

**5E1355**

Roll No. \_\_\_\_\_

[Total No. of Pages : 2]

**5E1355**

**B.Tech. V- Semester (Main) Examination, Nov. - 2019**  
**PCC/PEC Computer Sc. and Engg.**  
**5CS4-05 Analysis of Algorithms**  
**(Common With CS,IT)**

**Time : 3 Hours****Maximum Marks : 120**[ersahilkagyan.com](http://ersahilkagyan.com)**Min. Passing Marks : 42****Instructions to Candidates:**

*Attempt all ten questions from Part A, five questions out of Seven from Part B and Four questions out of Five from Part C.*

*Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly. Use of following supporting materials is permitted during examination. (No material is required)*

**PART - A****Attempt All questions of Part A****(10×2=20)**

- ✓ 1. Define complexity with its Notations.
- ✓ 2. Explain what is Greedy Approach to solve the problems.
- ✓ 3. Difference between Greedy Algorithms and Dynamic Programming Approach.
- ✓ 4. What is minimum spanning tree?
5. What is Cut and Min cut? ?
- ✓ 6. Define cook's theorem. ?
- ✓ 7. Define Backtracking. ?
- ✓ 8. What is P, NP and NP hard problems? ^
- ✓ 9. Define Assignment Problem. ?
- ✓ 10. Differentiate between Feasible and Optimal solution. ✓

**PART - B****Attempt any five questions out of seven****(5×8=40)**

- ✓ 1. Using Quick sort algorithm sort the following sequence  
 $A = \{13, 19, 9, 5, 12, 8, 7, 4, 21, 2, 6, 11\}$ .

2. Given 10 files with lengths of {28,32,12,5,84,53,91,35,3 and 11} Find the optimal merge pattern. Also calculate the total number of moves.
3. What do you understand Dynamic programming approach also illustrate its elements.
4. Using strassen's matrix multiplication algorithm compute the matrix product

$$A = \begin{bmatrix} 1 & 3 \\ 7 & 5 \end{bmatrix} B = \begin{bmatrix} 6 & 8 \\ 4 & 2 \end{bmatrix}$$

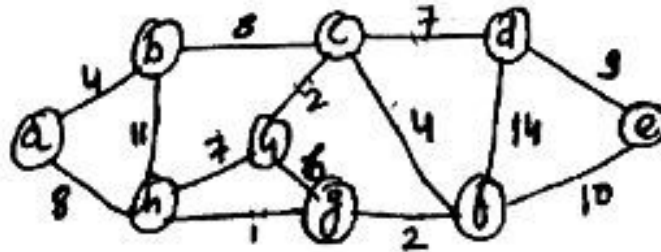
5. Explain the vertex cover and set cover problem.
6. Differentiate between backtracking and branch and bound algorithms.
7. Explain the quadratic assignment problem.

### PART - C

Attempt any Four questions out of five

(4×15=60)

1. Using Prim's and Kruskal Algorithm. Find out the minimum cost for a given graph.



2. Find an optimal paratherization of a matrix chain product whose sequence of dimensions are.

$\langle 5, 10, 3, 12, 5, 50, 6 \rangle$

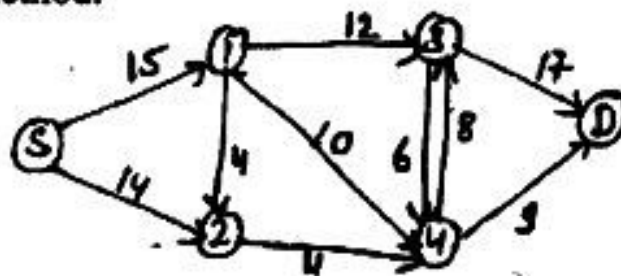
3. Given the two sequence of characters

$X = \langle ABCBDAB \rangle$

$Y = \langle BDCABA \rangle$

Find out longest common subsequence.

4. Define flow M/w and solve the following flow M/w for maximum flow using ford Fulkers on method.



5. For a given text

$T = \langle 2, 3, 5, 9, 0, 2, 3, 1, 4, 1; 5, 2, 6, 7, 3, 9, 9, 2, 1 \rangle$

$P = \langle 3, 1, 4, 1, 5 \rangle$  &  $q = 13$ . Find the shift  $s$  for which pattern  $P$  matches the substring of text  $T$  using Rabin karp algorithm.