Second Semester B.Sc., Degree Examinations

May / June 2026

(NEP Scheme)

COMPUTER SCIENCE

NSB0320 : Data Structure Using C

Time: 2 hrs.] *[Max.Marks:60*

Instructions to Students :

1) *The students 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) *Section – I Multiple Choice Questions should be answered in the First Page of Main answer book and same questions shall not be answered repeatedly.*
4) *Any identifications like marking, ticking, dots etc., in the options of MCQ (SECTION - I) on the question paper is strictly prohibited. Do not write anything (Except Reg. No.) on the question paper.*

SECTION – I

I. ***Select the most appropriate answer from options provided :*** ***10X1=10 Marks***

I-1) _____ is not the component of data structure.

A) Operations B) storage structure

C) Algorithm D) none of the above

I-2) To represent hierarchical relationship between elements, which data structure is suitable?

A) Stack B) Queue

C) Tree D) Graph

I-3) Elements in an array are accessed _____

A) Randomly C) Sequentially

B) Exponentially D) logarithmically

I-4) Which of these best describes an array?

A) A data structure that shows a hierarchical behaviour

B) Container of element of similar types

C) Arrays are immutable once initialized

D) Array is not a data structure

Contd...2

I-5) Entries in a stack are "ordered". What is the meaning of this statement?

A) A collection of stacks is sortable

B) Stack entries may be compared with the '<'operation

C) The entries are stored in a linked list

D) There is a Sequential entry that is one by one

I-6) The postfix form of the expression (A+B)*(C*D- E)*F / G is?

A) AB+ CD*E - FG /** B) AB + CD* E - F **G/

C) AB + CD* E- *F*G/ D) AB + CDE* - * F *G/

I-7) Choose the statement which is incorrect with respect to dynamic memory allocation.

A) Memory is allocated in a less structured area of memory, known as heap

B) Used for unpredictable memory requirements

C) Execution of the program is faster than that of static memory allocation

D) Allocated memory can be changed during the run time of the program based on the requirement of the program

I-8) Which of the following is an example of static memory allocation?

A) Linked list B) Stack

C) Array D) Queue

I-9) Which type of traversal of binary search tree outputs the value in sorted order?

A) pre-order B) post-order

C) in-order D) none of these

I-10) The node with zero indegree is called _____

A) Forest B) Left child

C) Right child D) Root

Contd...3

SECTION - II

II. *Answer any FIVE of the following.* *5X3=15 Marks*

II-1) Explain the Tower of Hanoi problem with suitable algorithm.

II-2) Explain insertion sort algorithm.

II-3) Write an algorithm to search an element using recursive binary search technique.

II-4) List the applications of stack.

II-5) Explain Memory allocation and de-allocation function in C.

II-6) How to create doubly linked list node in C program (syntax)

II-7) Explain linked list and its representation.

II-8) Define the tree terminologies siblings, edge, and depth.

SECTION - III

III. *Answer any THREE questions from the following:* *3X 5= 15 Marks*

III-1) Explain Algorithm Specification and write an algorithm to find GCD using recursion.

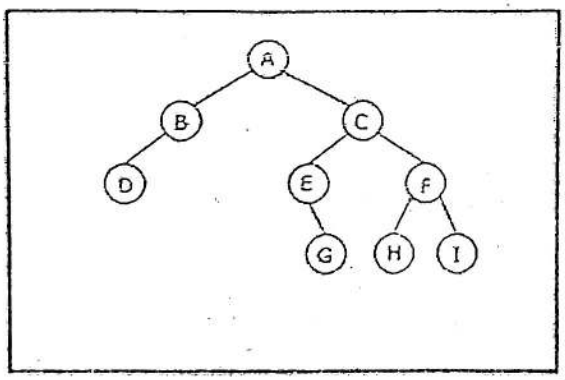
III-2) Trace the selection sort algorithm for the following list of numbers.

90,77,60,99,55,88,66.

III-3) Write an algorithm to convert an expression from infix to postfix using stack.

III-4) Write an algorithm to perform Insertion and Deletion operations on singly linked lists.

III-5) Write the different Traversal of given binary tree :



Contd...3

SECTION – IV

IV. Answer the following: *2X 10= 20 Marks*

IV-1) What is data structure? Explain types of data structure with their operations give suitable example.

OR

Explain Quick sort technique and write algorithm for it. (5+5)

IV-2) Define queue. Explain the types of queues with their representation give suitable examples.

OR

Explain the different types of trees. (5+5)



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