

NATIONAL INSTITUTE OF TECHNOLOGY SRINAGAR
 Department of Computer Science & Engineering
 Supplementary Examination (autumn 2016-17)

Course: Data Structures

Semester: 4th

Time Allotted: 2 hours

Dated: 05-04-2017

Course Code: CSE 401

Max Marks: 50

Note: - Attempt any four questions.

Q1: -

[8, 4.5]

- Write a program to implement circular Queue using arrays.
- Write a program to implement merge sort.

Q2: -

[9, 3.5]

- What are the various hashing techniques? Explain each with suitable examples.

- Given the following expression ,

$$x = 2 + 3 * 10^2 - 6 / 3$$

Evaluate the value of using stack data structure.

Q3: -

[8, 4.5]

- Write an algorithm to implement binary search tree. Explain the working of algorithm with suitable example.

- Given the hash function $x \bmod 12$ with $x = \{2, 3, 4, 5, 10, 22, 10, 89, 45\}$

Insert the values in hash table implemented using linear hashing.

Q4: -

[10, 2.5]

- What are the limitations of implementing binary trees with arrays? Write a program to implement the same using linked lists.

- Given the following expression in

Infix: $(A * (B + (C / D)))$

Postfix: $(A (B (C D /) +) *)$

Evaluate the corresponding prefix expression.

Q5: -

[8, 4.5]

- Write a program to implement insertion and deletion operations on singly linked list.
- What is heap property? Write an algorithm to implement min-heap data structure.

$$2, 2 \times 10^2 + 2 = 2, 302 + 2$$

END

22 key 10) mod 12 = 10
 22 key 1) mod 12 = 1

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