

DISTRIBUTED SYSTEMS

Paper Code: ETIT-430
Paper: Distributed Systems

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INSTRUCTIONS TO PAPER SETTERS:

MAXIMUM MARKS: 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: To understand networking, operating systems and various issues.

UNIT-I

Fundamentals of Distributed Computing:

Architectural models for distributed and mobile computing systems, Basic concepts in distributed computing.

Distributed Operating Systems:

Overview, network operating systems, Distributed file systems, Middleware, client/server model for computing.

[T1, T2][No. of Hours 12]

UNIT-II

Communication:

Layered protocols, RPC, RMI, Remote objects. Basic Algorithms in Message Passing Systems, Leader Election in Rings, and Mutual Exclusion in Shared Memory, Message Passing, PVM and MPI.

Process Concepts:

Threads, Clients and Servers, Code migration, Agent based systems, Distributed objects, CORBA, Distributed COM.

[T1 [No. of Hours 10]

UNIT-III

Synchronization:

Clock synchronization, Logical clocks, Election algorithms, Mutual exclusion, Distributed transactions, Naming concepts, Security in distributed systems

Distributed Databases:

Distributed Data Storage, Fragmentation & Replication, Transparency, Distributed Query Processing and Optimization, Distributed Transaction Modeling and concurrency Control, Distributed Deadlock, Commit Protocols.

[T2][No. of Hours 11]

UNIT-IV

Processing:

Basic Concepts: Introduction to processing, processing terminology, Design of algorithms, Design of Parallel Databases, Parallel Query Evaluation.

[T1, T2][No. of Hours 11]

Text Books:

- [T1] Tannenbaum, A, Maarten Van Steen. Distributed Systems, Principles and Paradigm, Prentice Hall India, 2002
- [T2] Elmarsi, Navathe, Somayajulu, Gupta, "Fundamentals of Database Systems", 4th Edition, Pearson Education, 2007

Reference Books:

- [R1] Tanenbaum, A, "Modern Operating Systems", 2nd Edition, Prentice Hall India, 2001.
- [R2] Singhal and Shivaratri, "Advanced Concepts in Operating Systems", McGraw Hill, 1994
- [R3] Attiya, Welch, "Distributed Computing", Wiley India, 2006
- [R4] Coulouris, Dollimore and Kindberg, "Distributed Systems", Pearson, 2009.