Second Semester B.Sc., Degree Examinations

May /June 2026

(SEP scheme)

Computer Science

SSB0320 : Data Structures Using C

Time: 3 hrs.] *[Max.Marks:80*

Instruction to the Candidates :

1. *The student should legibly write Section number along with question numbers within the margin only.*
2. *The answers without Section number and question numbers will not be valued.*
3. *Do not write anything (except register number) on the question paper.*

SECTION – A

I. Answer all the following questions. **(2X10=20)**

1.

a) Differentiate between primitive and nonprimitive data structures.

b) Briefly explain user defined functions.

c) What is a Stack ? Explain its representation.

d) What is a queue ? Give the queue representation.

e) Define memory allocation and deallocation.

f) Mention the different operations performed on a singly linked list.

g) What is a doubly linked list and circular linked list ? Explain

h) Define a tree and give its graphical representation.

i) Give the array representation of the binary tree.

j) Write a note on a heap tree.

SECTION – B

II. Answer any SIX of the following. **(5X6=30)**

2. What is a recursive function ? Write the Tower – of – Hanoi Algorithm.
3. Write an algorithm for sorting using quick sort.
4. Explain the different steps involved in infix to postfix conversion using stack. Give an example.
5. Explain the insertion of an element into the simple queue with pictorial representation.

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6. Differentiate between static and dynamic memory allocation.
7. Write an algorithm to insert an item into the singly linked list.
8. Explain strict binary tree and complete binary trees with tree structure.
9. Write a C program to search an item in a binary search tree.

SECTION – C

III. Answer any THREE of the following questions. **(10X3=30)**

10. a) Write on Algorithm to sort list of numbers using Selection sort.
    b) Write an algorithm to search an element using binary search. (5+5)
11. a) Explain push ( ) and pop ( ) operations in stack.
    b) Discuss different types of queue. (5+5)
12. a) Explain malloc ( ) and calloc ( ) with syntax and give example.
    b) Write an algorithm to search an item in the singly linked list. (5+5)
13. a) Define the following : root node, parent node, siblings, degree of a node, terminal node.
    b) Write an algorithm for inorder, preorder and postorder traversal of a binary tree. (5+5)

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