Total No. of Questions – [08] Total No. of Printed Pages 02

G.R. No.	

Paper code – U219 – 144 (BE – F & FS)

DECEMBER 2019/ENDSEM – Backlog exam

S. Y. B. TECH. (I.T.) (SEMESTER - I)

COURSE NAME: FUNDAMENTALS OF DATA STRUCTURES

COURSE CODE: ITUA21174

(PATTERN 2017)

Time: [**2 Hours**] [Max. Marks: **50**]

(*) Instructions to candidates:
1) Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8
2) Figures to the right indicate full marks.
3) Use of scientific calculator is allowed
4) Use suitable data where ever required
5) Write suitable examples wherever necessary.
6) Draw suitable diagrams if required.

Q-1 a) Differentiate between call by value and call by reference with the help of example. [6]

OR

b) Explain any three functions used for file handling in C with syntax and example. [6]

Q-2 a) Explain with example linear and non -linear data structure. [6]

OR

b) Write a pseudocode for finding intersection of two sets. Find its time complexity. [6]

Q-3 a) Show all passes to sort the values in ascending order using selection sort. Write complexity of selection sort algorithm. [6]
56, 12, 54, 28, -13, 47, 94, -2, 15, 32

OR

b) Compare linear and binary search techniques. Give an example of each. [6]

Q-4 a) Explain the concept of linear data structure with example. [4]

OR

b) Add the following two sparse matrices. [4]

Matrix A:	Matrix B:
4 3 4	4 3 5
0 0 5	0 1 7
0 2 8	1 1 8
1 1 5	1 2 9
3 1 9	2 2 5
	3 0 2

Q-5 a) Explain the different types of linked lists with one example of each. [6]

b) Give the structure definition to represent doubly linked list node to store numbers. Compare doubly linked list with singly linked list. [4]

c) Write pseudo code for deletion of an element in the singly linked list. Give supporting pictorial representation. [4]

OR

Q-6 a) Write a function in 'C' to insert a node at the beginning of the singly linked list and display SLL. [6]

b) Write a Pseudo C code for concatenation of two singly link lists. [4]

c) Compare the linear data structures with sequential organization and linked organization. [4]

Q-7 a) Convert infix to postfix. Show stack contents. [6]
(A-P)*(B+C-D*E)/F

b) What is stack? Sequence of stack operations: push(1), push(2),pop, push(1),push(2),pop, pop, pop, push(2), pop . Write correct sequence of popped values. [4]

c) Compare circular queue and priority queue with suitable example. [4]

OR

Q-8 a) Write a pseudo code to implement linear queue using array. [6]

b) Compare stack and queue data structures. [4]

c) Write algorithm to evaluate postfix expression. [4]