
MANIPAL INSTITUTE OF TECHNOLOGY
(Constituent Institute of Manipal University)
MANIPAL-576104

VII th Sem B.E. (CSE) DEGREE MAKE-UP EXAMINATION
DISTRIBUTED SYSTEMS (CSE 401)

TIME: 3 HOURS **MAX.MARKS: 50**

Instruction to Candidate
- Answer **ANY FIVE** full questions. (Each carry equal marks)
- Missing data can be suitably assumed.

1A. Discuss any five main important challenges of constructing a distributed system. (5)
1B. List out Omission and Arbitrary failures with proper description. (3)
1C. A user arrives at a railway station that she has never visited before, carrying a PDA that is capable of wireless networking. Suggest how the user could be provided with information about the local services and amenities at that station, without entering the station's name or attributes. What technical challenges must be overcome? (2)

2A.With neat sketch explain various threading architectures for a server. Mention its disadvantages if any. (5)
2B.Discribe three types of RPC exchange protocols, according to messages passed in these protocols. (3)
2C.Discuss the invocation semantics that can be achieved when the request-reply protocol is implemented over a TCP/IP connection, which guarantees that data is delivered in the order sent, without loss or duplication. Take into account all of the conditions causing a connection to be broken. (2)

3A.Discuss on Lamport logical clock and vector clocks with a neat graph. (5)
3B.Explain the role of various components in RPC in the context of procedural language with a neat diagram. (3)
3C. With an example explain why iterative navigation is necessary in a name service in which different name spaces are partially integrated, such as the file naming scheme provided by NFS. (2)
4A.Define atomic commit protocol.With neat sketch explain communication phases in two phase commit protocol. (1+3)
4B.What do you mean by concurrency control in distributed transactions ? Illustrate two well known problems of concurrent transactions :"lost update" and "inconsistant retrievals" problems. (3)
4B. Explain the different steps involved in edge-chasing algorithm with suitable example. (3)

5A.Discuss on (a) Strict Consistency (b) Weak Consistency (2+2)
5B.Write short note on Directory services and Discovery services. (2+2)

5C.Consider a personal mailbox for a mobile user, implemented as part of world wide-area distributed database. What kind of client centric consistency would be most appropriate? (2)

6A.Discuss on Process Resilience with respect to the design issues, Flat versus Hierarchical Groups and Group membership. (5)
6B. Briefly explain Implementing “Virtual Synchrony” (3)
6C.What is Phantom Deadlocks? Discuss. (2)

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