Reg. No.										

B.Tech. DEGREE EXAMINATION, MAY 2019
Fourth Semester

IT0208 – DATA STRUCTURES AND ALGORITHMS
(For the candidates admitted from the academic year 2007-2008 to 2012-2013)

Time: Three hours Max. Marks: 100

Answer **ALL** Questions

PART – A (10 × 2 = 20 Marks)

1. List the application of stack.
2. Define Big-O notation with an example.
3. Construct a BST for 21, 7, 9, 4, 41, 95.
4. Find out the maximum number of nodes available in a tree of height h = 15.
5. Compare the performance of linear and binary search.
6. Sort 41, 69, 72, 94, 105 using insertion sort. Exhibit all phase of sorting.
7. What is meant by digraph?
8. Write a simple algorithm for BFS.
9. Differentiate dynamic programming with divide and compare algorithm technique.
10. List down the considerations for choosing an algorithm to solve a problem.

PART – B (5 × 16 = 80 Marks)

11. a. Write pseudo code (or) algorithm to implement a sorted/ ordered linked list.

(OR)

b. With algorithm explain the implementation of queue.

12. a. Construct a AVL tree for the given data
11, 42, 64, 7, 4, 3, 51, 46, 89

(OR)

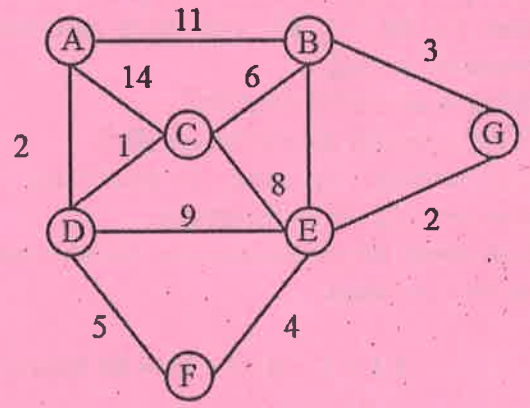
b. Construct a BST for 11, 42, 64, 7, 4, 3, 51, 46, 89 and perform all types of traversal on the BST.

13. a. Build a heap for the data 10, 20, 30, 40, 90, 80, 70, 60 such that it involved less number of swaps. Illustrate all steps in the construction of the heap.

(OR)

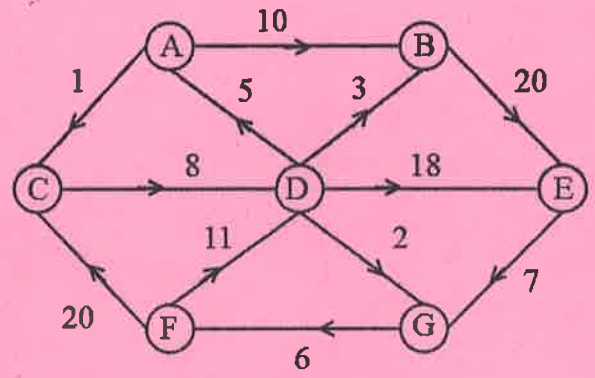
b. Explain open, closed, rehashing and extendible hashing technique with the given data 17, 21, 35, 11, 13, 19, 7, 29.

14. a. Construct MST for the given graph



(OR)

b. Write and explain the shortest path algorithm technique and apply the same of the given graph to derive its shortest path.



15. a. Construct Huffman code for the given data;

Symbols	a	e	i	o	u	$	;	·
Frequency	10	11	14	61	18	10	6	5

(OR)

b. Perform matrix chain multiplication using a suitable algorithm. explain with algorithmic technique
(i) A [5 × 5]
(ii) B [3 × 4]
(iii) C [5 × 8]
(iv) D [8 × 3]
Compare their performance.

* * * *