SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583
QUESTION BANK (DESCRIPTIVE)

Subject with Code : ADVANCED DATA STRUCTURES THROUGH C++ (16CS505)

Course & Branch: B.Tech –CSE&CSIT **Year & Sem:** II B.Tech & I Sem
Regulation: R16

UNIT –I

Essay Answer (10 mark) Questions

1.	Narrate in detail about object oriented programming(oop) concepts	[10M]
2.	a)what is default constructor?how do you call it?	[5M]
	b)explain how constructors are overloaded?	[5M]
3.	define access modifier?discriminate public and private with c++ programs	[10M]
4.	a)Explain how memory is allocated dynamically in c++	[5M]
	b)how to deallocate memory in c++	[5M]
5.	a)what is the purpose of "friend" function?	[5M]
	b)explain static variables with the help of c++ code	[5M]
6.	define exception?narrate how exceptions are handled in c++?	[10M]
7.	Compare friend class and friend function with c++ code	[10M]
8.	Discriminate constructors and destructors with an example c++ code	[10M]
9.	what is an object?how to pass an object to function by call by value and address	[10M]
10.	Define polymorphism.how do functions and operators exhibit polymorphism	[10M]

UNIT –II

Essay Answer (10 mark) Questions

1.	What are the differences between function overloading andfunction overriding? Give suitable example.	[10M]
2.	Write a C++ program to overload binary plus (+) operator using Operator Overloading concept.	[10M]
3.	Explain about the Generic Programming? Write the syntax for both function and class templates? Write a C++ program to swap two numbers (int, float) using function template	[10M]

4.	What is Inheritance? Explain types of Inheritances? Give an example of hybrid inheritance.	[10M]
5.	What is generic type?Narrate function templates in detail	[10M]
6.	What is a virtual function? Write the syntax and how the virtual functions are implemented in a class with an example.	[5M]
7.	What is abstract class? Define the rules to create an abstract class with example.	[5M]
8.	discriminate " private & protected " keywords with c++ code	[10M]
9.	What is code reusability?Explain it with "multi level inheritance"	[5M]
10.	a)By using class templates sort an array of integers	[5M]
	b)Implement inheritance by using class templates	[5M]

UNIT –III

Essay Answer (10 mark) Questions

1.	What is traversing?illustrate all binary tree traversing techniques with psedocode	[10M]
2.	write pseudocode of following operations on binary tree	
	a)searching	[5M]
	b)insertion	[5M]
3.	a)write properties of binary trees	[5M]
	b)write pseudocode to delete an element from binary tree	[5M]
4.	write pseudocode of following operations on binary search tree	
	a)searching	[5M]
	b)insertion	[5M]
5.	a)write about threaded binary trees	[5M]
	b)define spanning tree?explain minimum cost spanning trees with an example	[5M]
6.	a)discriminate trees and graphs	[5M]
	b)Illustrate how to represent graphs in memory	[5M]
7.	Illustrate BFS and DFS Traversing techniques on graph with pseudocodes	[10M]
8.	Narrate following techniques with pseudocode	
	a)kruskal	[5M]
	b)prims	[5M]

9. Explain following terminology of graph [10M]

a)Directed acyclic graph(DAG)

b)complete graph

c)undirected graph

d)path

e)cycle

f)spanning tree

g)adjacency matrix

h)chromatic number

i)connected graph

j)planar graph

10. a)Write in detail about "threaded binary trees" [5M]

b)define topological sorting.illustrate it with pseudocode [5M]

UNIT –IV

Essay Answer (10 mark) Questions

1. a)Define Dictionary. Define Hash Function and Mapping. [5M]

b)Construct a Hash table for the values 12 , 5 , 34, 6, 42, 8, 45, 21, 24.

Use Hashing Function as MOD 7. [5M]

2. Define Collision and discuss about Collision resolution Techniques such as

a. Linear Probing b. Random Probing c. Double Hashing [5M]

d. Quadratic Probing [5M]

3. Explain the following in detail:

a)Bucket hashing [5M]

b)chaining [5M]

4. Explain in detail how priority queues are represented using heap trees

by taking insertion and deletion operations [10M]

5. a) Define Priority Queue. Define Min Heap and Max Heap. [5M]

b)Construct a Min Heap for the following Elements: [5M]

40 12 3 9 50 26 16 5 14 30

6. a) Construct a Max Heap for the following Elements: [5M]

42 12 13 19 39 26 16 5 14 33

b)Explain the role of a Complete Binary Tree in a Priority Queue along with its properties. [5M]

7. Narrate in detail about "Binary heap trees" [10M]

8. Explain Binomial Heaps with an example [5M]

9. Explain Fibonacci Heaps with an example [5M]

10. what is the use of hash function?Narrate about any 3 in detail [10M]

UNIT –V

Essay Answer (10 mark) Questions

1. what is an AVL tree?explain LL,RR,RL,LR rotations with example while inserting an element [10M]
2. construct an AVL Tree by taking following numbers in their sequence "4,65,12,2,44,67,11,20,3,9,15,55,30,40," [10M]
3. a)what is red black tree?explain all rotations with example while inserting an element [5M]

b)Explain the properties of Red Black Trees with an example [5M]

4. construct an AVL Search tree using following words in their sequence "corn,pea,taro,fig,lime,pear,kiwi,plum,cherry,lychee,lettuce,radish,pepper,salt" [10M]
5. a)write about optimal binary search trees [5M]

b)Explain deletion operations on AVL Tree [5M]

6.	Define B-Tree .Illustrate insertion and deletion operations on B-Tree of order (m)=3	[10M]
7.	Define B-Tree.construct B-Tree of order 3 with following elements "50,4,70,40,3,60,30,2,9,38,7,23,11,99,15,72,81,94,36,46"	[10M]
8.	what is the use of splay trees?illustrate splay rotations	[10M]
9.	Describe imbalances while inserting elements in red-black tree	[10M]
10.	a)write about B+ trees	[5M]
	b) construct a red-black Tree by taking following numbers in their sequence "4,65,12,2,44,67,11,20,3,9,15,55,30,40,"	[5M]