



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI-ABUJA
FACULTY OF SCIENCE
DEPARTMENT OF COMPUTER SCIENCE
SEPTEMBER 2020_1 EXAMINATION

COURSE CODE: CIT 341
COURSE TITLE: DATA STRUCTURES
CREDIT UNIT: 3
TIME ALLOWED: 2 1/2HRS
INSTRUCTION: ANSWER QUESTION ONE AND ANY FOUR OTHERS

- 1.a.(i) Discuss a Data Type?
(ii) Illustrate an Abstract Data type?
 - b. Examine the concept of Objects in Object Oriented Programming.
 - c. (i) Discuss an ARRAY data structure.
(ii) What is an AVL tree?
 - d. Discuss the following: Inheritance, Encapsulation, Overloading
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2. a. Illustrate the List Data Structure?
b. With illustration, What is a Digraph?
c. Discuss the Stack Data Structures.
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- 3.a. What is a Queue?
b. Differentiate internal sort from external sort.
c. (i) What makes a tree a search tree?
(ii) What is a Hash Table?
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- 4.a. State the advantage linked List has over Arrays?
b. With illustration, explain Enqueue () and Dequeue ().
c. State the heap order property.
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- 5.a. With the aid of a diagram, discuss the removal of a node from a queue
b. When is a search said to be successful?
c. How is a Binary search tree (BST) different from a binary tree?

- 6.a. Formulate the steps to add a Node to a queue(with illustrations)
- b. Discuss Searching an M-way Tree
- c. Write short note on the following algorithms: (i) Selection Sort, (ii) Bubble Sort