Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_

****

**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec - 2016**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **12MT204** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **C++ AND DATA STRUCTURES** | **Max. marks :** | **100** |

|  |  |  |
| --- | --- | --- |
| **Q. No.** | **Questions** | **Marks** |
| **PART-A(10X1=10 MARKS)** | | |
| 1. | Define class with an example. | (1) |
| 2. | Write the advantages of arrays. | (1) |
| 3. | The statement obj I = obj J; will cause a compiler error if the objects are of different classes: True or false. | (1) |
| 4. | Assuming that class X does not use any overloaded operators, write a statement that subtracts an object of class X, x1, from another such object, x2, and places the result in x3. | (1) |
| 5. | The region in a program where a variable can be accessed by variables in other parts of the program is called its \_\_\_\_\_\_\_\_\_\_\_\_. | (1) |
| 6. | Write a declarator for a virtual function called dang() that returns type void and takes one argument of type int. | (1) |
| 7. | What data structure would you mostly likely see in a non recursive implementation of a recursive algorithm? | (1) |
| 8. | Give any two applications of linked list. | (1) |
| 9. | You have to sort a list M consisting of a sorted list followed by a few “random” elements. Which sorting methods would be especially suitable for this task? | (1) |
| 10. | A full binary tree with n leaves contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_ nodes. | (1) |

|  |  |  |
| --- | --- | --- |
| **PART B(5 X 3= 15 MARKS)** | | |
| 11 | What are the various access specifiers? How does the access specifier affect the accessibility of members? | (3) |
| 12 | Write a note on class hierarchies with a neat diagram. | (3) |
| 13 | Distinguish between array and linked list. | (3) |
| 14 | Sort the following sequence of keys using merge sort.  66, 77, 11, 88, 99, 22, 33, 44, 55 | (3) |
| 15 | Show sorting of {24, 56, 47, 35, 10, 90, 82, 31} using quick sort. | (3) |

|  |  |  |  |
| --- | --- | --- | --- |
| **PART C(5 X 15= 75 MARKS)** | | | |
| 16. |  | Examine in detail a few major characteristic elements of object oriented c++ language with its suitable example. | 15 |
| (OR) | | | |
| 17. |  | Write a C++ program to exemplify the SALEMON, a two dimensional array to store the sales products in figures of several districts and several months. | 15 |
| 18. |  | Explain the various types of inheritance. Write a sample C++ program to illustrate multilevel inheritance. | 15 |
| (OR) | | | |
| 19. |  | Discuss pointer to pointer concept and write the C++ program to sort the set of person objects based on the alphabetical order of their names. | 15 |
| 20. | a. | Define template. Write a C++ program to implement a function template. | 8 |
| b. | List the tasks of exception handling. Describe the simple exception handling mechanism with an example. | 7 |
| (OR) | | | |
| 21. |  | With a program, illustrate insertion and deletion of data from a singly linear list. | 15 |
| 22. |  | Write an algorithm for finding solution to the Towers of Hanoi problem with its stepwise diagram | 15 |
| (OR) | | | |
| 23. |  | Convert the following Infix expression to Postfix form using a stack: X + Y \* Z + (P \* Q + R) \* S, Follow usual precedence rule and assume that the expression is legal. | 15 |
| 24. |  | Sort the following list using Heap Sort technique, displaying each step. 66, 33, 40, 20, 50, 88, 60, 11, 77, 30, 45, 65. | 15 |
| (OR) | | | |
| 25. |  | What is a Binary Search Tree (BST)? Construct a BST for the following sequence of numbers. 45, 36, 76, 23, 89, 115, 98, 39, 41, 56, 69, 48 .Traverse the tree in Preorder, In order and Post order. | 15 |

ALL THE BEST