Reg. No.

B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019

Third Semester

CS16351 – PROGRAMMING AND DATA STRUCTURES

(Common to EE & EC)

(Regulation 2016)

Time: Three Hours   **Maximum : 100 Marks**

Answer **ALL** questions

PART A - (10 X 2 = 20 Marks)

		CO	RBT
1.	What is null pointer?	1	R
2.	What is meant by an array? Give its types.	1	R
3.	Define ADT.	2	R
4.	List down the advantages and disadvantages of linked list over arrays.	2	U
5.	Define Queue.	3	R
6.	Evaluate the following postfix expression 231*+9-	3	AP
7.	What is binary tree? Give an example.	4	R
8.	What is meant by strongly connected graph?	4	R
9.	What do you mean by sorting? Mention its types.	5	R
10.	Give the complexity of Insertion, Quick and Merge sort.	5	U

PART B - (5 X16 = 80 Marks)

				CO	RBT
11.	(a)	Explain the various control statements in C language with an example in detail.	(16)	1	R

(OR)

	(b)	Write a C program to read the contents of a file 'input.txt' and copy the contents to 'output.txt'	(16)	1	AP

12.	(a)	What is meant by Singly linked list? Explain insertion and deletion operations in detail.	(16)	2	R

(OR)

	(b)	Write a C program for polynomial multiplication using list ADT.	(16)	2	AP

13. (a) Explain in detail about stack ADT with diagrammatic representation using arrays. (16) 3 AP

(OR)

(b) (i) Write an algorithm to implement circular queue using arrays. (8) 3 R

(ii) Write an algorithm to convert infix to postfix expression and show stack status at each step. (A+B) * (C+D-E)*F (8) 3 R

14. (a) Construct BST for the following input list: (16) 4 AP

60,25,75,15,50,66,33,44.

Trace the algorithm to delete the nodes 25,75,44 from the tree.

(OR)

(b) Using Dijkstra's algorithm, find the shortest path from the source node 'V1' with suitable routine. (16) 4 AP
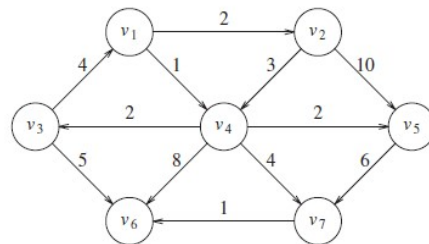
15. (a) Write an algorithm to sort 'n' numbers using merge sort. Show how the following numbers are sorted using merge sort : 15,25,70,07,11,65,81,57. (16) 5 AP

(OR)

(b) Write an algorithm to search a number using linear and binary search technique. (16) 5 AP