

25/1186
B.C.A. (Third Semester)
Examination, 2025

Second Paper**(Data Structure Using C & C++)**

Time : Two Hours / Maximum Marks : 75

Note : Attempt all sections as per directed.**Section-A****(Very Short Answer Type Questions)**

Note : Attempt all the question the **05 (Five)** questions. Each question carries **02 (two)** marks and The answer of each question should not exceed **50** words.

$$5 \times 2 = 10$$

1. (a) What do you mean by stack? Illustrate with example?

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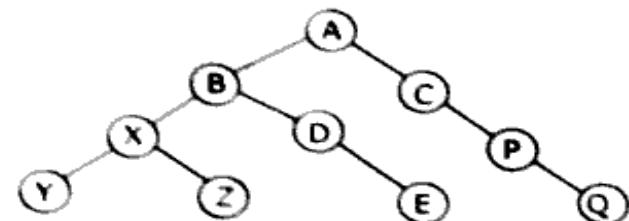
- (b) Illustrate Binary Search Tree with an example
- (c) Explain binary search in brief.
- (d) Convert to Postfix
 $d^* + 1 - 3 * a ^ c \text{ or } b ^ 2 - 4 * a ^ c$
- (e) What is Array? Define 2D Array with example.

Section-B**(Short Answer Type Questions)**

Note : Attempt any **05 (Five)** questions out of total **08 (Eight)** questions. Each question carries **05 (Five)** marks and answer of each questions should not exceed **100** words.

$$5 \times 5 = 25$$

2. (a) Write the inorder traversal of the following Binary Tree:



- (b) What is Hashing? Explain briefly?

- (c) Convert following to binary tree?
- $(A+B)*(C+D)$
 - $(A+B+C) * (D+E+F)$
- (d) What is Priority Queue? Explain its use with an example.
- (e) What is Array Data Structure? What are the Application of Array.
- (f) Define Inorder Traversal, preorder Traversal and Postorder Traversal.
- (g) Explain the Linear Search with Algorithm?
- (h) Define Sparse Array and also explain its importance?

Section-C**(Long Answer Type Questions)**

Note : Attempt any **02 (two)** questions out of total **04 (four)** questions. Each question carries **20 (twenty)** marks and the answer of each question should not exceed **400** words. $2 \times 20 = 40$

- 3 (a) Write Sort note 5+5+5+5
- Selection sort
 - Deque
 - Stack
 - Heap sort
- (b) (i) Discuss Binary Search Tree and its Characteristics?
(ii) What are the Application of Stack Data Structure?
- (c) (i) Write an Algorithm for Traversal for Binary Search Tree?
(ii) What do you mean by Searching? Explain Hashing with example.
- (d) Differentiate between 5+5+5+5
- Binary Search Vs Linear search
 - Singly vs Doubly Linked list
 - Queue vs Deque
 - Selection vs insertion sort