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

2. a. Illustrate the List Data Structure?

   b. With illustration, What is a Digraph?

   c. Discuss the Stack Data Structures.

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?

4.a. Statethe advantage linked List has over Arrays?

   b. With illustration, explain Enqueue ( ) and Dequeue ( ).

   c. State the heap order property.

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