

CU UG INTERMEDIATE EXAMINATION-2020

MAHESHTALA COLLEGE

COMPUTER SCIENCE (HONS)

SEMESTER-2, FULL MARKS: 50, TIME: 1 HOUR

PAPER: CC3 (Data Structure), Date: 01/12/2020, 2 PM to 3 PM

**PART-A (Theory: 25 Marks)**

**Answer any five question:**

5x5=25

1. What do you mean by Row Major Form and Column Major Form of a two dimensional array. Give example
2. Create a BST using the following elements.  
10, 9, 6, 2, 3, 45, 56, 23, 7
3. Convert the following infix expression to its equivalent postfix expression using stack.  
(a+b) \* c / d - e + f \$ g
4. Write the complexity of Merge sort. Between Quick sort and Merge sort which is better and why?
5. Sort the following elements using Radix sort. Show all steps of sorting.  
145, 237, 112, 894, 563,983,324
6. Sort the following elements using Quick sort by showing all steps  
24,12,89,43,56,28,15
7. Write Shell sort to sort n numbers.
8. What is binary search tree? Write the advantage of it. Write the average case complexity to search an item in BST?
9. Write C language functions for Insert and Delete operation on Circular Queue using array.

**PART-B (Internal Assessment: 10 Marks)**

**Answer any five questions**

5x2=10

1. Write the average time complexity of Quick sort?
2. Which conditioned must have to maintain for binary search?
3. An algorithm is executed within polynomial time and the other algorithm is executed with exponential time complexity. Which is better and why?
4. Write the name of three Hash functions.
5. What is collision?
6. Write the name of two collision resolution technique.
7. Write the complexity of Shell sort.
8. What is the worst case complexity of linear search to search an item from n elements?
9. Write two differences between recursion and iteration.

**PART-C (Practical: 15 Marks) (Write in separate sheet and send in a separate file)**

**Answer any one**

1. Write a C-program to sort n elements using Merge sort.
2. Write a C-program to sort n elements using Quick sort
3. Write a C-program to sort n elements using Heap sort.
4. Write a menu driven C-program for PUSH and POP operations in Stack.