Reg. No. : | | | | | | | | | | | | |

Question Paper Code: U4826

B.E./B.Tech. DEGREE EXAMINATION, NOV 2023

Fourth Semester

Biomedical Engineering

21UIT426 -DATA STRUCTURES USING OBJECT ORIENTED PROGRAMMING

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer All Questions

PART A - (10 x 2 = 20 Marks)

1.	List out the applications of OOP.	CO1-U
2.	Write a C++ program to find the given number is Odd or Even.	CO2-App
3.	Define inheritance and how do defining a derived class with example.	CO1-U
4.	Mention the role of this pointer.	CO1-U
5.	Define data structures.	CO1-U
6	Differentiate singly linked list and doubly linked lists.	CO2-App
7	Define Trees with example.	CO1-U
8	Define Graph with example.	CO2-App
9	When does the bubble sort algorithm stop?	CO1-U
10	Differentiate quick sort and merge sort.	CO1-U

PART – B (5 x 16= 80 Marks)

11.	(a)	Discuss the concepts of Object Oriented Programming with illustrations and examples.	CO1-U	(16)
		Or		
	(b)	Explain the control structures in C++ with demonstrate neat diagram with example.	CO1-U	(16)
12.	(a)	Explain the inheritance and its types. Demonstrate any one type of inheritance using suitable program.	CO2-App	(16)
		Or		

(b) Explain the string handling functions in C++ with suitable example. CO2-App (16)

13. (a) Develop an algorithm with diagrammatic illustrations to insert, delete, display operations using singly linked list. CO2-App (16)

Or

(b) Develop an algorithm and diagrammatic illustrations for the various operations that can be performed on a Stack ADT. CO2-App (16)

14. (a) Draw a binary search tree with the input given below. 45, 56, 78, 54, 39, 67, 12, 34, 89, 32, 81, 10. Consider the above drawn binary search tree do the following operations CO2-App (16)

a) Find in-order, Pre-order, Post-order traversal
b) Show the deletion of root node.

Insert 11, 22, 33, 44

Or

(b) Construct an AVL tree and apply various rotation techniques for the following values 15, 20, 24, 10, 13, 7, 30, 36, 25. CO2-App (16)

15. (a) Develop an algorithm to implement shell sort and Explain. Show the trace of the algorithm for following key sequence. 45, 15, 20,5,10. CO2-App (16)

Or

(b) Develop an algorithm for merge sort and Explain. Show the trace of the algorithm for following key sequence. 85,24,63,45,17,31,96,50. CO2-App (16)