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

Enrollment No.....

Faculty of Engineering

End Sem Examination Dec 2024

CS3EW05 Distributed System

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.

			Marks	BL	PO	CO	PSO
Q.1	i.	Which characteristics are not used to access distributed systems? (a) Heterogeneity (b) Scalability (c) Failure Handling (d) None of these	**1**	1	1,2,5	1	
	ii.	A limitation of distributed systems is- (a) Increased reliability (b) Complex synchronization issues (c) Reduced fault tolerance (d) High centralization	**1**	1	1,2,5	1	
	iii	CORBA stands for- (a) Classified Object Request Broker Architecture (b) Common Object Response Broker Architecture (c) Common Object Request Broker Architecture (d) Common Object Request Broker Application	**1**	1	1,2,3, 4,5, 6,11	4	
	iv	Which of the following parameter passing doesn't exist in RPC? (a) Pass by value (b) Pass by reference (c) Both (a) & (b) (d) None of these	**1**	1	1,2,5	1	
	v.	Which election algorithm ensures that the process with the highest ID becomes the leader? (a) Bully algorithm (b) Ring algorithm (c) Token ring algorithm (d) Lamport's algorithm	**1**	1	1,2,3, 5,6	3	

P.T.O.

vi.	Which logical clock algorithm is often used to establish a partial ordering of events in distributed systems? (a) Lamport's logical clock (b) Physical clock (c) Network time protocol (d) Real-time clock	**1**	1	1,2,3, 5,6	3
vii.	NFS stands for- (a) Network File Server (b) New File System (c) Network File System (d) National File Service	**1**	1	1,2,5, 6,9	2
viii.	All sub transactions ..… in flat transactions. (a) Cannot be nested (b) Execute in different systems (c) Commit or abort independently (d) Are rolled back if one fails	**1**	1	1,2,5, 6,9	2
ix.	Which type of load distributing algorithm does not consider the current state of the system? (a) Static (b) Adaptive (c) Dynamic (d) Reactive	**1**	1	1,2,3, 4,5,6, 11	4
x.	In a distributed database, data replication is used to- (a) Improve consistency (b) Increase availability (c) Reduce redundancy (d) Eliminate latency	**1**	1	1,2,5	1

Q.2	i. What is distributed system?	**2**	1	1,2,5	1
	ii. What are the differences between centralized system and distributed system?	**3**	2	1,2,3, 4,5,6, 11	4
	iii What are the types of distributed systems? Explain.	**5**	2	1,2,5, 6,9	2
OR	iv. What are the common characteristics of distributed system? Explain.	**5**	2	1,2,5	1
Q.3	i. What is remote procedure call?	**2**	1	1,2,5	1
	ii. What are the major components of CORBA architecture, and how do they interact to provide distributed object services? Highlight its strengths and weaknesses.	**8**	4	1,2,3, 4,5,6, 11	4
OR	iii What is Remote Method Invocation? Explain working of RMI with architectural diagram.	**8**	3	1,2,3, 4,5,6, 11	4

Q.4	i. What is logical clock in distributed systems?	**3**	1	1,2,3, 5,6	3
	ii. Explain Lamport's logical clock algorithm with example.	**7**	2	1,2,3, 5,6	3
OR	iii Explain the token-ring algorithm with example.	**7**	2	1,2,3, 5,6	3
Q.5	i. What is naming system in distributed file system?	**4**	1	1,2,5, 6,9	2
	ii. What is distributed file system? Describe key services of DFS.	**6**	2	1,2,5, 6,9	2
OR	iii Define distributed deadlocks and discuss strategies for detecting and resolving distributed deadlocks in a distributed file system.	**6**	3	1,2,5, 6,9	2
Q.6	Attempt any two:				
	i. Explain the key design issues for processor allocation algorithms.	**5**	2	1,2,5, 6,9	2
	ii. Explain the differences between static and dynamic load balancing algorithms.	**5**	2	1,2,3, 4,5,6, 11	4
	iii Define multimedia database and distributed database system.	**5**	1	1,2,5	1

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Marking Scheme
CS3EW05 Distributed System

Q.1	i)	d) None of the above	**1**
	ii)	b) Complex synchronization issues	**1**
	iii)	c) Common Object Request Broker Architecture	**1**
	iv)	b) Pass by reference	**1**
	v)	a) Bully Algorithm	**1**
	vi)	a) Lamport's Logical Clock	**1**
	vii)	c) Network File System	**1**
	viii)	d) are rolled back if one fails	**1**
	ix)	a) Static	**1**
	x)	b) Increase availability	**1**
Q.2	i.	What is distributed system?	**2**
		Definition -2 marks	
	ii.	Differences between centralized system and distributed system? -1 mark of each (3 marks)	**3**
	iii.	What are the types of distributed systems? -1 mark of each (3 marks)	**5**
		Explanation. - 2 marks	
OR	iv.	Characteristics of distributed system? -0.5 mark of each (2.5 marks)	**5**
		Explanation of each - 2.5 marks	
Q.3	i.	What is RPC?	**2**
		Definition -2 marks	
	ii.	Major components of CORBA architecture -5 marks Highlight its strengths and weaknesses. -1 mark of each (3 marks)	**8**
OR	iii.	What is Remote Method Invocation? -3 marks Explain working of RMI with architectural diagram. -5 marks	**8**
Q.4	i.	What is logical clock in distributed systems. -3 marks	**3**
	ii.	Explain Lamport's logical clock algorithm - 6 marks with example. -2 marks	**7**
OR	iii.	Explain the token-ring algorithm -6 marks	**7**
		with example. -2 marks	
Q.5	i.	What is naming system in distributed file system? -4 marks	**4**
	ii.	What is distributed file system? -3 marks Describe key services of DFS. -3 marks	**6**
OR	iii.	Define distributed deadlocks -3 marks Discuss strategies for detecting and resolving distributed deadlocks in a distributed file system. -3 marks	**6**
Q.6			
	i.	Explain the key design issues for processor allocation algorithms. -1 mark of each (5 marks)	**5**
	ii.	Differences between static and dynamic load balancing algorithms. -1 mark of each (5 marks)	**5**
	iii.	Multimedia database -2.5 marks Distributed database system. -2.5 marks	**5**

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