|  |  |  |
| --- | --- | --- |
| **Course Code:** | **CST-314** |  |
| **V Semester B.E. Computer Science and Engineering Test – I Examination**  **Design and Analysis of Algorithms [SHIFT-I]** | | |
| Time: 1 Hours] | | [Max. Marks: 15 |
| **All questions carry marks as indicate**  **Check the internal choices in each question** | | |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Questions** |  | **CO/EO** |
| **Q.1)** | Time complexity equation of Binary and Ternary Search | **01** | **CO2** |
| **Q.1)** | What is stack size required to implement min\_max algorithm with data size = 20 | **01** | **CO2** |
| **Q.1)** | The convex hull algorithm will start with three points which results in \_\_\_\_\_\_\_\_\_\_\_\_ size triangle | **01** | **CO2** |
|  | **Solve any one** |  |  |
| **Q.2)** | Take any 15 random points [x,y] and design convex hull for the points. Comment on time complexity | **04** | **CO2/L3** |
| **Q.2)** | Implement Binary Search analysis on array of size=14. [Assume suitable data]. Write equation for average comparison for successful and un-successful search. Write formulation and complexity equation. Comment on stack size required for execution. | **04** | **CO2/L3** |
|  | **Solve any one** |  |  |
| **Q.3)** | Write algorithm for Prims and implement the algorithm on following graph. Demonstrate the intermediate data structures used. Comment on time complexity and process of integration.  Assume any graph of SIX vertices. | **05** | **CO2/L2** |
| **Q.3)** | Write algorithm for knapsack problem. Implement algorithm on following data values  Size of Knapsack = 15 [Assume suitable data for blank fields]   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | Object | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | Profit | 10 | 7 | 9 | 8 | 10 | --- | 5 | | Wt | 2 | 3 | 2 | 4 | 4 | --- | -- | | **05** | **CO2/L2** |
|  | **Solve any one** |  |  |
| **Q.4)** | Demonstrate solution for traveling salesman problem on following graph stored as matrix. [Use data of your choice in blank spaces]   |  |  |  |  | | --- | --- | --- | --- | | 0 | 18 | 5 | 7 | | - | 0 | 11 | - | | - | 9 | 0 | 4 | | - | - | 6 | 0 | | **03** | **CO3/L3** |
| **Q.4)** | Illustrate the process of designing LCS on two strings.  String A: [E X P - N E N T I - L]  String B: [P - L Y N O M I - L]  In the blank space use first character of your name. [For example Ram, then use “r” in both strings] [expRnentiRl] [pRlynomiRl]  Write algorithm for “print\_lcs” | **03** | **CO3/L3** |