S.Y. BSc. IT Sem-III Data. Structures

Seat Number :_____

Duration: 2 ½ hrs. 732041123 Marks: 75

Note: (1) All questions are compulsory.
(2) All questions carry equal marks.

Q.1		**Attempt any three of the following**	**(15M)**
	1	What is data structure? Explain the categories in which data structure can be divided.	(CO1 –R)
	2	What are the advantages and limitation of an array?	(CO1-R)
	3	Write a program for search the element in the array using linear search.	(CO1-A)
	4	What is an Algorithm? What are the characteristics of an algorithm	(CO1-U)
	5	Explain Array. Discuss various types of array	(CO1-U)
	6	Explain the ADT and explain its advantages.	(CO1-U)
Q.2		**Attempt Any three of the following**	**(15M)**
	1	What is linked List? Explain types of linked list.	(CO1-R)
	2	Write a program to create display the singly linked list	(CO2-A)
	3	Explain comparison between an array and a linked list.	(CO1-E)
	4	Write and Explain an algorithm to delete a node from a doubly linked list.	(CO1-U)
	5	What are the applications of linked list?	(CO1-R)
	6	What is a circular linked list? How to traverse a circular linked list.	(CO1-R)
Q.3		**Attempt Any Three of the following**	**(15M)**
	1	Define stack. Discuss the basic operations performed on the stack.	(CO2-R)
	2	Convert the following infix expression into prefix and postfix expressions. i) ((A+B) * (C+D))/E ii) A*(B+C/D)	(CO1-U)
	3	Write a short note on recursion function.	(CO2-U)
	4	Write a program to implement the concept of stack with push and pop operations.	(CO2-A)
	5	Write a short note on queue operations.	(CO1-U)
	6	Write a program to implement the concept of queue with insert operation.	(CO2-A)
Q.4		**Attempt Any Three of the following:**	**(15M)**
	1	What is bubble sort? Sort the following data items using bubble sort. 34 22 12 89 50 49	(CO2-U)
	2	Write a program for search the element in the array. Using binary search.	(CO2-A)
	3	Write Difference between linear search and binary search.	(CO1-E)
	4	Explain AVL tree with an example	(CO1-U)
	5	Write a program to create the tree.	(CO2-A)
	6	Explain Operations performed on AVL tree.	(CO1-U)
Q.5		**Attempt Any Three of the following**	**(15M)**
	1	What is Hashing? Explain the properties of Hash Function	(CO1-R,U)
	2	Explain linear probing with example	(CO1-U)
	3	Explain any two collision resolution techniques	(CO1-U)
	4	List different Hashing methods. Explain with example any two of them.	(CO1-R)
	5	What is Graph? Define directed and undirected graph.	(CO1-R)
	6	Write and explain the algorithm for (BFS) best first search in a graph.	(CO1-R,U)

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