

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2025

Course: B.Tech in Computer Engineering and Allied

Semester: VII

Subject Code & Name: Distributed Systems (BTCOE703B)

Max Marks: 60

Date: 31st January 2026

Duration: 3 Hr.

Instructions to the Students:

- 1 Each question carries 12 marks.
- 2 Question No. 1 will be compulsory and include objective-type questions.
- 3 Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.
- 4 The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
- 5 Use of non-programmable scientific calculators is allowed.
- 6 Assume suitable data wherever necessary and mention it clearly.

Marks

Q. 1 Objective type questions. (Compulsory Question)

12

- 1 The mechanism used in BSD UNIX for local inter-process communication using queues, semaphores, and shared memory is called _____.
a) POSIX threads b) System V IPC c) DCE IPC d) RPC 1
- 2 Which DSM parameter determines the size of shared data transferred?
a) Granularity b) Consistency c) Replication d) Synchronization 1
- 3 Which call semantic may result in multiple executions during failures?
a) Exactly-once b) At-most-once c) At-least-once d) Never-execute 1
- 4 The scheduler responsible for system-wide decisions is called _____.
a) Local scheduler b) Global scheduler c) Thread manager d) Dispatcher 1
- 5 Which of the following is not a desirable feature of a good message-passing system?
a) Transparency b) Reliability c) Tight coupling d) Scalability 1
- 6 Which entity represents a lightweight execution unit?
a) Process b) Job c) Task d) Thread 1
- 7 The language used to specify RPC interfaces independent of programming languages is _____.
a) API b) IDL c) XML d) RPC-C 1
- 8 Replication improves availability but increases update complexity.
a) Depends on cache b) Depends on Memory
c) Depends on semantics d) None of the above 1
- 9 The abstraction that hides hardware and network details in distributed systems is known as _____.
a) Kernel b) Middleware c) Scheduler d) Monitor 1
- 10 Which component of RPC hides communication details from the programmer?
a) Stub b) Binder c) Server d) Protocol 1

11	The consistency model that guarantees a single global order of memory operations is _____.	1
	a) Causal consistency b) Sequential consistency	
	c) Weak consistency d) Eventual consistency	
12	Which RPC feature allows a remote call to resemble a local function call?	1
	a) Procedural abstraction b) Message encapsulation	
	c) Asynchronous invocation d) Port mapping	
Q. 2	Solve the following.	12
A)	State the fundamental goals of a distributed computing system. Identify different architectural models used in distributed computing.	6
B)	Explain the need for synchronization in distributed communication.	6
Q.3	Solve the following.	12
A)	Identify basic elements involved in an RPC interaction. Explain how RPC hides network communication details.	6
B)	List advantages of RPC over low-level message passing. Explain server lifecycle management in RPC frameworks.	6
Q. 4	Solve Any Two of the following.	12
A)	Identify components of DSM architecture. Explain design challenges in implementing DSM.	6
B)	Explain memory coherence maintenance.	6
C)	Define logical clocks. Explain clock synchronization techniques.	6
Q.5	Solve Any Two of the following.	12
A)	Define global scheduling. Explain resource management challenges.	6
B)	Define load balancing. Explain load balancing approaches.	6
C)	What is process migration? Explain process migration benefits.	6
Q. 6	Solve Any Two of the following.	12
A)	What is file sharing semantics? Explain file sharing semantics.	6
B)	List design principles of DFS and explain DFS design principles.	6
C)	Define file caching. Explain caching schemes in DFS.	6

*** End ***