KATHMANDU UNIVERSITY
End Semester Examination [C]
May/June, 2019

05 JUN 2019

Level : B.Sc.
Year : III
Time : 2 hrs. 30 mins.

Course : COMP 314
Semester : II
F. M : 40

SECTION "B"
[6 Q. × 4 = 24 marks]

Attempt *ANY SIX* questions.

1. What is an algorithm? Discuss at least three characteristics of a good algorithm. [1+3]
2. Simulate selection sorting algorithm in the following set of numbers.
   67, 34, 21, 55, 48, 79, 91, 17
3. State single source shortest path problem. Write an algorithm to solve it. [1+3]
4. Consider question 2. Apply merge sort algorithm to sort the given numbers.
5. Describe greedy technique of solving a problem. Write an algorithm to solve activity selection problem using greedy algorithm. [2+2]
6. What do you mean by dynamic programming technique? Discuss its properties. [1+3]
7. Describe the working principle of huffman coding.

SECTION "C"
[2 Q. × 8 = 16 marks]

Attempt *ANY TWO* questions.

8. Consider the matrices A_1, A_2, A_3, and A_4 with following dimensions.

Matrix	Dimensions
A_1	3 × 3
A_2	3 × 1
A_3	1 × 5
A_4	5 × 1

   Use dynamic programming to fill up m-table and s-table. Find the optimal parenthesization of above matrices.

9. Simulate the quick sort algorithm with following set of numbers.
   44 12 67 23 92 55 31 75

10. What is Minimum spanning tree? Describe the working principle of Krushkal's algorithm that finds the minimum spanning tree. [2+6]