

FACULTY OF INFORMATICS
MCA I Semester (CBCS) (Backlog) (2019 Batch) Examination, August 2021

Subject: Data Structures with CPP

Time: 2 Hours

Max. Marks: 70

(Missing data, if any, may be suitably assumed)

Note: Answer any four questions.

(4 x 17 ¹/₂ = 70 Marks)

- 1 Describe the space and time complexity with suitable algorithm.
- 2 Describe the operations of Row & Column major representation and its abstract classes.
- 3 Discuss the operations of stack using linked representation.
- 4 Write about Hashing with linear open addressing?
- 5 Describe the Binary Tree traversal with suitable example.
- 6 Discuss the AVL Tree operations of insert and delete with suitable example.
- 7 Explain the depth first search with suitable example.
- 8 Write the Kruskal's algorithm for minimum spanning tree and explain with example.
- 9 Write a C++ program for selection & quick sort and explain with example?
- 10 Explain the Heap tree and Heap sort with suitable example.

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MCA II Semester (CBCS) (Backlog) (Old) Examination, December 2021

Subject: C++ and Data Structures

Time: 2 Hours

Max. Marks: 70

(Missing data, if any, may be suitably assumed)

Note: Answer any four questions.

(4 x 17^{1/2} = 70 M)

- 1 a) Explain programming paradigms in detail.
b) Explain call by value and call by reference with an example program.
- 2 a) Illustrate arrays in C++ with an example.
b) Illustrate function overloading with an examples.
- 3 a) Define class. Write an example program for a class?
b) Discuss constructors and its types with an examples.
- 4 a) Define pointer. Explain dynamic arrays with an example.
b) Explain friend functions with an examples.
- 5 a) What is polymorphism? Explain polymorphism with an example.
b) Explain function overriding with an example.
- 6 a) Illustrate inheritance with an examples.
b) Explain exception handling in detail.
- 7 a) Explain applications of stack.
b) Discuss hashing with an example.
- 8 a) Illustrate queue operations with an examples.
b) Explain collision with an example.
- 9 a) Explain tree traversing techniques with an example.
b) Define AVL Tree with an example.
- 10 a) Illustrate graph traversing techniques with an examples.
b) Define Binary Tree and Binary search tree.

M.C.A. (2-Year Course) I-Semester (CBCS) (Main & Backlog) (New) Examination,
July 2021

Subject : Data Structures Using "C"

Max. Marks: 70

Time : 2 Hours

Missing data, if any, may be suitably assumed

Note: Answer any Four questions :

(4 x 17^{1/2} = 70 Marks)

1. a) Explain about different types of operators in C?
b) Write a C program to demonstrate Nested for Loop?
2. a) Write a short note on Array in C?
b) Explain about Input and output operations in C?
3. a) What is Pointer? Write a c program to swap two numbers using Pointers?
b) Write a short note on Call by Value and Call by Reference?
4. a) What is a short note on Storage Classes?
b) Define Union? Write a C program to store and access student information using Union?
5. a) Define queue? Explain about link list implementation of queue?
b) Write about Applications of stack?
6. Discuss about the following?
a) Write a C program to create Single linked list and read nodes from it?
b) Discuss about Circular Linked List?
7. a) What is Binary Tree? Explain about different operations on Binary tree?
b) Write a note on Tree Traversal Techniques?
8. a) Explain about Binary Search Trees?
b) Illustrate BFS Algorithm?
9. a) Write about Binary Search with Example?
b) Explain about Bubble sort with example?
10. Write a short note on
a) Quick Sort
b) Types of Hashing

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M.C.A. I-Semester (CBCS) (Main & Backlog) Examination, January / February 2020

Subject : Data Structures with CPP

Time :3 Hours

Max. Marks:70

Note: Answer one question from each unit. All questions carry equal marks.

Unit-I

- 1 Describe the Space and Time complexity with suitable algorithm?
OR
- 2 (a) Explain the Big 'O' and Big 'Omega' Notations?
(b) Describe the operations of Double Linked List and its abstract class

Unit-II

3. Discuss the operations of Queue using Linked representation.
OR
4. Write about Hashing with Linear Open Addressing?

Unit-III

5. Describe the Binary Tree Operations of Insert, Delete and Search with suitable example.
OR
- 6 Discuss the Binary Search Tree operations of Insert, Delete and Search with suitable example?

Unit-IV

- 7 Explain the Depth First Search with suitable example?
OR
- 8 Write the Prim's algorithm for Minimum Spanning Tree and explain with example.

Unit-V

- 9 Write a C++ program for Insertion & Quick Sort and explain with example?
OR
- 10 Explain the Heap Tree and Heap Sort with Suitable example?

OK

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M.C.A. II-Semester (CBCS) (Main & Backlog) Examination, July 2019

Subject : C++ & Data Structures

Time : 3 Hours

Max. Marks: 70

Note: Answer one question from each unit. All questions carry equal marks.

Unit-I

- 1 (a) Write the advantages and applications of OOPs.
(b) What are the merits of passing arguments by reference?
OR
- 2 (a) How does an inline function differ from a preprocessor macro?
(b) Write about recursion with an example.

Unit-II

- 3 (a) What is friend function? What are the merits and demerits of using friend function?
(b) Differentiate between friend function and member function. Give example.
OR
- 4 (a) What are the advantages of using constructors and destructors?
(b) Write about this pointer with suitable examples.

Unit-III

- 5 (a) Explain single Inheritance with example.
(b) Discuss the need of virtual function.
OR
- 6 (a) How is polymorphism achieved?
(b) What are the advantages of using exception handling mechanism?

Unit-IV

- 7 Write a C++ program to implement linear list using array representation.
OR
- 8 (a) Discuss about Hashing.
(b) Discuss the applications of queue.

Unit-V

- 9 (a) Draw all possible AVL trees height 3.
(b) Write the properties of graph.
OR
- 10 Write a note on :
(a) B-trees
(b) Minimum cost spanning tree

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M.C.A. I-Year II – Semester (Backlog) Examination, July 2019

Subject : C++ and Data structures

Time : 3 hours

Max. Marks : 80

Note: Answer ONE question from each unit. All questions carry equal marks.

UNIT – I

- 1 Explain object oriented programming concepts. Explain advantages of OOPs.
OR
2 a) Explain multidimensional arrays with example.
b) Discuss about function overloading.

UNIT – II

- 3 a) Explain friend function with example.
b) Explain about constructors with example.
OR
4 a) Explain dynamic arrays with example.
b) Write a short note on abstract data type.

UNIT – III

- 5 a) Explain operator overloading with an example.
b) Discuss about virtual functions.
- OR
- 6 Explain different types of inheritance with example.

UNIT – IV

- [illegible]

UNIT-V

- 9 Explain different tree traversal techniques with example.
OR
10 What are the properties of AVL tree? Explain the process of inserting a node (different cases) to AVL tree with an example.
