

GUJARAT TECHNOLOGICAL UNIVERSITY
B.E. - SEMESTER – VIII EXAMINATION – OCTOBER 2012

Subject code: 180701

Date: 27/10/2012

Subject Name: Distributed Systems

Time: 02.30pm - 05.00pm

Total Marks: 70

Instructions:

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a) i) What is a distributed system? How a distributed system projects a single system image? 02
ii) Why network system protocols are unsuitable for distributed systems? 02
iii) What is the main difference between stateless and stateful servers? Which servers are used in distributed applications? 03
- (b) i) State the relative merits and demerits of the various process addressing mechanisms. 03
ii) Distinguish different RPC communication protocols. Suggest one example where each protocol is used. 04
- Q.2 (a) Discuss briefly the various issues related to distributed system design. 07
(b) What is ordered message delivery? Compare the various ordering semantics for message-passing. Explain how each of these semantics is implemented. 07
- OR**
- (b) What is RMI? What are the main features of Java RMI? Discuss the various components and the process of RMI execution. 07
- Q.3 (a) Enumerate the various issues in clock synchronization. Classify the clock synchronization algorithms and explain Berkeley algorithm with an example. 07
(b) i) What is logical clock? Discuss its significance in a distributed system. 03
ii) Explain how logical clocks are implemented in a distributed system 04
- OR**
- Q.3 (a) Why mutual exclusion is more complex in distributed systems? Categorize and compare mutual exclusion algorithms. 07
(b) i) What is a deadlock? List the four necessary and sufficient conditions for a deadlock to occur. 03
ii) Discuss various deadlock prevention strategies. 04
- Q.4 (a) Discuss the issues in designing load balancing algorithms. 07
(b) What is process migration? What are the main steps involved in process migration? Explain how freezing of the migrating process is carried out. 07
- OR**
- Q.4 (a) Discuss the issues in designing the DSM systems. 07
(b) What are threads? Enumerate the major differences between threads and processes. Discuss thread synchronization. 07
- Q.5 (a) What is object location? How is it carried out in a distributed system? Discuss various object-locating mechanisms. 07
(b) How the problem is specified using formal model? Specify the problem of mutual exclusion using formal model specification 07
- OR**
- Q.5 (a) Describe the basic concepts related to object naming in distributed systems. 07
(b) How the process is specified using formal model? Define the process execution and admissibility using formal model specification. 07
