NATIONAL OPEN UNIVERSITY OF NIGERIA
14/16, Ahmadu Bello Way, Victoria Island

SCHOOL OF SCIENCE AND TECHNOLOGY
October, 2013 Examination

Course Code: CIT 341 ***Time:*** 3hrs

Course Title: Data Structures ***Course Credit Unit*:** 3

Instruction: Answer any **five (5)** questions.

QUESTIONS

1a. Explain the concept of search trees from the perspective of keys. (8 marks)
1a. Write down the algorithm for a binary tree in a preorder traversal. (6 marks)
[Total = 14 marks]

2a. Explain the following concepts:
i. Memory leak)
ii. Dangling reference)
iii. Garbage collection)(4 marks each) (12 marks)

2b. State the principle of optimality. (2 marks)
[Total = 14 marks]

3a. Dynamic programming design is fundamental in programming. Outline four major steps entailed in this sort of programming design. (10 marks)

3b. What is the transpose of the following digraph G = (V, E)? (4 marks)
[Total = 14 marks]

4a. Give a brief definition of these terms:
i. Parameters
ii. Fields
iii. Local variables (4 marks each) (12 marks)
4b. Write down any two (2) reference types. (2 marks)
[Total = 14 marks]

5a. State any 2 reasons for sub-allocations. (10 marks)
5b. What are the characteristics of a good hash function? (4 marks)
[Total = 14 marks]

6a Explain how one can assist the garbage collector? (6 marks)
6b. Write down the basic components of a 'Statement'. (2 marks)
6c. Distinguish between public and private modifiers. (6 marks)
[Total = 14 marks]

7a. Name and describe two basic operations of a stack. (10 marks)
7b. Determine the linear expression of DIM P (4, 12) (4 marks)
[Total = 14 marks]