Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering
End Sem Examination Dec-2023
CS3EL04 Distributed Systems

Programme: B.Tech. Branch/Specialisation: CSE All

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. In distributed system, each processor has its own _____. **1**

(a) Local memory (b) Clock

(c) Both (a) and (b) (d) None of these

ii. Which of the following is not an Advantages of Distributed Systems? **1**

(a) All the nodes in the distributed system are connected to each other

(b) It can be scaled as required

(c) Failure of one node does not lead to the failure of the entire distributed system

(d) Some messages and data can be lost in the network while moving from one node to another

iii. The difference in the time value of two Clocks is called_____. **1**

(a) Clock drift (b) Clock skew

(c) Clock synchronization (d) Difference clock

iv. Which algorithms are used to handle mutual exclusion in distributed systems? **1**

(a) Centralized (b) Distributed

(c) Token ring (d) All of these

v. A message broker acts as an application-level gateway in a _____. **1**

(a) Message-queuing system (b) RPC

(c) IPC (d) Message Streaming System

vi. Processes on the remote systems are identified by _____. **1**
(a) Host ID (b) Host name and identifier
(c) Identifier (d) Process ID

vii. Which is not a major component of a file system? **1**
(a) Directory service
(b) Authorization service
(c) Shadow service
(d) System service

viii. What are characteristic of NFS protocol? **1**
(a) Search for file within directory
(b) Read a set of directory entries
(c) Manipulate links and directories
(d) All of these

ix. If one site fails in distributed system then _____. **1**
(a) The remaining sites can continue operating
(b) All the sites will stop working
(c) Directly connected sites will stop working
(d) None of these

x. In distributed systems, link and site failure is detected by _____. **1**
(a) Polling (b) Handshaking
(c) Token passing (d) None of these

Q.2 i. Differentiate peer-to-peer (P2P) and client-server systems. **2**
ii. Differentiate network OS and distributed OS. **3**
iii. List some of the limitation of distributed systems. **5**
OR iv. Explain different types of architectural models of distributed system. **5**

Q.3 i. Is there any difference between RPC & RMI? Explain in detail. **2**
ii. Where do you need RPC? Explain RPC with suitable example. **8**
OR iii. Explain CORBA Service in detail. **8**

Q.4 i. Explain the need of nested distributed transactions. **3**
ii. Explain ring algorithm with diagram. **7**
OR iii. What is the difference between logical clock and global clock? Explain Lamport's Logical Clock algorithm in detail. **7**

Q.5 i. What are the distributed file system requirements? **3**
ii. Describe the mechanism of deadlock detection in distributed system. **7**
OR iii. Explain the concepts of atomic commit protocols, focusing on the characteristics and mechanisms of one-phase commit and two-phase commit protocols. **7**

Q.6 Write a short note on any two:
i. Components of load distributing algorithm. **5**
ii. Faults and failures in distributed system. **5**
iii. Distributed database and multimedia system **5**

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Marking Scheme
Distributed Systems-CS3EL04 (T)

Q.1	i)	c) both local memory and clock		**1**
	ii)	d) Some messages and data can be lost in the network while moving from one node to another		**1**
	iii)	b) Clock Skew		**1**
	iv)	c) Token ring		**1**
	v)	a) Message queuing system		**1**
	vi)	b) host name and identifier		**1**
	vii)	c) Shadow service		**1**
	viii)	d) All of the mentioned		**1**
	ix)	a) the remaining sites can continue operating		**1**
	x)	b) handshaking		**1**
Q.2	i.	Difference	(1 Mark*2)	**2**
	ii.	Difference	(1 Mark*3)	**3**
	iii.	The limitation of Distributed Systems	(1 Mark*5)	**5**
OR	iv.	Different model listing Explanation	1 Mark 4 Marks	**5**
Q.3	i.	For Answer For justification of answer	1 Mark 2 Marks	**3**
	ii.	For applicability of RPC. For RPC explanation	2 marks 5 marks	**7**
OR	iii.	Explain CORBA Service in detail.-	(As per explanation)	**7**
Q.4	i.	The need of nested distributed transactions.	(As per explanation)	**3**
	ii.	For diagram For explaining ring algorithm	2 Marks 5 Marks	**7**
OR	iii.	for difference for Lamport's Logical Clock algorithm	3 Marks 4 marks	**7**
Q.5	i.	The Distributed file system requirements	(1 Mark*3)	**3**
	ii.	The mechanism ……. system-	(As per explanation)	**7**
OR	iii.	For atomic commit protocol One phase commit protocol Two phase commit protocol	2 Marks 2.5 Marks 2.5 Marks	**7**
Q.6		Attempt any two:		
	i.	Components of load distributing algorithm-	(As per explanation)	**5**
	ii.	Faults in distributed system Failure in distributed system	2.5 Marks 2.5 marks	**5**
	iii.	Distributed database Distributed multimedia system	2.5 Marks 2.5 Marks	**5**

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