

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Distributed System

Semester: Fall
Year : 2018
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) Explain why and how middleware plays vital role in distributed system. 7
What kind of transparencies should be provided for the process in distributed system if the process relocates to another node from previous node? Explain with suitable example.
- b) What are the similarities and dissimilarities between RPC and RMI? 8
Explain the term distributed object, remote object, remote interface, proxy and skeleton.
2. a) Explain the architecture of distributed event notification. How static 7
and dynamic object invocation works in CORBA?
- b) Compare and contrast stateful and stateless service in distributed file 8
system (DFS). Explain the File service architecture.
3. a) What are the benefits of logical clock over physical clock? 7
A node transmits a packet at 5:03:13.100. At 5:03:13.600, it receives a message stating that the time is 5:03:08:200. What will the Cristian's algorithm calculate the true current time to be?
- b) What is partial event ordering and total event ordering? How does 8
vector logical clock overcome the shortcomings of Lamport's logical clock?
4. a) What is distributed mutual exclusion? Explain Ricart and Agrawala 7
algorithm for distributed mutual exclusion.

- b) Explain the need of election in distributed system. How can we 8
resolve the multiple active elections at the same time in ring election algorithm?
5. a) Differentiate active and passive replication. Explain the principle of 7
virtual synchronous multicast.
- b) What is meaning of fault tolerant system? Show that Byzantine 8
agreement cannot be always be reached among four processors if two processors are faulty (Lamport's algorithm).
6. a) Differentiate forward and backward recovery with appropriate 7
example. Explain two phase distributed commit protocol with state transition diagram.
- b) Define flat transaction and distributed transaction. Explain different 8
concurrency control mechanisms.
7. Write short notes on: (**Any two**) 2×5
 - a) WWW
 - b) Name Services
 - c) Failure models