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| **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** | | |

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|  | **Questions** |  |  |
| **Q.1)** | Greedy algorithm is short sighted. [True/False]  Justify. [One line answer] | **01** | **CO2** |
| **Q.1)** | Any two differences between Prims and Kruskal Algorithm | **01** | **CO2** |
| **Q.1)** | Write formula for activity scheduling using SJF method for turnaround time. Assuming “n=5” processes | **01** | **CO2** |
|  | **Solve any one** |  |  |
| **Q.2)** | Take any 15 random points [x,y] and design closest pair algorithm demonstrating the pair of points with minimum distance present in band around mid-division. | **04** | **CO2/L3** |
| **Q.2)** | Implement maximum sub – array algorithm on using array with positive and negative numbers. Assume size of array = 9 elements. | **04** | **CO2/L2** |
|  | **Solve any one** |  |  |
| **Q.3)** | Write algorithm for Kruskal’s 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 logic for compression and decompression using Huffman encoding / decoding scheme. [Use suitable values for blank fields]  Write algorithm for traversal on Huffman tree during decoding operation.   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | Char | A | B | C | D | E | F | G | | Freq | 12 | 16 | 9 | -- | 40 | --- | -- | | **05** | **CO2/L2** |
|  | **Solve any one** |  |  |
| **Q.4)** | Design a multistage graph with distance ranging between [5..20] and number of vertices = 12.  Write backward algorithm and compute shortest path between vertex 1 and vertex 12. Demonstrate the contents of arrays used [bcost] [d] [path] | **03** | **CO3/L2** |
| **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 “construction of c[mxn] matrix with direction” | **03** | **CO3/L3** |