NP – 120

II Semester B.Sc. Examination, September/October 2022
(NEP – 2021-22 and Onwards)
COMPUTER SCIENCE
Paper – II : 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 abstract data type. Give an example.
2) What is a sparse matrix ?
3) Define garbage collection.
4) What is a binary search tree ?
5) Define AVL tree.
6) Define hash function.

PART – B

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

7) Explain the various asymptotic notations for complexity of algorithm. **5**
8) Write an algorithm to insert an element into an array at a given position. **5**
9) Write a C program for tower of Hanoi problem. **5**
10) Explain topological sorting. **5**
11) Explain how to build a binary search tree with an example. **5**
12) Explain various tree traversal methods with suitable examples. **5**

P.T.O.

PART – C

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

13) a) Explain any four string operations. **4**

b) Explain the four operations performed on primitive data structure. **4**

14) a) Define queue. Explain its types. **5**

b) Explain push and pop operations of stack. **3**

15) a) Define linked list. Write an algorithm to insert an element at the end of a singly linked list. **6**

b) Write any two applications of stack. **2**

16) a) Explain sequential representation of graph in memory. **4**

b) Explain collision resolution by chaining. **4**

17) Explain shell sort for the given elements 18, 32, 14, 9, 45, 6, 55, 16. **8**

18) Write an algorithm to implement binary search technique in an array with an example. **8**
