

COLLEGE OF ENGINEERING, PUNE

(An autonomous Institute of Government of Maharashtra)

End Semester Examination

Subject :- (CT 412) Distributed Systems

Max. Time :- 3 Hrs

Class:- B.Tech (Information Technology)

Max. Marks:- 100

Instructions :

1. Attempt all questions
2. Figures to the right indicate full marks
3. Draw neat and labelled diagram wherever necessary
4. Assume suitable data, if necessary

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- Q 1 a) Explain Message Ordering and Scalability design issues in group communication. 10
b) What are advantages of distributed systems over isolated computers. 10
- Q 2 a) Compare three mutual exclusion algorithms wrt Messages per entry/exit , delay before entry (in message times) and major problems. 10
b) For Cristian's algorithm, what should be the maximum time period after which other machines should ask time server for its current time ? What are problems in using this algorithm ? How these problems are solved? 10
- Q 3 State and explain various ways of dealing with shared files in distributed systems. 10
OR
Explain with example Gifford's scheme for voting.
- Q 4 With appropriate diagram, explain NFS layer structure. 10
- Q 5 a) If a deadlock gets detected by CMH algorithm in a distributed system then how will you break the deadlock ? 6
b) A system uses preemption method for deadlock prevention. Suppose there are five transactions T1, T2, T3, T4 and T5, their timestamps are t1, t2, t3, t4 and t5 respectively ($t1 > t2 > t3 > t4 > t5$). Explain what happens if : 4
1. The system uses the wait-die scheme and T2 requests for a resource held by T5.
2. The system uses the wait-die scheme and T4 requests for a resource held by T1.
3. The system uses the wait-wound scheme and T3 requests for a resource held by T4.
4. The system uses the wait-wound scheme and T5 requests for a resource held by T2.
- Q 6 Write short notes on **any three** of the following : 30
a) Cluster computing
b) General organization of a JavaSpaces in Jini
c) Server-side CGI programs.
d) static and dynamic interfaces in CORBA