

# POKHARA UNIVERSITY

Level: Bachelor  
Programme: BE  
Course: Distributed System

Semester: Fall

Year : 2017  
Full Marks: 100  
Pass Marks: 45  
Time : 3hrs.

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

*The figures in the margin indicate full marks.*

***Attempt all the questions.***

1. a) What is Distributed System? What are the design challenges of Distributed System? 7  
b) What is Interface Definition Languages (IDL)? What are the Components of a CORBA environment? 8
2. a) What are the Programming Models for Distributed Application? Explain them. 8  
b) What is Remote Procedure Call? Explain the role of client and Server stub procedures in RPC with diagram. 7
3. a) What is clock synchronization? Explain the Network Time Protocol for physical clock synchronization. 10  
b) Explain Lamport's timestamp algorithm for logical clock synchronization. 5
4. a) What is mutual exclusion in Distributed System? Explain the token based algorithm to obtain mutual exclusion. 8  
b) Explain the Chang and Roberts (Ring Algorithm) election algorithm. 7
5. a) What is the reason for replication in Distributed system? Explain the Passive and Active replication technique for fault tolerant in DS. 8  
b) What are the approaches to fault tolerant? Explain two-phase and three-phase commit protocol. 7
6. a) What is nested transaction? Explain the concurrency control mechanism for distributed transaction. 7  
b) What is distributed deadlocks? Explain the Obermarck's Path Pushing Algorithm for distributed deadlock detection. 8
7. Write short notes on: (**Any two**) 2×5
  - a) Availability & Reliability
  - b) Forward and Backward Recovery
  - c) Application of Distributed System