# **GUJARAT TECHNOLOGICAL UNIVERSITY** BE - SEMESTER-VIII EXAMINATION – WINTER 2015

Subject Code:180701 Subject Name: Distributed Systems Time: 2:30pm to 5:00pm Instructions:

### 1. Attempt all questions.

- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- Q.1 (a) What are the fundamental issues in resource management in distributed system? 07
  - (b) Why is scalability an important feature in the design of a distributed system? 07 Discuss some of the guiding principles for designing a scalable distributed system.
- Q.2 (a) What are the different types of failures and how are they dealt in distributed 07 system?
  - (b) What is datagram? Explain the mechanism of handling multiple datagrams in 07 IPC.

## OR

- (b) Network system protocols are unsuitable for distributed systems. Explain. 07
- Q.3 (a) Enumerate the various issues in clock synchronization. Classify the clock 07 synchronization algorithms and explain Berkeley algorithm with an example.
  - (b) What is remote method invocation? What are the commonalities and 07 differences between RPC and RMI?

### OR

- **Q.3** (a) Compare message passing and distributed shared memory approaches.
  - (b) Define thrashing in DSM. Also explain methods for solving thrashing problem 07 in DSM
- Q.4 (a) What is process migration? List the steps for it. What is the advantage of 07 process migration?
  - (b) What are threads? Enumerate the major differences between threads and 07 processes. Discuss thread synchronization.

#### OR

- Q.4 (a) What is object location? How is it carried out in a distributed system? Discuss 07 various object-locating mechanisms.
  - (b) Explain an algorithm using multicast and logical clocks for mutual exclusion. 07
- Q.5 (a) How does DFS differ from a file system used for a centralized time-sharing 07 system?
  - (b) Explain the DNS name service and bind implementation of DNS. 07

### OR

- Q.5 (a) Explain the DSM system architecture. How does granularity affect DSM system 07 performance?
  - (b) Explain the common approaches to user authentication. What problems are 07 associated with these approaches?

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# Date:09/12 /2015

**Total Marks: 70**