NP – 226

14

II Semester B.Sc. Examination, August/September 2023
(NEP Scheme)
COMPUTER SCIENCE
CS – C3T : Data Structures

Time : 2½ Hours

Max. Marks : 60

*Instruction : Answer **any four** questions from **each** Part.*

PART – A

I. Answer **any four** questions. **Each** question carries **two** marks. **(4×2=8)**

1) Define data structure. List out any two operations of data structure.

2) Write abstract data type of an array.

3) Convert (A + B/C*D) + F into postfix form.

4) Mention the different ways of tree traversal.

5) What is doubly linked list ?

6) Define hashing.

PART – B

II. Answer **any four** questions. **Each** question carries **five** marks. **(4×5=20)**

7) Explain time and space complexity of an algorithm.

8) Define stack. Write an algorithm to push and pop elements into stack.

9) Explain sequential search technique with an example.

10) Construct a binary search tree for the list of numbers 45,38,77,55,33,66, 88,22,57,89,46.

11) What is linked list ? Explain different types of linked list.

12) Explain collision resolution by chaining.

P.T.O.

PART – C

III. Answer **any four** questions. **Each** question carries **eight** marks.　　(4×8=32)

13) a) Explain Asymptotic notation for complexity of an algorithm.　　5

　　b) Write a note on sparse matrix.　　3

14) a) Evaluate the following postfix expressions using stack (6 5 * 2 + 8 1 – 1) (6 3 + 5 * 2 3 ++).　　5

　　b) Write a note on priority queue.　　3

15) a) Explain array concepts with its classification.　　4

　　b) Write an algorithm for insertion sort.　　4

16) a) Explain stepwise BFS concept for below graph.　　6
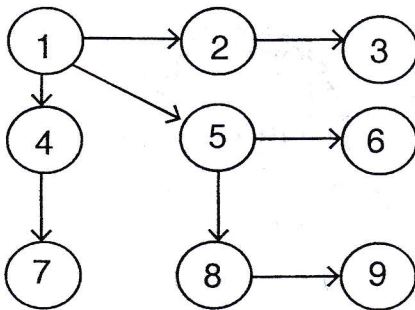
　　b) Write a note on B-Trees.　　2

17) a) What is queue ? Write a program to implement linear queue using arrays.　　5

　　b) Define the following with examples.　　3
　　　a) Directed graph
　　　b) Indegree.

18) a) Define hashing. Explain hash table and hash function.　　4

　　b) Explain quick sort.　　4