Exam.Code:0921
Sub. Code: 6954

2021
B.E. (Information Technology)
Third Semester
ITE-302: Data Structure

Time allowed: 3 Hours | Max. Marks: 50

NOTE: *Attempt <u>five</u> questions in all, including Question No. I which is compulsory and selecting two questions from each Part.*

x-x-x

1.	a). What is the data structure? What are its types? b). List various data structures? c). What are the various operations that can be performed on different data structures? d). What is algorithm complexity? e) Define time space trade off among algorithms? f). What are the limitations of Big Oh Notation? g). What will be the complexity of the operation to remove an element from the end of the linear linked list? h). What is the maximum number of nodes at k^{th} level of binary tree? i). How a heap differs from a binary tree? j). What is the complexity of a selection sort algorithm?	(10)
	Part A	
2.	a). Construct an algorithm to insert an element in the middle of a linked list? b). Write an algorithm to count number of elements in a linear array?	(5,5)
3.	a). Convert following arithmetic infix notation to postfix notation and then evaluate it by showing the status of the stack? 10/(21-17)+5*(9+22)-4	(10)
4.	a). Show the iterative implementation of quick sort method for the following list: 23, 45, 12, 3, 4, 87, 56, 23, 78. b). If memory of for n elements of a circular queue Q is reserved, a). What is the number of elements in Q b). When Q will be full?	(5,5)
	Part B	
5.	a). For a binary search tree, its in-order and pre-order traversals are as follows: Pre-order: A, B, E,. H, Q, R, C, D, K, L, M In-order: B, Q, R, H, E, A, D, L, K, M, C What is the Height of the tree? What is it post order traversal? b). What is heap? How it differs from binary tree?	(5,5)
6.	a). How Graphs can be represented in computer memory. Give merits and demerits of each representation scheme. Explain with an example?	(10)
7.	a). What are collisions in hashing? How collisions can be handled? b). Sort the given list in ascending order using selection sort method? 34, 54, 12, 4, 78, 23, 15, 56, 46	(5,5)

x-x-x