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**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14CS2009** | **Duration :** | **3hrs** |
| **Sub. Name :** | **Data Structures** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** | |
| 1. | a. | Discribe the implementation of Stack data Structure. | CO1 | **10** | |
| b. | Discuss about the Tower of Hanoi problem and solution in detail with example. | CO1 | **10** | |
| **(OR)** | | | | | |
| 2. | a. | Explain in detail about the process of converting an infix expression to post fix expression with appropriate example. | CO1 | **10** | |
| b. | Briefly discuss about the arrays and the address calculations in arrays when it is stored in row major order and column major order. | CO1 | **10** | |
| 3. |  | Explain the implementation (Search, Traverse, Display, Insertion, Deletion etc…) of Linked List data structure with the help of algorithms or C language. | CO1 | **20** | |
| **(OR)** | | | | | |
| 4. |  | Discuss in detail how a Stack and Queue data structure can be implemented using Linked list. | CO1 | **20** | |
| 5. | a. | What is hashing? Discuss about any two collision resolution techniques in hashing. | CO1,  CO2 | **10** | |
|  | b. | Explain Quick Sort algorithm and using that sort the numbers 100, 70, 10, 50, 20, 60, 30, 80, 40, 90 in ascending order. | CO1 | **10** | |
| **(OR)** | | | | | |
| 6. |  | Discuss about Bubble sort and Selection sort with the help of algorithms. | CO1 | **20** | |
| 7. | a. | What is an AVL tree? Define balance factor of an AVL tree? Illustrate the four rotation types in AVL tree with examples? Construct an AVL tree for the list 100, 70, 10, 50, 20, 60, 30, 80, 40, 90? | CO1, CO2 | **10** | |
|  | b. | Explain about binary tree traversals and its implementation in C language. | CO1 | **10** | |
| **(OR)** | | | | | |
| 8. | a. | Discuss about B-Tree and construct a B-Tree of order 3 (maximum  number of children nodes) using the list of following numbers 10, 20, 30, 50, 60, 70, 80 90, 40, 98, 52, 77, 15, 25, 78? | CO1, CO2 | | **10** |
|  | b. | Discuss about binary search tree. With the help of relevant diagrams show the implementation of insertion and deletion in a binary search tree. | CO1 | | **10** |
|  | | **Compulsory:** |  | |  |
| 9. | a. | Discuss about graph data structure and its representation in computer in detail with relevant diagrams. | CO1 | | **10** |
|  | b. | Explain about various graphs traversal methods. | CO1, CO2 | | **10** |

ALL THE BEST