

Exam Answer Key

Question -1- (5 pts)

Respond by True or False:

- a- An algorithm is a method for solving a given problem in a finite time. **True (1pt)**
- b- The tree is a linear data structure. **False (1pt)**
- c- Python, C, and Java are not programming languages. **False (1pt)**
- d- A binary tree is a data structure in which each parent node can have at most three children. **False (1pt)**
- e- The Linked List allows non-contiguous allocation of list items. **True (1pt)**

Question -2- (5 pts)

- a. Each item in appropriate column **(0.25pt)** --→ all items **(2pts)**

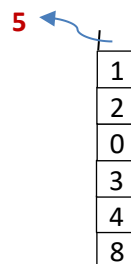
Linear Data Structure	Non Linear Data Structure
simple list, arrays, stacks, Queues, files, linked list	trees, Graphs

- b. The choice of **data structure** is critically important in constructing an **algorithm or program** because it directly impacts the **efficiency, scalability, and correctness** of the solution **(1.5pts)**
- c. This choice is independent of programming language. **(1.5 pts)**

Question -3- (5pts)

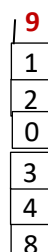
1-The stack of integers {5, 1, 2, 0, 3, 4, 8} is « popped » once.

- a. The returned value is "5". **(2.5 pts)**



2-The stack looks like :

(2.5 pts)



Question -4-(5 pts)

You are given the tree in the corresponding picture:

- a-** The root is ...**1**.... (1pt)
 - a. 5 has as children: **6,7, 8**(1pt)
 - b. The leaves are**4,6, 7, 8, 3**(1pt)
 - c. The tree has**two**.....as levels. (1pt)
 - d. The tree, is not binary. (1pt)

