Code No: **RT42051** **R13** **Set No. 1**

IV B.Tech II Semester Regular/Supplementary Examinations, April - 2018

DISTRIBUTED SYSTEMS

(Common to Computer Science and Engineering & 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) What is the purpose of fundamental model? [3]
   b) Define group communication. [4]
   c) Describe Object Model. [3]
   d) Distinguish between processes and threads. [4]
   e) Distinguish between Structured versus unstructured peer-to-peer systems. [4]
   f) Write the importance of concurrency control in distributed systems. [4]

PART–B *(3x16 = 48 Marks)*

2. a) State and explain the challenges of distributed systems. [8]
   b) Describe hardware service layers in distributed systems. [8]

3. a) Discuss the issues relating to datagram communication. [8]
   b) Describe IP Multicast communication. [8]

4. a) Explain the implementation of Remote Method Invocation with a neat sketch. [8]
   b) Describe how distributed object are related to distributed system? [8]

5. a) What is the need for protection? Explain various protection mechanisms supported by operating systems. [8]
   b) Describe the architecture for multi-threaded servers. [8]

6. a) Discuss the Napster and its legacy with respect to distributed file systems. [8]
   b) What is the goal of an election algorithm? What are the features required for election algorithms? [8]

7. a) Explain the different ways to control concurrency in distributed transactions? Explain with examples. [8]
   b) What is distributed deadlock? Explain with example. [8]

Code No: **RT42051** **R13** **Set No. 2**

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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

*****

PART–A *(22 Marks)*

1. a) List three properties of distributed systems. [4]
   b) What is meant by Multicast transmission in Distributed Systems? [3]
   c) Define the term 'registry' in Java RMI? [3]
   d) How are the performances of threads measured? [4]
   e) List the characteristics of file systems. [4]
   f) Explain the role of coordinator in distributed transaction. [4]

PART–B *(3x16 = 48 Marks)*

2. a) Explain distributed system with examples. [8]
   b) What are software services provided by distributed systems? Explain about its software layers. [8]

3. a) Differentiate TCP stream communication and Client Server Communication. [8]
   b) Explain how the Multicast messages provide a useful infrastructure for constructing distributed systems. [8]

4. a) Elaborate the term RPC with a neat example. [8]
   b) Describe events and its types and explain notifications in the remote invocation. [8]

5. a) Explain how operating system layer support the common middleware. [8]
   b) What do you mean by thread synchronization? How to implement this in multithreaded distributed systems? [8]

6. a) Write and explain centralized algorithm for implementing mutual exclusion in distributed systems. [8]
   b) Explain distributed mutual exclusion with suitable algorithms. [8]

7. a) Explain the basic architectural model for the management of Replicated data with a neat diagram. [8]
   b) How is recovery of two-phase commit protocol done in a distributed transaction? Explain. [8]

Code No: **RT42051** **R13** **Set No. 3**

IV B.Tech II Semester Regular/Supplementary Examinations, April - 2018

DISTRIBUTED SYSTEMS

(Common to Computer Science and Engineering & 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) Why would you design a system as a distributed system? [4]
   b) Write about the characteristics of protocols in a distributed system. [4]
   c) Why distributed garbage collection is important? Discuss. [3]
   d) What are the pros and cons of user level threads? [4]
   e) Write the differences between distributed file system and centralized file system. [3]
   f) Explain about the requirements for replicated data. [4]

PART–B *(3x16 = 48 Marks)*

2. a) Explain in detail Architectural models. [10]
   b) Explain the concept of resource sharing with client-server communication in distributed systems. [6]

3. a) What the characteristics are of inter process communication? Explain. [8]
   b) Write short notes on
   (i) Marshalling (ii) Sockets [8]

4. a) Differentiate between RMI and Remote procedure call with respect to distributed systems. [8]
   b) Describe the design implementation of java RMI. [8]

5. a) Discuss important operating systems services that are essential for supporting the development of concurrent and scalable distributed systems. [8]
   b) Explain how a new process can be created in distributed systems with an example. [8]

6. a) What are the main tasks of Routing Overlays? Discuss [8]
   b) Explain the distributed file service architecture with a neat sketch. [8]

7. a) Write about distributed deadlocks. How to prevent deadlocks in distributed Systems. [8]
   b) Write about active and passive replications. [8]

Code No: **RT42051** **R13** **Set No. 4**

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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) List the design requirements for distributed architectures. [4]
   b) What is meant by external data representation? [3]
   c) Define the term Remote produce call? Explain. [3]
   d) Describe Operating System Layer. [4]
   e) Give the requirements of Distributed file system. [4]
   f) Draw the transaction system architecture in distributed systems? [4]

PART–B *(3x16 = 48 Marks)*

2. a) What are different benefits of resource sharing? Explain about its significance. [8]
   b) How failures are recovered in distributes system? [8]

3. a) Explain the API for the Internet Protocols. [8]
   b) What are characteristics of the TCP stream communication? [8]

4. a) Discuss about the various design issues for remote method invocation. [9]
   b) With neat sketch, explain the functional components of distributed object model. [7]

5. a) Describe about the operating system address space of threads in a distributed system. [8]
   b) Explain the architecture of server threads. Give its applications. [8]

6. a) Write the requirements of distributed mutual exclusion. How to implement this using recart-agarwala algorithm. [8]
   b) Elaborate any three election algorithms. Use diagrams wherever necessary. [8]

7. a) Explain the passive or primary-backup model of replication for fault tolerance. [8]
   b) Write rules for connecting of nested transaction. [8]