C

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

Question Paper Code: 53826

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

Third Semester

Electronics and Communication Engineering

15UIT326-DATA STRUCTURES AND ALGORITHM ANALYSIS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Which of the following concepts means wrapping up of data and functions together? CO1-R

(a) Abstraction (b) Encapsulation (c) Inheritance (d) Polymorphism

2. Which of the following ways are legal to access a class data member using this pointer? CO2- R

(a) this->x (b) this.x (c) *this.x (d) *this-x

3. Which of the following is two way lists? CO3- R

(a) Grounded header list (b) Circular header list

(c) Linked list with header and trailer nodes (d) List traversed in two directions

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 is not a stable sorting algorithm in its typical implementation? CO5- R

(a) Insertion Sort (b) Merge Sort (c) Quick Sort (d) Bubble Sort

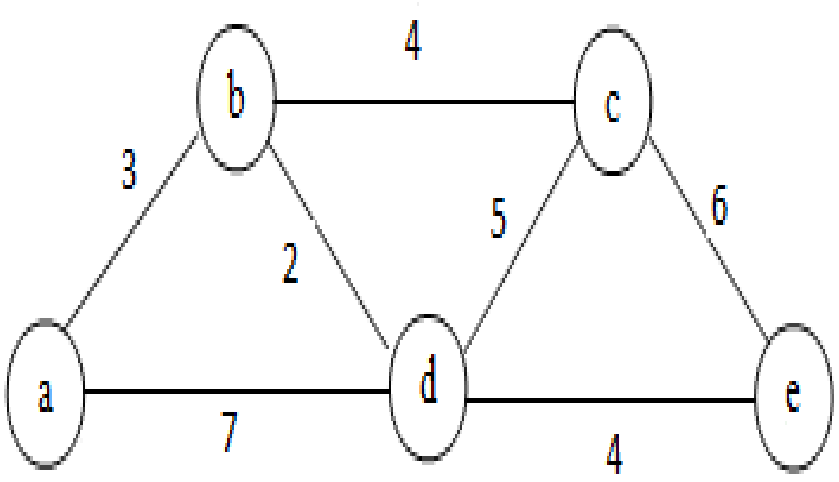
PART – B (5 x 3= 15 Marks)

6.	Differentiate inline function from normal function.	CO1- Ana
7.	Define pure virtual function with example.	CO2- R
8.	How to check whether queue is empty or not?	CO3- R
9.	Differentiate binary search tree and AVL tree?	CO4- U
10.	Construct an insertion sort for the given numbers 45, 15, 20,5,10.	CO5- App

PART – C (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)
		Or		
12.	(a)	Explain the inheritance and its types. Demonstrate any one type of inheritance using suitable program.	CO2- U	(16)
		Or		
	(b)	Explain the exception handling mechanism demonstrate with neat diagram and program.	CO2- U	(16)
13.	(a)	Write an algorithm with diagrammatic illustrations how insertion and deletions can be performed on doubly linked list.	CO3- App	(16)
		Or		
	(b)	Evaluate the postfix expression of the given infix expression (9 – ((3 * 4) + 10) / (4+9*8/4)) with diagrammatic illustrations.	CO3- App	(16)
14.	(a)	Construct a Binary Search tree from the following set of elements—25, 14, 2, 45, 78, 1, 3, 4, 5, 20, 11, 56, 90, 85, 79, 65 —and traverse the tree built in In-order, Post order and Preorder	CO4-App	(16)
		Or		

(b) Find a shortest path between any two vertices of a weighted graph or digraph and Estimate the efficiency of Dijkstra's Algorithm. CO4-App (16)



15. (a) Develop an algorithm for merge sort. Analyze the worst case and average case time complexity of this algorithm. Show the trace of the algorithm for following key sequence. CO5- Ana (16)
85,24,63,45,17,31,96,50.

Or

(b) Construct the merge sort with algorithm for the following set of numbers 4, 26, 3, 17, 7, 31, 44, 5 with the help of divide and conquer algorithm and analyze the time complexity of merge sort. CO5- Ana (16)