D-8M

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M1MIT03/CT03

M. Sc. I.T. Ist Semester Examination, 2017-18

DATA STRUCTURE

Paper–III

Time : Three Hours

Maximum Marks : 80

PART - A [Marks : 20

Answer all questions (50 words each).

All questions carry equal marks.

PART - B [Marks : 40

Answer *five* questions (250 words each).

Selecting *one* from each unit. **All** questions carry equal marks.

PART - C [Marks : 20

Answer any *two* questions (300 words each).

All questions carry equal marks.

PART - A

UNIT - I

1. What do you mean by sparse matrix ?

2. Name the different types of linked list.

UNIT - II

3. List the various applications of stack.

4. Convert the expression A-B-(C*D–F/G)*E into prefix notation.

UNIT - III

5. What is the threaded binary tree ?

6. List the various representation of tree in the memory.

UNIT - IV

7. What do you mean by adjacency matrix ?

8. What is minimum spanning tree ?

UNIT - V

9. Compare linear and binary search in terms of time complexity.

10. Give the charactreristics of a good hash function.

PART - B

UNIT - I

2. What do you understand by the term algorithm ? Explain space and time complexity with suitable example.

3. Explain how a polynomial can be represented using single linked list. Also, write an algorithm to add two polynomials.

UNIT - II

4. Write an algorithm to convert infix expression into postfix expression.

5. What do mean by compaction ? Explain boundary tag system for memory management.

UNIT - III

6. What is tree traversla ? Write recursive and non-recursive algorithm for infix tree traversal.

7. What is expresion parsing ? What are the applications of B-Tree ?

UNIT - IV

8. Discuss KMP algorithm for pattern searching with example.

9. Differentiate between Depth first search and breadth first search with an example of each.

UNIT - V

10. What do you mean by collision ? Discuss linear probing method to overcome this problem.

11. Write an algorithm for quick sort ? Compare it with other sorting techniques known to you.

PART - C

UNIT - I

12. What is data abstraction ? Differentiate between array and linked list with an example of each.

UNIT - II

13. What is stack ? Write a procedure for push and pop operations.

UNIT - III

14. What are threaded trees ? How it differ from B-Trees.

UNIT - IV

15. What are string matching algorithms ? Explain with an example.

UNIT - V

16. Write short notes on :

1. Hash Table

2. Shell Sort