POKHARA UNIVERSITY

Level: Bachelor Semester:Fall Year : 2020
Programme: BE Full Marks: 100
Course: Distributed System 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) Differentiate between centralized and distributed system. Explain interaction model of distributed system in short and give an example for your own distributed system. 8
   b) Define socket? Differentiate stream communication and datagram communication. 7
2. a) Define marshalling. Explain different types of marshalling used in distributed system? 7
   b) What are the similarities and dissimilarities between RPC and RMI? Explain the term distributed object, remote object, remote interface, proxy and skeleton. 8
3. a) What is Lamport's definition of concurrent events using the happened before relation?How do vector clocks extend the notion of Lamport's logical clocks? 8
   b) What is consistent cut? Describe snapshot algorithm that can determine global state of distributed system. 7
4. a) Berkely algorithm for clock synchronization needs coordinator. How can we select that coordinator? Describe the algorithm.. 7
   b) Define mutual exclusion. Describe any one non-token algorithm for mutual exclusion. 8
5. a) Differentiate error and fault. How are fault tolerant and replication related to each other? Explain. 7
   b) Define process and channel failure. How can we establish agreement in faulty system (process and channel)? 8
6. a) Consider a banking transaction where a client has to transfer $10 from account A to C and then transfer $20 from B to D.A and B are on separate servers X and Y and accounts C and D are at same server Z. Prepare flat and nested transaction for above scenario. What advantages do we get while using nested transactionover flat transaction. 7
   b) Define the concepts cloud and cluster computing. Explain JINI a distributed system application.
7. Write short notes on: **(Any two)** 2×5
   a) 3 phase commit protocol
   b) Deadlock and starvation
   c) Name server