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

Question Paper Code: 53827

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Third Semester

Biomedical Engineering

15UIT327-OBJECT ORIENTED PROGRAMMING AND DATA STRUCTURES

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Which of the following term is used for a function defined inside a class? CO1-R

   (a) Member Variable (b) Member function

   (c) Class function (d) Classic function

2. The _____ mode tells C++ to open a file for input CO2- R

   (a) add::ios (b) in::file (c) ios::app (d) ios::in

3. Each node in singly linked list has _____fields. CO3- R

   (a) 2 (b) 3 (c) 1 (d) 4

4. What are the balance factors in AVL trees? CO4- R

   (a) 1,-1,0 (b) -2,-1,0 (c) 1,2,3 (d) 2,-1,1

5. Which of the following algorithm design technique is used in the quick sort algorithm? CO5- R

   (a) Dynamic programming (b) Backtracking

   (c) Divide-and-conquer (d) Greedy method

PART – B (5 x 3= 15 Marks)

6. Write a simple C++ program to swap two numbers using call by reference. CO1- App
7. List the modes & its meaning by which a file can be opened. CO2- U
8. Illustrate the use of linked list with an example. CO3- App

9.		Build an expression tree with an given expression a+(b*c).	CO4-R	
10.		Define hash function.	CO5- U	

PART – C (5 x 16= 80 Marks)

11.	(a)	Write the function prototype. Explain Call by value and Call by reference with an example program.	CO1- App	(16)
		Or		
	(b)	Create a class complex with real and imaginary as data members. Also include member functions to get the values for a complex number and to print the complex number in a+ib format. Also include member functions to add two complex numbers and multiply two complex numbers.	CO1- App	(16)
12.	(a)	Explain in detail about Inheritance and its Types. Demonstrate any one type of inheritance using suitable program.	CO2- U	(16)
		Or		
	(b)	Discuss the need for exception with try, catch and throw keywords.	CO2- U	(16)
13.	(a)	Consider an array A [1: n] Given a position, write an algorithm to insert an element in the Array. If the position is empty, the element is inserted easily. If the position is already occupied the element should be inserted with the minimum number of shifts.	CO3- App	(16)
		Or		
	(b)	Write C++ code for linear queue with insert, delete, and display operations.	CO3- App	(16)
14.	(a)	Construct an AVL tree and apply various its rotation technique for the following values 5, 7, 9, 15, 13, 12, 11, 3, 6, 10. and traverse the tree built in In-order, Postorder and Preorder	CO4-App	(16)
		Or		
	(b)	Apply Kruskal's algorithm to find the minimum spanning tree for the following graph and write the complexity of Kruskal's Algorithm.	CO4-App	(16)

15. (a) Write and apply shell sort algorithm to sort the following list **7, 6, 2, 5, 9, 4, 1, 3, 8** CO5- App (16)

Or

(b) Write selection sort algorithm and sort a given list of elements **5, 8, 3, 45, 69, 75, 2, 7, 1, 52, 9.** CO5- App (16)