Total No. of Questions : 11] [Total No. of Printed Pages : 7

PK-258

B.C.A. IV Semester (Reg./ATKT)

Examination May 2018

DATA STRUCTURE AND ALGORITHMS

Paper - BCA-401

Time Allowed : Three Hours] *[Maximum Marks : 85*

Note : All questions are compulsory.

Section - A

Objective Type Questions

Q.1. Choose the correct answer. 15×1=15

i) The logical or mathematical model of a particular organization of data is called a ___

(a) Data structure

(b) Data arrangement

(c) Data configuration

(d) Data formation

ii) Which of the following data structure are indexed structures?

(a) Linear array (b) Linked list

(c) Graphs (d) Trees

iii) The memory address of the first element of an array is called :

(a) Floor address

(b) First address

(c) Foundation address

(d) Base address

iv) Process of inserting an element in stack is called :

(a) Create (b) Push

(c) Evaluation (d) Pop

v) A data structure in which elements can be inserted or deleted at from both the ends but not in the middle is :

(a) Queue (b) Circular queue

(c) Dequeue (d) Priority queue

vi) Linked list is considered as an example of ____ type of memory allocation.

(a) Dynamic

(b) Static

(c) Compile time

(d) None of the mentioned

vii) A variant of linked list in which last node of the list points to the first node of the list is :

(a) Singly linked list

(b) Doubly linked list

(c) Circular linked list

(d) Multiply linked list

viii) In doubly linked lists, traversal can be performed.

(a) Only in forward direction

(b) Only in reverse direction

(c) In both directions

(d) None of these

ix) In binary trees nodes with no successor are called :

(a) End nodes (b) Terminal nodes

(c) Final nodes (d) Last nodes

x) A binary tree whose every node has either zero or two children is called :

(a) Complete binary tree

(b) Binary search tree

(c) Extended binary tree

(d) Data structure

xi) In order traversal of binary tree is :

(a) Left Root Right

(b) Root Left Right

(c) Left Right Root

(d) None of these

xii) Partition and exchange sort is :

(a) quick sort (b) tree sort

(c) heap sort (d) bubble sort

xiii) If the number of records to be sorted is small, then _____ sorting can be efficient

(a) Merge (b) Head

(c) Selection (d) Bubble

xiv) Finding the location of a given item in a collection of items is called _____

(a) Discovering (b) Finding

(c) Searching (d) Mining

xv) A graph with all vertices having equal degree is known as a :

(a) Multi graph

(b) Regular graph

(c) Simple graph

(d) Complete graph

Section - B

Short Answer Type Questions

$5 \times 5 = 25$

Q.2. Define basic operations on array.

OR

Define linear array. How multi dimension array is represented in memory.

Q.3. What do you understand by stack? Write down its operations.

OR

Translate the following expression to its postfix form :

$A * (B \wedge C) + D$

Q.4. Explain singly linked list with its operations.

OR

Write short notes on Header linked list.

Q.5. Define tree traversal of binary tree.

OR

Define binary tree with its operations.

Q.6. Explain selection sort in brief.

OR

Write short note on breadth first search.

Section - C

Long Answer Type Questions

$5 \times 9 = 45$

Q.7. State the row major and column major formula of three dimensional array accessing functions.

OR

What do you understand by data structures? Write its types and operations.

Q.8. What is dequeue? Write an algorithm to delete the first element in a dequeue.

OR

Write an algorithm to convert infix expression to its postfix form using stack.

Q.9. Explain different types of linked list in detail.

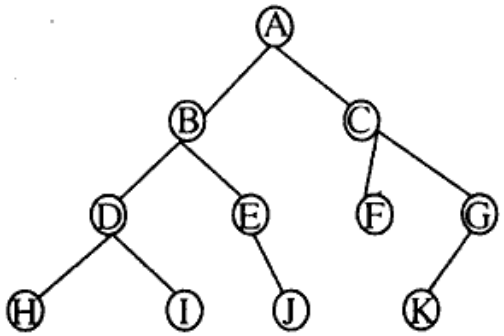
OR

Write an algorithm for inserting and deleting an element from doubly linked list.

Q.10. Define tree. Write algorithm to deletion operation.

OR

Traverse the tree into pre-order and post order traversal.



Q.11. What is Quick Sort algorithm? Explain with example.

OR

Explain Graph Traversal Schemes.