Name:

Enrolment No:

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, July 2020

Programme Name: **B.Tech. (CSE) BAO & OGI** **Semester : II**

Course Name : **Advance Data Structures** **Time : 02 hrs**

Course Code : **CSEG1004** **Max. Marks : 100**

TF Constructor can be private only when you create an object of a class in main function. [CO 1] FALSE

TF int a = 10; int &b = a; here the variable b would be called as the reference of variable a. [CO 1] TRUE

TF """this"" pointer return the reference of the calling object. [CO 1]" TRUE

TF friend function can access all the private and protected members of the class but not in the case when the constructor is defined as private member of the class. [CO 1] TRUE

MC Which statement is wrong about friend function of a class. [CO 1] can access all private members of the class incorrect can access all protected members of the class incorrect member functions of the class correct All are correct incorrect

MC class abc{} int main(){ cout<<sizeof(abc);} What will be the output ? Assuming all required headerfiles and namesapce has been included. [CO 1] 0 incorrect 1 correct compile time ERROR incorrect Run time ERROR incorrect

MC delete operator return _____ [CO 1] void* incorrect void** incorrect garbage value incorrect none of these correct

TF Multilevel inheritence lead to diamond problem [CO 2] FALSE

TF function overloading and operator overloaing follow the process of early binding. [CO 2] TRUE

MC Which of the statements is/are correct. (1) constructor can be virtual (2) virtual function support runtime polymorphism (3) virtual function support early and late binding [CO 2] 1 incorrect 2 correct 3 incorrect All are correct incorrect

TF "ofstream out(""hello_abc.txt"", ios::trunc); this statement will not create the file ""hello_abc"" if file doesnot exist. [CO 2]" FALSE

MC "In direct address table, search and insert operation can be perform in _____ time. [CO 3]" O(1) and O(n) incorrect O(1) and O(1) correct O(n) and O(n) incorrect O(log n) and O(n) incorrect

MC Which of the following gives the memory address of the first element in array int a[10]; ? [CO 3] &a incorrect *(a) incorrect a correct *(&a[0]) incorrect

MC "The keys 12, 18, 13, 3, 23, 5 and 15 are inserted into an initially empty hash table of length 10 using open addressing with hash function h(k) = k mod 10 and linear probing. On which index key 3 would be placed. [CO 3]" 1 incorrect 2 incorrect 3 incorrect 4 correct

MC "A hash table of length 10 uses open addressing with hash function

h(k)=k mod 10, and linear probing. After inserting 6 values into an empty hash table, the elements occupy the following indexes (index - key).

0 - empty, 1 - empty, 2 - 42, 3 - 23, 4 - 34, 5 - 52, 6- 46, 7 - 33, 8 - empty, 9 - empty.

Which one of the following choices gives a possible order in which the key values could have been inserted in the table? [CO 3]" "46, 42, 34, 52, 23, 33" incorrect "34, 42, 23, 52, 33, 46" incorrect "46, 34, 42, 23, 52, 33" correct "42, 46, 33, 23, 34, 52" incorrect

MC Given hash table with 100 slots that stored 2000 elements then the load factor would be _____ [CO 3] 10 incorrect 20 correct 30 incorrect 40 incorrect

TF "A binary tree, completely filled, with the possible exception of the bottom level, filled from left to right can be considered as complete binary tree. [CO 3]" TRUE

MC "consider the hash table with 110 slots, collision will resolved using chaining. Assuming simple uniform hashing what would be the probablility that first 4 slots remain empty after first 3 insertion. [CO 3]" (106x106x106)/110x110x110 correct (110x109x108)/110x110x110 incorrect (106x106x106)x3!/110x110x110 incorrect ((110x109x108)/110x110x110)x3! incorrect

TF inorder traversal of binary search tree always give data in ascending order. [CO 3] TRUE

MC "If inorder of a tree is 8, 10, 11, 12, 15, 16, 18 and preorder is 12, 10, 8, 11, 16, 15, 18 then what will the post-order. [CO 3]" "8, 11, 10, 15, 18, 16, 12" correct "8, 11, 10, 18, 15, 16,

12" incorrect "8, 10, 11, 18, 15, 16, 12" incorrect "10, 8, 11, 18, 15, 16, 12" incorrect

TF Time complexity of right skewed binary search tree is better than the left skewed binary search tree. [CO 3] FALSE

MC A non-root node in a B-tree of order n contains at least _____keys [CO 4] (n ? 1)/2 correct (n ? 2)/2 correct n/2 incorrect n(n+1)/2 incorrect

MC A node is inserted in the left subtree of right subtree of any node A of a balanced AVL tree. But after insertion the tree become unbalanced. Find how many rotations will be required to rebalance the tree. [CO 4] 0 incorrect 1 incorrect 2 correct 3 incorrect

MC B- Tree of order 3 and height 5 can store maximum _____ keys [CO 4] 225 incorrect 255 incorrect 728 correct 729 incorrect

MC 2-3-4 trees are B-trees of order _____ [CO 4] 2 incorrect 3 incorrect 4 correct 5 incorrect

TF Worst case time complexity of both AVL and B-Tree are same as both are height balanced tree. This statement is not true when the data is already sorted. [CO 4] FALSE

MC time require to make a binary heap is same as_____ [CO 4] searching in AVL tree incorrect searching in B-Tree incorrect linear search correct all are correct incorrect

MC if we have deleted the last minimum element in heap sort it means that we get [CO 4] tree preorder incorrect tree inorder incorrect data in descending order correct data in acsending order incorrect

MC Which of the following is binary max-heap [CO 4] "50, 20, 28, 10, 15, 25, 30" incorrect "50, 20, 25, 10, 15, 30, 28" incorrect "50, 15, 30, 10, 20, 25, 28" incorrect "50, 20, 30, 10, 15, 25, 28" correct

TF Heap of 2n elements can build in O(n) time [CO 4] TRUE

MC "After building heap from an array with elements 11, 23, 45, 10, 22, 44, 76, 88, the element 22 will be placed at _____ index in heap [CO 4]" 2 incorrect 3 incorrect 4 incorrect 5 correct

MC Which vertex can be considered as source vertex ? [CO 5] indegree = 1 and outdegree = 1 correct indegree = 4 and outdegree = 0 correct indegree = 0 and outdegree = 5 correct indegree = 3 and outdegree = 3 incorrect

MC "A directed graph G is said to be _____, if for each pair (u,v) of vertices in G, if there exists a path from u to v, there must exist a path from v to u. [CO 5]" True graph

incorrect 2-way graph incorrect bi-way graph incorrect strongly connected correct

MC "Two edges e1 and e2 connected in such a way e1 = (u,v) and e2 = (u,v) will be called _____. [CO 5]" loop edge incorrect parallel edges correct connected edges incorrect extra edges incorrect

MC "If undirected graph with 5 vertices is forming a circle, what would be the total path covered while traversing from initial node A and reaching back to A. [CO 5]" 5 edges correct 6 edges incorrect 7 edges incorrect none of these incorrect

TF In undirected graph sum of degree of all vertices is even. [CO 5] TRUE

MC "A 3x3 matric having digonal 0 and rest all elements are 1, then it could represent _____ . Choose the most appropriate option [CO 5]" undirected graph incorrect directed graph incorrect complete undirected graph correct linear uni-directed graph incorrect

MC "A 10x10 matric having all elements of 1st, 3rd, 5th and 10th complete row are 1 and rest of the elements are 0s representing a graph. Then how many vertices in the graph would be sink vertices. [CO 5]" 3 incorrect 4 incorrect 5 incorrect 6 correct

MC In case of BFS algorith u.ã = NIL means _____ [CO 5] distance from source node is NIL incorrect color of u is white incorrect u is dequeued incorrect u has no predecessor correct

TF In BFS if the node color is gray it means that node in still in queue [CO 5] TRUE

MC Which data structure can be use to traverse a graph using DFS technique. [CO 5] stack correct queue incorrect priority queue incorrect none of these incorrect