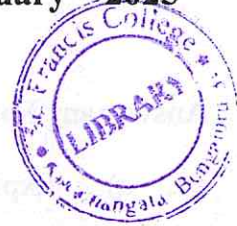


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**I Semester B.C.A. Degree Examination, January/February - 2025****COMPUTER SCIENCE****Data Structures****(NEP Scheme Repeaters)****Time : 2½ Hours****Maximum Marks : 60****Instructions to Candidates:**

All Sections are Compulsory.

**SECTION - A****I. Answer any Four of the following questions.****(4×2=8)**

1. What is Data Structures? List out its types.
2. Define ADT.
3. What is an array? List types of arrays.
4. Define doubly linked list.
5. What is Heap Tree?
6. What is Hash Collision? Give one example.

**SECTION - B****II. Answer any Four of the following questions.****(4×5=20)**

7. Explain the classification of the data structures.
8. Explain Garbage Collection.
9. Mention the operations on Stack.
10. Explain the difference between Row Major Vs. Column Major memory representation.

**[P.T.O.]**



11. Compare Linear and Binary search techniques.
12. What are the characteristics of Good Hash function?

**SECTION - C**

III. Answer any Four of the following questions. (4×8=32)

13. a) Explain Abstract Data type model. (4)
- b) Explain the following mathematical functions and notations.
  - i) Floor
  - ii) Ceil
  - iii) Remainder
  - iv) Integer and Absolute value. (4)

14. Evaluate the infix expression to the following postfix expression using stack:

$$A + (B * C - (D / E ^ F) * G) * H$$

15. Explain the rules of Tower of Hanoi Problem. Evaluate it with no.of disk ( $n$ ) = 3.
16. Explain AVL Rotations with an example.
17. a) Write a program to perform bubble sort. (4)
- b) Explain Divide and Conquer technique. (4)
18. a) Explain Hashing Mechanism with an example. (4)
- b) Explain Collision Resolution by chaining with an example. (4)