C.Sc. 544-2081 ✡

Tribhuvan University

Institute of Science and Technology

2081

✡

Master Level / I Year/ Ist Semester/ Science

Computer Science and Information Technology (C.Sc. 544)

(Parallel and Distributed Computing)

Full Marks: 45

Pass Marks: 22.5

Time: 2 hours.

Candidates are required to give their answers in their own words as for as practicable.

The figures in the margin indicate full marks.

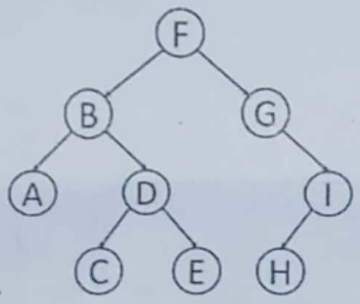
Section A

Long answer questions:

Attempt any TWO questions. **[2×10=20]**

1. Distinguish between process graph and process algebra. Describe the variations in petri nets. Using single criterion algorithm, sort the array {3, 1, 2, 8, 9, 7, 6, 10}. [2 + 5 + 3]

2. What is the advantage of vector clock over logical clock? How do you choose the leader in distributed computing using Bully algorithm? Explain. Find the post ordering numbering of the nodes in following tree. [2 + 4 + 4]



3. Describe the parallel program task. Draw the data flow diagram for the statement x = if n > 0 then a / b else a × b. Find the maximal sum sub segment in the array {2, 3, 4, -1, 5, -8, 10}. [2 + 3 + 5]

Section B

Short answer questions:

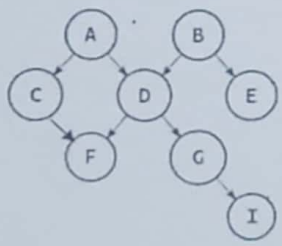
Attempt all questions **[5 × 5 = 25]**

4. Why do need to study about semantics over syntactic structure of a programming language? Give the axiomatic semantic definition of sequence statement rule and alternative statement rule. [2+3]

5. Define busy wait. Discuss any two types of Flynn's taxonomy. [1+4]

6. Using PRAM model find the prefix sum in the array {1, 4, 7, -3, 6, 8, 9, 2}. [5]

7. Given the following tree graph construct the task scheduling using two processor scheduling. [5]



8. Why do we need checkpoint in distributed computing? Give the example of single and multiple reduction operation on a single set of data. [2 + 3]