Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL

A Constituent unit of MAHE, Manipal

VI SEMESTER B.TECH. (COMPUTER SCIENCE & ENGINEERING)

GRADE IMPROVEMENT / MAKE UP EXAMINATIONS, AUGUST 2021

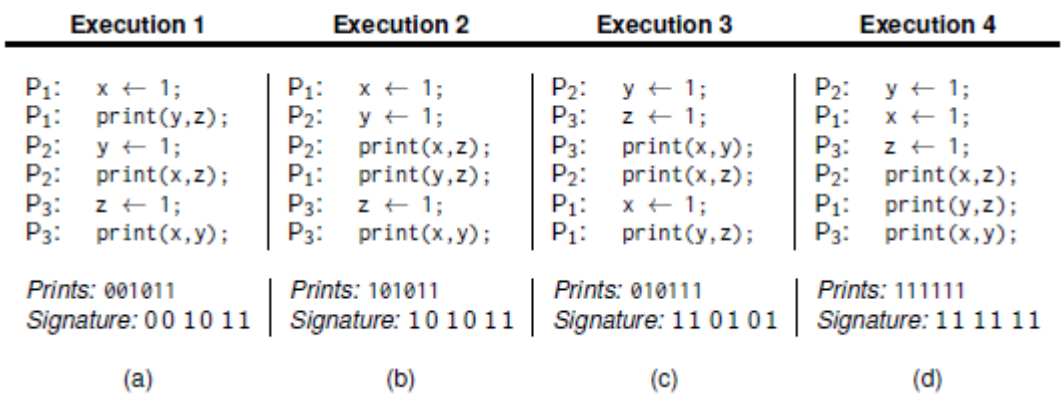
SUBJECT: DISTRIBUTED SYSTEMS [CSE 3251]

REVISED CREDIT SYSTEM
(07/08/2021)

Time: 2 Hours MAX. MARKS: 40

Instructions to Candidates:

- Answer **any FOUR full** questions.
- Missing data may be suitably assumed.

1A.	With a neat diagram explain how distributed system organized in a middleware layer, which extends over multiple machines. Explain typical Middleware services.	**5**
1B.	List and explain different types of distribution transparency.	**5**
2A.	With a neat diagram, explain basic NFS architecture for UNIX systems.	**5**
2B.	With diagrams and example, explain the distributed algorithm for mutual exclusion.	**5**
3A.	With required diagram, explain the basic RPC operation.	**5**
3B.	Explain gossip-based data dissemination.	**5**
4A.	Explain the process of associating node identifier of different name spaces across network with an example and a neat diagram.	**5**
4B.	What is name resolution? What are the different methods followed to implement name resolution? Explain and compare those methods with necessary diagrams.	**5**
5A.	What is sequential consistency? Consider three concurrently executing processes that executes in the order P_1, P_2, and P_3. Four valid sequences are given below. Among this, which one is violating sequential consistency? Why? How signature is related to this? 5 Marks  **Execution 1** P_1: x ← 1; P_1: print(y,z); P_2: y ← 1; P_2: print(x,z); P_3: z ← 1; P_3: print(x,y); *Prints:* 001011 *Signature:* 00 10 11 (a) **Execution 2** P_1: x ← 1; P_2: y ← 1; P_2: print(x,z); P_1: print(y,z); P_3: z ← 1; P_3: print(x,y); *Prints:* 101011 *Signature:* 10 10 11 (b) **Execution 3** P_2: y ← 1; P_3: z ← 1; P_3: print(x,y); P_2: print(x,z); P_1: x ← 1; P_1: print(y,z); *Prints:* 010111 *Signature:* 11 01 01 (c) **Execution 4** P_2: y ← 1; P_1: x ← 1; P_3: z ← 1; P_2: print(x,z); P_1: print(y,z); P_3: print(x,y); *Prints:* 111111 *Signature:* 11 11 11 (d)	**5**

5B.	How Causal Consistency is measured. Explain with an example.	**5**
6A.	With an example, explain Replica Server Placement.	**5**
6B.	Write a program using Map Reduce for finding Word Count in a sentence. Illustrate with an example.	**5**