

IV B.Tech II Semester Regular Examinations, April/May - 2017

**DISTRIBUTED SYSTEMS**

(Common to Computer Science &amp; Engineering and Information Technology)

**Time: 3 hours****Max. Marks: 70***Question paper consists of Part-A and Part-B**Answer ALL sub questions from Part-A**Answer any THREE questions from Part-B*

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**PART-A (22 Marks)**

1. a) Define heterogeneity. What are the characteristics of heterogeneity? [4]
- b) What is XML Name Space? Explain. [4]
- c) What is meant by atomic broadcast protocol? [4]
- d) What is a thread? [3]
- e) Differentiate consistent cut and inconsistent cut. [3]
- f) Define what it means for an interleaving of two transactions to be serially equivalent? [4]

**PART-B (3x16 = 48 Marks)**

2. a) What are the transparencies which can be observed in distributed system? List the basic transparencies which need to be supported by the distributed system. [10]
- b) How is Distributed OS different from Network OS? [6]
3. a) What are stub and skeleton and why are they needed in remote procedure calls? [8]
- b) What are the design issues of RPC? [8]
4. a) Discuss the system calls which are used to provide the communication between related processes and arbitrary processes. [10]
- b) What is 'registry' in Java RMI? [6]
5. a) What are the different server threading architectures? [8]
- b) How are the performance of threads measured? [8]
6. a) Give the requirements of Distributed file system. [8]
- b) Distinguish between IP and overlay routing for peer-to-peer applications. [8]
7. a) Define concurrency control and explain its need in any transaction. What are the major goals and mechanisms of concurrency control? [8]
- b) Give an example to Nested Transaction. [8]

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**PART-A (22 Marks)**

1. a) Examine Scalability with suitable Example. [4]
- b) What is data marshalling? [4]
- c) What is RMI registry? [3]
- d) What is a multi thread? [3]
- e) Describe the role of coordinator in distributed transaction. [4]
- f) Define ACID properties. [4]

**PART-B (3x16 = 48 Marks)**

2. a) Consider that railway reservation system is implemented using distributed environment. List out the possible types of transparencies need to be incorporated in this system. Justify your answer. [8]
- b) Discuss the design issues in Intranet. [8]
3. How is TCP stream communication and UDP datagram communication done using Sockets? Explain in brief. [16]
4. a) List several ways to invoke a method on a remote object. [8]
- b) How is RMI implemented in Java? Discuss about the interface and parameter passing semantics of Java. [8]
5. What is a micro kernel? What is the role of micro kernel? How does MACH and Chorus work? [16]
6. a) What is Napster peer-to-peer file sharing? [8]
- b) Discuss shortly about Routing overlay. [8]
7. a) How are transactions recovered in distributed systems? What are the tasks or recovery manager?. [8]
- b) What is a Phantom DeadLock? [8]

Code No: RT42051

**R13**

**Set No. 3**

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**PART-A (22 Marks)**

1. a) What is meant by internetworking? [3]
- b) What are the design issues in Intranet? [3]
- c) What are the components of RMI software? [4]
- d) What are the pros and cons of user level threads? [4]
- e) What is clock skew and clock drift? [4]
- f) What is timestamp ordering? [4]

**PART-B (3x16 = 48 Marks)**

2. a) Explain the Differences between intranet and internet. [8]
- b) Describe details about architectural model. [8]
3. a) Explain external data representation and marshalling concepts in detail. [8]
- b) What is group communication? What are the key areas of applications of group communication? Explain the programming model for group communication. [8]
4. a) How is RMI implemented in Java? Discuss about the interface and parameter passing semantics of Java. [8]
- b) What is 'registry' in Java RMI? [8]
5. a) How are the invocations between address done with respect to system call, RPC/RMI with in the same computer and RPC/RMI on different computers? [8]
- b) What is a light weight RPC? Explain in brief. [8]
6. a) Demonstrate Napster file system with examples. [8]
- b) Explain distributed mutual exclusion with suitable algorithms. [8]
7. a) How is recovery of two-phase commit protocol done in a distributed transaction? Explain. [8]
- b) Explain the role of co-ordinator in distributed transaction. [8]

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**PART-A (22 Marks)**

1. a) What is redundancy and why is it used in a distributed system? [4]
- b) What is meant by message ordering? [4]
- c) What is meant by remote object reference and remote reference? [4]
- d) What is a Process and Thread? [3]
- e) What are the two modes of synchronization? Write the format of the modes. [4]
- f) What is meant by dirty read? [3]

**PART-B (3x16 = 48 Marks)**

2. a) Explain the two types of resource management in distributed system. [8]
- b) Give the characteristics and goals of centralized OS, Network OS & Distributed OS [8]
3. a) What is object serialization? How does Java serialize objects? [8]
- b) What is XML? Explain the following with respect to XML:  
Entities, Attributes, Names, Binary Data, CDATA, XML Prolog, Name spaces and schemas. [8]
4. a) What is remote method invocation? What are the commonalities and differences between RPC and RMI? [8]
- b) What are the design issues for RMI? [8]
5. a) What is copy on write? Explain. [8]
- b) What is Asynchronous operation? Explain with respect to CORBA and QRPC. [8]
6. a) Why is global clock important in a distributed system? Why this is an issue? How this can be realized? [8]
- b) Elaborate any three election algorithms. Use diagrams wherever necessary. [8]
7. a) What are the different ways to control concurrency in distributed transactions? Explain with examples. [8]
- b) What is distributed deadlock? Explain with example [8]