B.Tech._SY_III_1UCEC303_QP B .

Question Paper set B

K. J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai-22

(Autonomous College Affiliated to University of Mumbai)

End Semester Exam

Nov – Dec 2021

Program: B.Tech

Examination: SY Semester: III

Course Code: 1UCEC303 and Course Name: Data Structure

Duration: 03 Hours
Max. Marks: 60

Instructions:

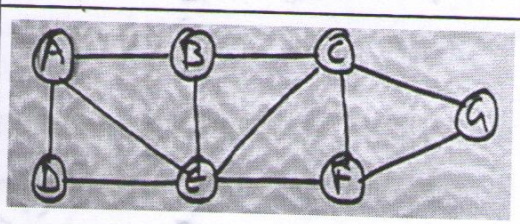
(1)All questions are compulsory.

(2)Draw neat diagrams wherever applicable.

(3)Assume suitable data, if necessary.

		Max. Marks	CO	BT level
Q 1	**Solve any six questions out of eight:**	**12**		
i)	Define ADT with example.	**2**	CO1	U
ii)	Convert the infix expression (A-B/C)*(D/E-F) into a postfix expression	**2**	CO2	U
iii)	Give the difference between Array and Linked List.	**2**	CO3	U

iv)	What is dynamic memory allocation?	2	CO3	U
v)	What is the difference between Binary Search Tree and AVL Tree?	2	CO4	U
vi)	Explain Practical applications of Trees.	2	CO4	U
vii)	Differentiate between BFS and DFS.	2	CO5	U
viii)	Mention one advantage and disadvantage of using quadratic probing.	2	CO6	U
Q.2	**Solve any four questions out of six.**	**16**		
i)	Explain how recursion is implemented with the help of Stack.	4	CO2	Ap
ii)	Write C code to implement insert at end function for doubly Linked List.	4	CO3	Ap
iii)	Construct an expression tree for the expression (a + b * c) +((d * e + 1) * g).	4	CO4	Ap
iv)	Construct an AVL tree by inserting numbers from 1 to 8 showing all the steps	4	CO4	Ap
v)	Write a Function for DFS traversal of a graph.	4	CO5	Ap
vi)	Write a program to implement Binary search.	4	CO6	Ap
Q.3	**Solve any two questions out of three.**	**16**		
i)	Write a C program to convert infix expression to	8	CO2	Ap

	postfix expression.			
ii)	Write a C program to implement insert at beginning and delete at given position for doubly linked list.	**8**	CO3	Ap
iii)	Consider a hash table of size 10. Using linear probing, insert the keys 72, 27, 36, 24, 63, 81, 92, and 101 into the table. Use modulo division hash function. Show all the steps.	**8**	CO6	Ap
Q.4	**Solve any two questions out of three.**	**16**		
i)	Construct an AVL tree by inserting the following elements in the given order: 63,9,19,27,18,108,99,81. Show all steps.	**8**	CO4	Ap
ii)	 Give the Breadth first Search (BFS) traversal of the above graph showing all the steps.	**8**	CO5	Ap
iii)	Write a program to implement a circular queue using an array.	8	CO2	Ap