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

Question Paper Code: 55821

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

Fifth Semester

Electronics and Instrumentation Engineering

15UIT521 – PROGRAMMING WITH DATA STRUCTURES

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

PART A - (5 x 1 = 5 Marks)

1. Which one of the below mentioned is linear data structure? CO1- R

   (a) Queue (b) Stack

   (c) Arrays (d) All the above

2. Which of the following concepts of OOPS means exposing only necessary information to client? CO2- R

   (a) Encapsulation (b) Abstraction (c)Data hiding (d) Data binding

3. Which data structure allows deleting data elements front and inserting at rear? CO3- R

   (a)Stacks (b) Queues (c) Dequeues (d) Linkede List

4. What must be the ideal size of array if the height of tree is 'n'? CO4 -R

   (a) 2^n -1 (b) n-1 (c) n (d) 2n

5. The complexity of Bubble sort algorithm is CO5 -R

   (a) O(n) (b) O(log n) (c) $O(n^2)$ (d) O(n log n)

PART - B (5 x 3 = 15 Marks)

6.	List and define the two types of Polymorphism	CO1 -R	
7.	Distinguish between Call by Value and Call by Reference.	CO2- R	
8.	What are the operations of the stack?	CO3- R	
9.	Discuss the three binary tree traversal algorithms with examples.	CO4- Ana	
10.	What do you mean by internal and external sorting**?**	CO5 -U	

PART – C (5 x 16= 80Marks)

11.	(a)	Explain in detail about Object Oriented programming concepts.	CO1 -U	(16)
		Or		
	(b)	State the rules to be followed while overloading an operator. write a program to illustrate overloading.	CO1- U	(16)
12.	(a)	Explain in detail about Types of Inheritance.	CO2 -U	(16)
		Or		
	(b)	Explain multiple catch statement with help of suitable C++ coding.	CO2 -U	(16)
13.	(a)	(i) Construct an expression tree for the expression a + b * c + (d * e + f) * g	CO3- App	(8)
		(ii) Write a function to delete the minimum element from a binary heap.	CO3- U	(8)
		Or		
	(b)	Explain the Queue Model and list out its Applications.	CO3 -U	(16)
14.	(a)	(i) Write routines to insert and delete a node from binary search tree.	CO4 -U	(8)
		(ii) Draw a binary search tree for the following list 60, 25, 75, 75, 50, 66, 33, 44. Trace the algorithm to delete the nodes 25, 75, 44 from the tree.	CO3- App	(8)
		Or		
	(b)	Explain in detail about all pair shortest path problem with example.	CO4 -App	(16)
15.	(a)	Discuss the Quick sort algorithm with an example.	CO5- U	(16)

Or

(b)	Explain in detail about all pair shortest path problem with example.	CO5- U	(16)