV11P0/DEV11B0
QUALIFICATION	: ND – INFORMATION TECHNOLOGY
EXAMINER/S	: MR. M SASIKUMAR : MS. M MOKOKA
MODERATOR	: MR. S FERNANDEZ
DURATION	: 3 Hours (180 minutes)
MARKS	: 100
NUMBER OF PAGES	: 5 (including cover page)

INSTRUCTIONS

This is a closed book test.
No student is allowed to borrow anything from another student.
All cell phones must be switched off.
Calculators may be used *but cell phones may not be used as calculators*.
All questions must be answered on the paper provided.
Answer ALL questions.

EXAMINATION RULES ARE NOW IN FULL FORCE AND EFFECT.
DO NOT TURN THE PAGE BEFORE BEING TOLD TO DO SO.

Question 1. **[15 marks]**

1.1 Write declaration statement in pseudocode for storing each of the following data items. [5 marks]

a. Surname of a student

b. Cellphone number of the student

c. Number of tests written by the student

d. Average marks obtained by the student

e. ID Number of the student

1.2 Evaluate the following expressions. Show the steps of the evaluation and the result of each of the following expressions. [4 marks]

a. (9 < 4 * 3 + 5) OR (8 * 3 = 4 + 3 * 5) AND NOT (7 < 7 MOD 2)

b. (16 MOD 3 ^ 2 <> 3 * 6 – 4 MOD 2) OR (5 * 2 < 7 MOD 2 ^ 2) AND (12 ^ 1 + 3 \ 2 = 6 / 2)

1.3 Write down what is displayed when each of the following VB code is executed by the computer. Write only what is displayed on the computer screen. [6 marks]

(a)
```
If "apple" = "Apple" Then
    Console.WriteLine("True")
Else
    Console.WriteLine("False")
End If
```

(b)
```
Dim num As Integer
num = 5
Select Case num
    Case 3 To 5
        Console.WriteLine("Low")
    Case 5
        Console.WriteLine("Middle")
    Case 5, 6, 7
        Console.WriteLine("High")
End Select
```

(c)
```
Dim marks As Integer
marks = 50
If marks > 50 Then
    Console.WriteLine("Pass")
Else
    Console.WriteLine("Fail")
End If
```

Question 2 [20 marks]

East London Airport has two types of parking for cars, shaded parking and open parking. It charges visitors for parking based on the type of parking used. The minimum charge for shaded parking is R 20.00 and open parking is R 10.00, which is the parking fee for the first 2 hours. Thereafter R 5.00 is charged for every hour or part thereof for shaded parking and R 3.00 for open parking. A program is required to get the type of parking used (the user inputs S for shaded parking and O for open parking) and the number of hours parked (hours is entered as a whole number). The program calculates and displays the amount to be paid as the parking fee.

2.1. Draw the IPO chart for the program. [4 marks]

2.2 Draw the flowchart for the program. [16 marks]

Question 3 [12 marks]

A programmer has written the following pseudocode for a programming problem. He needs to test the output of the program. Draw a Trace Table if the user input is 200.

```
BEGIN
Declare temp, no1, no2 as Integer
Accept no1
no2 = 50
If no1 > no2 then
  temp = no1
  If temp < 100 then
    no1 = no2
    no2 = temp
  Else
    If no1 + no2 <> temp * 2 then
      temp = no2
      no2 = no1
      no1 = temp
    End If
    Display "no1 = ", no1
  End If
  Display "no2 = ", no2
Else
  Display "temp = ", temp
End If
END
```

Question 4 **[30 marks]**

East London Canopies.manufactures and sells canopies for bakkies. The types of canopy and their price is given below.

Type of Canopy	***Price in Rands***
Half-Ton Bakkie	10000.00
Single Cab Bakkie	15000.00
Double Cab Bakkie	12000.00

If canopy needs to be painted in with ordinary paint, an additional amount of R 1000.00 needs to be paid. If it is to be painted in metallic paint, the painting cost will be R 1500.00. The customer has to pay VAT (14%) on the total cost of the canopy including the paint.

The company needs a program to accept the type of canopy required by the customer (user inputs H for half-ton bakkie, S for single cab bakkie and D for double cab bakkie) and type of painting required (user enters O for ordinary paint, M for metallic paint and N for no paint). The program should calculate and display the price of canopy, cost of painting, total cost of the canopy, VAT amount and the total amount to pay.

The program must repeat until the user inputs X for the type of canopy. When there is no more input, display the following information.

- Total number of double cab bakkie canopies sold.
- Total price of single cab bakkie canopies sold excluding VAT.
- Total amount of VAT collected from all sales.

Write the **pseudocode** for the program. The program must show meaningful message for getting the input and displaying output.

NOTE: You must use **NESTED IF** statement to calculate the price of canopy.

Question 5 **[23 marks]**

South African Revenue Service (SARS) is responsible for collection of taxes. The amount of tax is based on the annual income of the individual. Every individual is given a rebate of R 13500.00. Senior citizens (people over the age of 65) is given an additional rebate of R 7500.00. The taxable income is calculated by subtracting the total rebate from the annual income of the individual. The calculation is tax (based on taxable income) is given in the following table.

Taxable Income (Rands)	**Rate of Tax (Rands)**
0 – 188000	18% of taxable income
188001 – 293600	33840 + 26% of taxable income above 188000
293601 – 406400	61296 + 31% of taxable income above 293600
406401 – 550100	96264 + 36% of taxable income above 406400
550101 – 701300	147996 + 39% of taxable income above 550100
701301 and above	206964 + 41% of taxable income above 701300

Write a program in **Visual Basic Console Application**, to get the name of the person, annual income of the person and age of the person. The program must calculate and display the tax of the person.

The program should display meaningful messages for getting the input and displaying the output.

NOTE: You must use **SELECT CASE** structure to calculate the tax.