Comprehensive Examination

Birla Institute of Technology & Science, Pilani, Pilani Campus
Subject: Data Structures and Algorithmic Thinking (MPBA G537)
MBA in Business Analytics 1st Year- 2nd semester/2nd Year-1st semester
Maximum Marks: 40 Marks
Time duration: 03 Hours
Date of Exam: 26 December 2022

Q.1 Answer the following for a binary search tree

i) What is the total number of nodes N of a full tree with height h?... 1 Marks

ii) What is the height h of a full tree with N nodes?... 1 Marks

iii) Why is height h being important in tree operations?... 1 Marks

iv) What is the maximum height of a tree with N nodes?... 1 Marks

v) What is the minimum height of a tree with N nodes?... 1 Marks

vi) What are the tree traversal methods? 1 Marks

Q.2 Answer the following sorting algorithms with a suitable example

i) Bubble sort --- 2 Marks

ii) Insertion sort …2 Marks

iii) Selection sort… 2 Marks

iv) Merge sort…2 Marks

Q.3 Explain about the classification of ‘Data Structures’… 2 Marks

Q.4 What is a stack, explain its operation? What are the applications of stack? 2 Marks

Q.5 Explain Queue and its operation. What are the applications of Queue ...2 Marks

Q.6 What are the various operations of a tree traversal? 2 Marks

Q.7 What is a linked list? describe its various types of properties. 2 Marks

Q.8 What are the various Abstract Data Types? 2 Marks

Q.9 Explain linear probing technique with a suitable example. 2 Marks

Q.10 Define a hash table and its importance ……2 Marks

Q.11 Explain collision in a hash table. How to handle such collisions? 2 Marks

Q.12 Explain Quadratic Probing with a suitable example. 2 Marks

Q.13 Describe the comparison between Binary Search Tree and Hash Table. 2 Marks

Q.14 Enlist the responsible factors affecting the efficiency in hashing operations. 2 Marks

Q.15 Write the expressions for efficiency of various types of Hashing. 2 Marks