Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India

(Autonomous College Affiliated to University of Mumbai)

Mid Semester Examination

March 2018

Max. Marks: 30 | **Duration: 90 Mins**
Class: FYMCA | **Semester:II**
Course Code: MCA23 | **Branch : MCA**
Name of the Course: Data Structures

Instruction:

(1) All questions are compulsary
(2) Draw neat diagrams
(3) Assume suitable data if necessary

Q No.	Question	Max. Marks	CO
Q.1	Compare the efficiency of Bubble sort and Insertion sort algorithm on following data in terms of number of passes required and number of iterations required. 10, 20, 2, 3, 15, -22	8	CO1
Q.2	Use Double hashing technique to map following data in memory of size 11. 15, 17, 88, 59	8	CO2
Q.3	Apply Interpolation search on following data to find key element 30 a[8] = { 10, 20, 30, 40, 50, 60, 70, 80 }	5	CO2
	OR		
	Apply Binary search on following data to find key 35 a[5] = { 2, 44, 35, 88, 1 }	5	CO2
Q.4	Evaluate Worst case complexity of following using Master's theorem T(n) = 2 T(n/2) + n	4	CO1
	OR		
	Determine the content of an array after completion of pass 3 by applying Radix sort on following data. a[5] = { 1234, 234, 4564, 898, 9890 }	4	CO1
Q.5	Build following sparse matrix using linked list. $M = \begin{bmatrix} 0 & 2 & 0 \\ 3 & 0 & 0 \\ 0 & 0 & 3 \end{bmatrix}$	5	CO3
	OR		
	Construct an algorithm for searching an element in singly linked list.	5	CO3