TRINITY UNIVERSITY
Building on the Rock

CITY CAMPUS, OFF ALARA STREET, YABA, LAGOS, NIGERIA.

TITLE OF EXAMINATION: B.Sc Examination
FACULTY: Science
DEPARTMENT: Computer & Information Sciences
SESSION: 2018/2019
SEMESTER: Second
CREDIT UNIT: 3
COURSE TITLE: Introduction to Problem Solving
COURSE CODE: CSC 121
TIME: 2 ½ Hours
INSTRUCTION: Answer ANY Four (4) questions

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1 a. What is a Computer Program? (2 Mks)
b. List and describe five (5) prominent programming languages of the century. (7½ Mks)
c. Distinguish between Procedures and Subroutines. (4 Mks)
d. Write a Pseudocode for a Program that accepts three (3) numbers and computes the Sum, Average and Product of the numbers. (4 Mks)

2 a. List and explain briefly the steps involved in Program Development. (8 Mks)
b. What do you understand by Top-down and Bottom-up Programming? (4 Mks)
c. Design an Algorithm and a Flowchart to calculate the sum and product of 3 x 3 Matrices. (5½ Mks)

3. Design an Algorithm and a Flowchart to solve a quadratic equation of the form:

$$ax^2 + bx + c = 0$$ (17½ Mks)

The program should first test if any given equation is quadratic or not, and if not, it should print "Not Quadratic" and stop. Otherwise, your program should determine again if the equation has Real roots or Complex roots. If only Complex roots exist, it should print "Complex Roots" and stop. But if Real roots, it should calculate the roots using the formula:

$$x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$$

4a. What is Structured Programming? State its elements. (6½ Mks)
b. Distinguish between Top-down Design and Modular Programming. (6 Mks)
c. State the advantages and disadvantages of Modular Programming. (5 Mks)

5a. Explain the following Programming Aids:
i. Pseudocode ii. Data Flow Diagram (4 Mks)
b. In the 'Configure your new project' of Visual Basic Studio, state three (3) functions that can be performed from the window. (4 ½ Mks)
c. i. Design a form that will show two textboxes, one label and one button where the textboxes will accept values from a user and the button will compute the addition of the values and show the result. (3 Mks)
ii. Write a simple code to implement (i) above. (6 Mks)

6a. Describe what each of the following displays in Visual Basic environment. (6 Mks)

i. Project window

ii. Properties window

b. Explain the following Programming Aids: (4 Mks)

i. Program Flowchart ii. Structure Chart

c. State the purpose of DIM statement in VB.NET and give an example. (5 Mks)

d. What is the function of Private keyword in VB.NET? (2½ Mks)