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 :** | **14CS2001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ANALYSIS OF ALGORITHM** | **Max. marks :** | **100** |

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

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. |  | Explain with an example worst-case, best-case, and average-case efficiencies of an algorithm. | CO2 | 20 |
| (OR) | | | | |
| 2. | a. | Write the recursive algorithm for solving Tower of Hanoi problem and analyze the worst case time complexity. | CO2 | 12 |
| b. | Write an algorithm to perform matrix operation and find its time efficiency. | CO2 | 8 |
| 3. |  | Write the quicksort algorithm and apply the input 25, 13, 11, 29, 81, 62, 54, 67 on the algorithm and show each step. Analyze the best case. | CO2 | 20 |
| (OR) | | | | |
| 4. | a. | Write the algorithm for selection sort and find its worst case time complexity. | CO2 | 10 |
|  | b. | Write the algorithm for bubble sort and analyze the worst case time complexity. | CO2 | 10 |
| 5. |  | Discuss Depth-First search algorithm in detail with example. | CO1 | 20 |
| (OR) | | | | |
| 6. | a. | What is an AVL tree? | CO1 | 3 |
|  | b. | Define balance factor of an AVL tree | CO1 | 3 |
|  | c. | Illustrate the four rotation types in AVL tree with examples. | CO1 | 4 |
|  | d. | Construct an AVL tree for the list 51, 62, 83, 34, 25, 46, 77, 18. | CO1 | 10 |
| 7. |  | Explain briefly about Warshall’s algorithm with a suitable example. | CO1 | 20 |
| (OR) | | | | |
| 8. |  | Explain Floyd’s Algorithm for the all-pairs shortest-paths problem with suitableexample. | CO1 | 20 |
|  | | **Compulsory:** |  |  |
| 9. | a. | What is a minimal spanning tree? | CO1 | 5 |
|  | b. | Explain Kruskal’s algorithm for constructing a minimal spanning tree with suitable example. | CO1 | 15 |

ALL THE BEST