SARDAR PATEL INSTITUTE OF TECHNOLOGY

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(Autonomous Institute Affiliated to University of Mumbai)

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India

DEPARTMENT OF COMPUTER ENGINEERING AND IT

END SEMESTER EXAMINATION

CS304: Distributed Computing

Max. Marks: 100 Time: 3 hours

Instructions

- Carefully read the question and the weight age given, and accordingly strategies your answers. *(Don't write things which are not asked)*
- Make suitable assumptions, if required. Mention those categorically.
- All Questions are Compulsory.
- New Question (not a sub-question) be solved from a new page.
- You may choose any sequence of questions while writing the answers, however, all sub questions must be written in a sequence.
- The last two columns are related with Outcome Based Education. (You don't bother)

Q. No		Questions	MM	BL	CO
Q1	A	What is meant by transparency in distributed systems? What are the kinds of transparency exist in distributed systems? Explain each one with examples	10	B2	C1
	B	i. What is a role of middleware in distributed systems? ii. Many networked systems are organized in terms of a back office and a front office. How does organizations match with the coherent view we demand for a distributed system? **OR** Compare Distributed OS, Network OS, and Middleware based distributed systems with respective following parameters: i. Degree of transparency ii. Same OS on all node iii. No. of copies of OS iv. Basis for communication v. Resource management vi. Scalability vii. Openness	10	B2	C1
Q2	A	What is distributed object? Draw the organization of distributed object and explain its components.	10	B3	C2

	B	What is group communication? Give any two key application area of group communication in distributed systems.	10	B2	C2
Q3	A	In this problem you are to compare reading a file using a single-threaded file server and a multithreaded server. It takes 15 msec to get a request for work, dispatch it, and do the rest of the necessary processing, assuming that the data needed are in a cache in main memory. If a disk operation is needed, as is the case one-third of the time, an additional 75 msec is required, during which time the thread sleeps. How many requests/sec can the server handle if it is single threaded? If it is multithreaded?	10	B3	C3
	B	i. What are reason for migrating code? ii. Describe the following a) Code segment b) Resource segment and c) Execution segment	10	B1	C3
Q4	A	Consider the behavior of two machines in a distributed system. Both have clocks that are supposed to tick 1000 times per millisecond. One of them actually does, but the other ticks only 990 times per millisecond. If UTC updates come in once a minute, what is the maximum clock skew that will occur? OR Define i. Clock drift ii. Clock skew. Show the relation between clock time and UTC when clocks tick at different rates.	10	B3	C4
	B	How Mutual Exclusion is handled in Distributed System? Compare the Centralized, Distributed and Token Ring Algorithms with respect to Message per entry/exit , Delay before entry (in message times), Problems	10	B4	C4
Q5	A	What are the reason for replication? What are the two issues in replication? If we can think of replicating a remote object across several machine, we need to solve the problem of how to protect the object against simultaneous access by multiple clients. What are the two solution to this problem?	10	B3	C3
	B	What is weak consistency model? Write down its three properties. Using time diagram show the valid and invalid sequence of event.	10	B3	C3
Good Luck !!					