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## Nadar Saraswathi College of Engineering and Technology

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

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### Question Bank for the Units – I to V

SEM-03

V Semester – B.E. / B.Tech.

BR-104

Department of Artificial Intelligence and Data Science

CS

CS3551 – DISTRIBUTED COMPUTING

### Part-A (10 x 2 = 20 Marks)

### UNIT – I

No	Question	Level	Competence	Mark
1	<b>Describe</b> parallelism/concurrency in distributed systems.	BTL 2	Understand	2
2	<b>Compare</b> centralized and distributed system.	BTL 4	Analyze	2
3	<b>Describe</b> parallelism/concurrency in distributed systems.	BTL 2	Understand	2
4	<b>What</b> is happened before or causal precedence?	BTL 3	Apply	2
5	<b>Illustrate</b> five reasons why to build distributed System.	BTL 3	Apply	2
7	<b>Classify</b> the security challenges faced by the distributed systems.	BTL 4	Analyze	2
8.	What is the significance of distributed system?	BTL-1	Remember	2
9.	<b>How</b> distributed processes are executed in distributed Computing Environment?	BTL-1	Remember	2
10.	What is meant by group communication?	BTL-1	Remember	2

### UNIT-II

1	<b>What</b> are the message ordering paradigms?	BTL 1	Remember	2
2	<b>State</b> the property for causal delivery of messages.	BTL 4	Analyze	2
3	<b>Sketch</b> an interpretation in terms of a cut.	BTL 2	Understand	2
4	<b>What</b> is consistent cut?	BTL 1	Remember	2
5	<b>Outline</b> marker sending rule.	BTL 2	Understand	2
6	<b>What</b> is marker receiving rule?	BTL 1	Remember	2
7	What is clocks drift rate?	BTL 3	Apply	2
8	<b>What</b> is meant by group communication?	BTL 1	Remember	2
9	<b>What</b> are the forms of message ordering paradigms?	BTL 1	Remember	2
10	<b>Differentiate</b> between synchronous and asynchronous communication.	BTL 1	Remember	2
11	<b>State</b> the issues in Clocks.	BTL 1	Remember	2
<b>UNIT-III</b>				
1	<b>What</b> are the three basic approaches for implementing distributed mutual exclusion?	BTL 1	Remember	2
2	<b>Explain</b> idle token.	BTL 4	Analyze	2
3	<b>Define</b> the two design issues for suzuki–kasami’s.	BTL 1	Remember	2
4	<b>How</b> ricart–agrawala algorithm achieves mutual exclusion.	BTL 2	Understand	2
5	<b>Develop</b> the facts of global state detection-based deadlock detection?	BTL 6	Create	2
6	<b>Define</b> the features of Mitchell and Merritt’s algorithm.	BTL 1	Remember	2
7	<b>Name</b> the two types of messages used in Ricart-Agrawala's algorithm	BTL 1	Remember	2
8	<b>Which</b> are the three basic approaches for implementing distributed mutual exclusion?	BTL 3	Apply	2
9	<b>What</b> do you mean by deadlock avoidance?	BTL 1	Remember	2
<b>UNIT-IV</b>				
1	<b>Define</b> the terms: rollback propagation.	BTL 1	Remember	2
2	<b>Describe</b> local check pointing?	BTL 2	Understand	2

3	Give the use of piggybacking.	BTL 2	Understand	2
4	Formulate the different types of messages.	BTL 6	Create	2
5	Discuss the two types of log storage?	BTL 2	Understand	2
6	What are the two kinds of checkpoints for checkpoint algorithm?	BTL 1	Remember	2
7	Write the purpose of using checkpoints.	BTL 1	Remember	2
8	What is the difference between agreement and consensus problem?	BTL 2	Understand	2
UNIT-V				
1	Define cloud computing	BTL1	Remember	2
2	Define layer and types of cloud	BTL1	Remember	2
3	Explain the various characteristics of cloud	BTL1	Remember	2
4	Define the Benefits of cloud model	BTL2	Understand	2
5	Explain the Challenges of cloud	BTL2	Understand	2
6	List out cloud computing platforms	BTL3	Applying	2
7	What is cloud service?	BTL 1	Remember	2
8	Explain about virtual machines.	BTL 3	Applying	2
Part – B ( 5 x 16 = 80 Marks) or Part – B ( 5 x 13 = 65 Marks) and Part C				
UNIT- I				
1	Explain the characteristics of distributed systems. (7) List the features of distributed systems(6)	BTL 4	Analyze	13
2	Write a brief note on the key algorithmic challenges in distributed computing. (13)	BTL 1	Remember	13
3	What are the processing modes of flynn taxonomy? (7) Examine various MIMD architectures in terms of coupling.(6)	BTL 1	Remember	13
4	Discuss the primitives for distributed communication.(13)	BTL 3	Apply	(13)
5	What are the processing modes of flynn taxonomy? (7) Examine various MIMD architectures in terms of coupling.(6)	BTL 1	Remember	(13)

6	<b>Summarize</b> the distributed computer system components (7) Explain the requirements of distributed systems (6)	BTL 5	Evaluate	(13)
<b>UNIT- II</b>				
1	<b>Summarize</b> NTP for synchronizing system of physical clocks in distributed systems.(13)	BTL 4	Analyze	(13)
2	<b>Identify</b> and explain the basic properties of scalar and vector time.(13)	BTL 3	Apply	(13)
3	<b>Analyze</b> in detail about the centralized algorithm to implement total order and causal order of messages. (13)	BTL 4	Analyze	(13)
4	<b>Discuss</b> in detail about the distributed algorithm to implement total order and causal order of messages. (13)	BTL 2	Understand	(13)
5	<b>Explain</b> chandy and lamport algorithm (13)	BTL 1	Remember	(13)
6	i) <b>Design</b> FIFO and non-FIFO executions.(7) ii)Discuss on causally ordered executions (6)	BTL 6	Create	(13)
<b>UNIT-III</b>				
1	i) <b>List and Explain</b> the following properties to satisfy a mutual exclusion algorithm. (7) <b>What</b> are the performance metrics of mutual exclusion algorithms? (6)	BTL 1	Remember	(13)
2	<b>Explain</b> about the lamport distributed mutual exclusion algorithm.(13)	BTL 5	Evaluate	(13)
3	<b>Illustrate</b> with a case study explain ricart–agrawala algorithm. (13)	BTL 3	Apply	(13)
4	i) <b>State</b> the Example of a WFG. (7) ii)Discuss the Issues in deadlock detection.(6)	BTL 2	Understand	(13)
5	<b>Formulate</b> the mitchell and merritt’s algorithm for the single-resource model. (13)	BTL 6	Create	(13)
6	<b>Conclude</b> in brief about knapp’s classification of distributed deadlock detection algorithms.(13)	BTL 4	Analyze	(13)
<b>UNIT- IV</b>				
1	<b>Elaborate</b> the various checkpoint-based rollback-recovery techniques.(13)	BTL 6	Create	(13)

2	<b>Describe</b> the pessimistic logging , optimistic logging and casual logging.(13)	BTL 4	Analyze	(13)
3	i) <b>Summarize</b> the koo–toueg coordinated check pointing algorithm.(7) Explain the rollback recovery algorithm. (6)	BTL 2	Understand	(13)
4	<b>Demonstrate</b> in detail about the juang–venkatesan algorithm for asynchronous check pointing and recovery.(13)	BTL 3	Apply	(13)
5	<b>Explain</b> agreement in (message-passing) synchronous systems with failures.(13)	BTL 5	Evaluate	(13)
6	Give byzantine agreement tree algorithm and illustrate with an example. (13)	BTL 1	Remember	(13)
<b>UNIT- V</b>				
1	Explain in detail about the cloud deployment models	<b>BTL1</b>	<b>Remembering</b>	13
2	Describe the driving factors of cloud in details	<b>BTL2</b>	<b>Understanding</b>	13
3	Explain the concept of virtualization	<b>BTL2</b>	<b>Understanding</b>	13
4	Define load balancing and replication	<b>BTL4</b>	<b>Analyzing</b>	13
5	Discuss the various challenges of cloud platform with an example	<b>BTL5</b>	<b>Evaluating</b>	13
6	Explain in detail about the cloud service models	<b>BTL6</b>	<b>Creating</b>	13
<b>PART C (16 A OR B) 15 MARKS</b>				
<b>UNIT 1</b>	<b>Explain</b> about the synchronous versus asynchronous executions in a message-passing system with examples.	BTL 2	Understand	(15)
<b>UNIT 1</b>	<b>Illustrate</b> five reasons why to build distributed System and explain its algorithmic challenges	BTL 2	Understand	(15)
<b>UNIT 2</b>	What good is a distributed snapshot when the system was never in the state represented by the distributed snapshot? <b>Give an application</b> of distributed snapshots.	BTL 5	Evaluate	(15)
<b>UNIT 2</b>	<b>Create</b> a simplified implementation of synchronous and asynchronous order. Develop the for the process $P_i, 1 \leq i \leq n$ .	BTL 6	Create	(15)
<b>UNIT 3</b>	<b>Express</b> with neat sketch and explain chandy–misra–haas algorithm for the AND model and OR model.	BTL 2	Understand	(15)
<b>UNIT 3</b>	<b>Examine</b> suzuki–kasami’s broadcast algorithm.	BTL 1	Remember	(15)
<b>UNIT 4</b>	<b>Design</b> a system model of distributed system consisting of four	BTL 6	Create	(15)

	processes and explain the interactions with the outside world.			
<b>UNIT 4</b>	Consider the following simple check pointing algorithm. A process takes a local checkpoint right after sending a message. <b>Create</b> that the last checkpoint at all processes will always be consistent. What are the trade-offs with this method?	BTL 6	Create	<b>(15)</b>
<b>UNIT 5</b>	Explain the cloud computing features of Scalability and Elasticity –Monitoring	BTL 2	Understand	<b>(15)</b>
<b>UNIT 5</b>	Cloud Services and Platforms: Compute Services – Storage Services – Application Services	BTL 2	Understand	<b>(15)</b>

**L1: Knowledge, L2: Comprehension, L3: Application, L4: Analysis, L5: Evaluation, L6: Synthesis**

<b>COs</b>	<b>Outcomes</b>	<b>Bloom's Taxonomy</b>
<b>C504.1</b>	To introduce the computation and communication models of distributed systems	<b>Remember</b>
<b>C504.2</b>	To illustrate the issues of synchronization and collection of information in distributed systems	<b>Understand</b>
<b>C504.3</b>	To describe distributed mutual exclusion and distributed deadlock detection techniques	<b>Apply</b>
<b>C504.4</b>	To elucidate agreement protocols and fault tolerance mechanisms in distributed systems	<b>Analyse</b>
<b>C504.5</b>	To explain the cloud computing models and the underlying concepts	<b>Understand</b>