

Code No: R1621055

**R16****SET - 1****II B. Tech I Semester Model Question Paper Oct/Nov - 2017****DATA STRUCTURES THROUGH C++**

(Com. to CSE, IT)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)2. Answer **ALL** the question in **Part-A**3. Answer any **FOUR** Questions from **Part-B**

~~~~~

**PART - A**

[7 x 2 =14]

1. a) What is a binary search tree?
- b) What is a threaded binary tree?
- c) What is BFS?
- d) What are the features of C++?
- e) What is a complete binary tree
- f) Define Graph.
- g) What is the best sorting technique? Explain

**PART - B**

2. a) Efficiently implement a stack class using a singly linked list, with no header or tail nodes. (7M)
- b) What are the applications of stack ? Explain. (7M)
3. a) What are the operations of a singly linked list? Discuss. (7M)
- b) Write an algorithm to delete duplicates in a linked list. (7M)
4. a) Write an algorithm for creating a singly linked list and perform the insertion and deletion operations on it. (7M)
- b) Differentiate between doubly linked list and circular linked list. (7M)
5. a) Define the following terms used in binary trees i) Siblings ii) height iii) level (7M)
- b) Write recursive traversals of the tree with an example (7M)
6. Explain the graph traversal methods with suitable examples. (14M)
7. a) Explain in detail about sorting and different types of sorting techniques (7M)
- b) What is the worst case and best case time complexity of bubble sort? (7M)

\*\*\*\*\*

Code No: R1621055

**R16**

**SET - 2**

**II B. Tech I Semester Model Question Paper Oct/Nov - 2017**

**DATA STRUCTURES THROUGH C++**

(Com. to CSE, IT)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)

2. Answer **ALL** the question in **Part-A**

3. Answer any **FOUR** Questions from **Part-B**

~~~~~

**PART - A**

[7 x 2 =14]

1. a) Define BFS.
- b) What is minimum spanning tree? Explain.
- c) Define balanced binary tree?
- d) Define Max Heap
- e) What are the applications of the singly linked list.
- f) What are the applications of Graphs?
- g) What is the time complexity of Quick sort?

**PART - B**

2. a) Efficiently implement a queue class using a singly linked list, with no header or tail nodes (7M)
- b) Write a program to convert an infix expression that includes ( , ), +, -, \*, and / to postfix (7M)
3. a) Write an algorithm for infix to postfix conversion, (7M)
- b) Differentiate between doubly and circular linked lists. (7M)
4. a) Write an algorithm for creating a singly linked list and perform the insertion and deletion operations on it. (7M)
- b) What is singly linked list? How to represent it? Discuss. (7M)
5. a) What is a threaded binary tree? Explain with an example. (7M)
- b) Write an algorithm for inserting and deleting a node in a binary search tree. (7M)
6. a) Draw a complete undirected graph having five nodes. (7M)
- b) Write an algorithm for minimum cost spanning tree using prim's Algorithm (7M)
7. a) Explain the algorithm for insertion sort and give a suitable example (7M)
- b) Demonstrate the insertion sort results for each pass for the following initial array of elements . 21 6 3 57 13 9 14 18 2 (7M)

\*\*\*\*\*

Code No: R1621055

**R16**

**SET - 3**

**II B. Tech I Semester Model Question Paper Oct/Nov - 2017**

**DATA STRUCTURES THROUGH C++**

(Com. to CSE, IT)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)

2. Answer **ALL** the question in **Part-A**

3. Answer any **FOUR** Questions from **Part-B**

~~~~~

**PART - A**

[7 x 2 =14]

1. a) What is abstraction?
- b) Give the analysis of Heap Sort Algorithm
- c) Explain any application of the Queue?
- d) Explain operations on binary trees?
- e) Draw the binary search tree for the following: 40, 67, 71, 33, 91, 56, 22, 32
- f) What is threaded binary tree?
- g) What is graph? Explain its key terms

**PART - B**

2. a) Differentiate array and linked list representation of Stack. (7M)
- b) Explain about ADTs with suitable examples. (7M)
3. a) Differentiate between doubly and circular linked lists. (7M)
- b) Write an algorithm for evaluating arithmetic expression using stack data structure (7M)
4. a) What are the advantages and disadvantages of singly linked list? Explain. (7M)
- b) Write an algorithm for merging two singly linked lists. (7M)
5. a) What is Binary Tree? What are the operations of Binary tree? Discuss. (7M)
- b) Write an algorithm for post-order traversal of a binary tree.Explain with an example. (7M)
6. a) Write an algorithm for minimum cost spanning tree using kruskal's Algorithm (7M)
- b) Describe Minimum Spanning Tree using prim's algorithm. (7M)
7. a) Explain the algorithm for merge sort and give a suitable example. (7M)
- b) Show the quick sort results for each exchange for the following initial array of elements 35 54 12 18 23 15 45 38 (7M)

\*\*\*\*\*

Code No: R1621055

**R16**

**SET - 4**

**II B. Tech I Semester Model Question Paper Oct/Nov - 2017**

**DATA STRUCTURES THROUGH C++**

(Com. to CSE, IT)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)

2. Answer **ALL** the question in **Part-A**

3. Answer any **FOUR** Questions from **Part-B**

~~~~~

**PART-A**

[7 x 2 =14]

1. a) Define balanced binary tree?
- b) Explain about Encapsulation in C++
- c) Define DFS.
- d) What are the applications of stack
- e) What are the advantages of circular linked list
- f) What is the best sorting technique? Explain
- g) What is threaded binary tree?

**PART-B**

2. a) Describe how an array can be effectively used to store a sparse matrix. (7M)
- b) Explain about poly nomial representation with a suitable example. (7M)
3. a) What is LIFO? How to represent Queue? Explain. (7M)
- b) Write an algorithm for infix to postfix conversion, (7M)
4. a) What is a circularly linked list? Explain with a diagram (7M)
- b) Write an algorithm for reversing a singly linked list. (7M)
5. a) How to represent Binary trees? Discuss. (7M)
- b) Write an algorithm for in-order traversal of a binary tree. Explain with an example (7M)
6. a) How Graphs are represented in memory? Explain with an example (7M)
- b) What is Transitive Closure? Explain (7M)
7. a) Explain the algorithm for QUICK sort ( partition exchange sort) and give a suitable example. (7M)
- b) Demonstrate the insertion sort results for each insertion for the following initial array of elements . 25 6 15 12 8 34 9 18 2 (7M)

WWW.MANARESULTS.CO.IN