

Tribhuvan University
Institute of Science and Technology
2081



Master Level / 1 Year/ 1st Semester/ Science
Computer Science and Information Technology (C.Sc. 540)
(Algorithms and Complexity)

Full Marks: 45
Pass Marks: 22.5
Time: 2 hours.

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Section A

Long answer questions:

Attempt any two questions.

[2×10=20]

1. Why online algorithms are difficult to handle? Explain ski rental problem with necessary equations. [3+7]
2. Perform bitonic sort for the given sequence A= 2,5,1,3 and B 4,7,6,8 in a butterfly network. [10]
3. What do you mean by amortized cost analysis? Explain accounting method of amortized cost analysis with reference to table doubling of hash table. [10]

Section B

Short answer questions:

Attempt all questions.

[5×5=25]

4. Explain embedding of binary tree on Hypercube. Calculate Expansion and Dilation. [5]
5. Explain the concept of data concentration in a mesh with an example of your own. [5]
6. Perform prefix computation for the following sequence in PRAM environment 1,4,5,6,7,8,3,4,5,11,12,9,20,14,13,2. [5]
7. What is the difference between Polynomial and Non Polynomial problems? List some examples as well. [5]
8. Write short notes [2×2.5=5]
 - a. Primality testing
 - b. Broadcasting