R-19

Code: 3304/19/BL

**Faculty of Science**

**B.Sc (Computer Science) II-Year, CBCS –III Semester**

**Backlog Examinations –June/July, 2022**

**PAPER: Data Structures**

Time: 3 Hours Max Marks: 80

**Section-A**

I. Answer any *eight* of the following questions (8x4=32 Marks)

1. What is an Array? Describe the initialization of an Array.
2. What are the pros and cons of Arrays?
3. Discuss the different String Manipulation Functions.
4. Differentiate Iteration and Recursion.
5. What are the applications of Linked List?
6. Give a brief note on Garbage Collection.
7. What is Binary Search Tree? Explain briefly.
8. Write a short note on Hash Functions.
9. Describe Spanning Tree.
10. What is searching? Explain Sequential Search with an example.
11. Discuss the procedure to create a Heap Tree.
12. Explain Selection Sort with an example.

**Section-B**

II. Answer the following questions (4x12=48 Marks)

13.(a) Explain the process of Evaluating the Postfix Expression with an example program.

(OR)

(b) Write a program to implement Stack Operations using Arrays.

14.(a) Discuss the Operations of Queue ADT with an example program.

(OR)

(b) What are the advantages and disadvantages of Linked List? Explain elaborately.

15.(a) Demonstrate the Graph Traversal Techniques DFS and BFS with suitable examples.

(OR)

(b) Illustrate and explain the Collision Resolution Strategies.

16.(a) Discuss the steps to sort the elements of an array using Quick sort with an example.

(OR)

(b) Discuss Binary Search Technique with an example program.

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R-19

Code: 3304/R

**Faculty of Science**

**B.Sc (Computer Science) II-Year, CBCS –III Semester**

**Regular Examinations –Jan, 2023**

**PAPER: Data Structures using C++**

Time: 3 Hours | Max Marks: 80

**Section-A**

I. Answer any *eight* of the following questions (8x4=32 Marks)

1. What is an Array? Describe the initialization of an Array.
2. What are the pros and cons of Arrays?
3. Discuss the different String Manipulation Functions.
4. Differentiate Iteration and Recursion.
5. What are the applications of Linked List?
6. Give a brief note on Garbage Collection.
7. What is Binary Search Tree? Explain briefly.
8. Write a short note on Hash Functions.
9. Describe Spanning Tree.
10. What is searching? Explain Sequential Search with an example.
11. Discuss the procedure to create a Heap Tree.
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**Section-B**

II. Answer the following questions (4x12=48 Marks)

13.(a) Explain the process of Evaluating the Postfix Expression with an example program.

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(b) Write a program to implement Stack Operations using Arrays.

14.(a) Discuss the Operations of Queue ADT with an example program.

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(b) Discuss Binary Search Technique with an example program.

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Code: 3304/19/BL

**Faculty of Science**
**B.Sc (Computer Science) II-Year, CBCS –III Semester**
**Backlog Examinations –June, 2023**
**PAPER: Data Structures using C++**

Time: 3 Hours Max Marks: 80

**Section-A**

I. Answer any *eight* of the following questions (8x4=32 Marks)

1. What is Flow Chart? Explain with factorial of a given number.
2. Write pseudo-code of an Algorithm.
3. Explain reversing a String using Stack.
4. What is Recursion? Explain variants of Recursion.
5. Write the applications of Linked List. Compare linked representation and array representation.
6. Compare and Contrast Recursion and Iteration.
7. How do you represent Binary Tree? Explain.
8. Explain different Hash Functions.
9. Compare Depth First and Breadth First search methods.
10. Explain the Heap Sort.
11. Explain Merge Sort.
12. Write the applications of Data Structures in Computer Science.

**Section-B**

II. Answer the following questions (4x12=48 Marks)

13.(a) What is an array? Explain Memory representation and address calculation of 1-D, 2-D and N-D arrays. Write pros and cons of using arrays.

(OR)

(b) Explain Primitive operations of Stacks using stack ADT. Write applications of Stacks.

14.(a) What is Queue? Explain the operations performed on Queue using array Implementation.

(OR)

(b) Explain creating, inserting, traversing and deleting of node from Doubly Linked List.

15.(a) Explain Binary Tree Traversal Techniques.

(OR)

(b) What is Graph? Explain Graph Representation Methods. Write Graph Applications.

16.(a) Explain Linear Search. Compare with Binary Search.

(OR)

(b) Explain Bubble Sort. Compare with Insertion and selection Sort.

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