S8 CSE QUESTION BANK
COMPUTER SCIENCE & ENGINEERING

Index

CST402 DISTRIBUTED COMPUTING

	MODULE 1		
Sl. No	**Questions**	**Marks**	**KTU/KU Month/Year**
1	Explain the applications of distributed computing.	4	KTU OCT 2023
2	Summarize the challenges in designing a distributed system.	5	KTU MAY 19 KTU OCT 2023
3	What do you mean by load balancing in a distributed environment.	4	KTU OCT 2023
4	"The absence of these two transparencies most strongly affects the utilization of distributed resources". Identify and explain the above two types of transparencies with examples.	4	KTU MAR 2020 KTU OCT 2023
5	In what all aspects distributed systems are better than centralized systems? Give examples of two applications for which distributed systems will be more suitable.	4	KTU SEP 2020 KTU OCT 2023
6	What are the different communicating entities in a distributed system?	4	KTU SEP 2020
7	Discuss the challenges in designing a distributed system.	6	KTU SEP 2020 KTU JUNE 2023
8	List the Characteristics of Distributed System	3	KTU JUNE 2023
9	What are the Transparency requirements of Distributed System	3	KTU JUNE 2023
10	Compare logical and physical concurrency.	8	KTU JUNE 2023
11	What are the applications of Distributed Computing.	6	KTU JUNE 2023
12	Explain about the Models of communication networks	8	KTU JUNE 2023 KTU OCT 2023

MODULE 2

Sl. No	Questions	Marks	KTU/KU Month/Year
1	Apply spanning tree-based termination detection algorithm in the following scenario. The nodes are processes 0 to 6. Leaf nodes 3, 4, 5, and 6 are each given tokens T3, T4, T5 and T6 respectively. Leaf nodes 3, 4, 5 and 6 terminate in the order, but before terminating node 5,it sends a message to node 1.	7	MODEL QUESTION
2	Explain Termination detection by weight throwing.	5	MODEL QUESTION
3	Explain Spanning-tree-based algorithm	5	MODEL QUESTION
4	What are the basic properties of scalar time	3	KTU OCT 2023 KTU JUNE 2023
5	Explain about Termination Detection.	3	KTU JUNE 2023 KTU OCT 2023
6	Illustrate the Working of Spanning Tree based Termination Detection Algorithm.	10	KTU JUNE 2023 KTU OCT 2023
7	Define properties of Vector time	4	KTU JUNE 2023
8	Explain Ring based Election Algorithm in Detail.	8	KTU JUNE 2023
9	Explain how logical clock is implemented.	6	KTU JUNE 2023
10	Illustrate bully algorithm for electing a new leader. Does the atgorithm meet liveness and safety conditions?	7	KTU OCT 2023
11	Exptain in detail about Chandy Lamport algorithm.	6	KTU OCT 2023

MODULE 3

Sl.No	Questions	Marks	KTU/KU Month/Year
1	Illustrate Suzuki- Kasami's broadcast algorithm.	7	KTU JUNE 2023 KTU OCT 2023
2	Explain deadlock handling strategies	5	MODEL QUESTION
3	Explain Issues in deadlock detection.	5	KTU JUNE 2023 KTU OCT 2023
4	List the requirements of Mutual Exclusion Algorithms.		KTU JUNE 2023
5	Explain Lamport's Algorithm for Mutual Exclusion.	8	KTU JUNE 2023
6	Explain in Detail about Deadlock handling Strategies in a Distributed environment	6	KTU JUNE 2023
7	Explain how Wait for Graph can be used in Deadlock Detection	6	KTU JUNE 2023 KTU OCT 2023
8	Explain and lllustrate Ricart-Agrawala algorithm for achieving mutual exclusion	7	KTU OCT 2023
9	Compare various models of deadlock.	7	KTU OCT 2023

MODULE 4

Sl. No	Questions	Marks	KTU/KU Month/Year
1	List the requirements of Mutual Exclusion Algorithms.	3	KTU JUNE2023

2	List the different types of Messages in Rollback Recovery.	3	KTU JUNE2023
3	Explain about Lamport's Bakery Algorithm	8	KTU JUNE2023 KTU OCT 2023
4	Explain Checkpointing and Rollback Recovery in Detail	6	KTU JUNE2023 KTU OCT 2023
5	Explain the disadvantages of distributed shared memory	8	KTU JUNE2023
6	Differentiate Consistent and Inconsistent State with example.	6	KTU JUNE2023 KTU OCT 2023
7	List any three advantages of using Distributed Shared Memory	3	KTU OCT 2023
8	Explain no orphans consistency condition.	3	KTU OCT 2023
9	What are the issues in faiture recovery? Illustrate with suitable examples.	6	KTU OCT 2023

MODULE 5			
Sl.No	**Questions**	**Marks**	**KTU/KU Month/Year**
1	Summarize Distributed File System Requirements.	3	KTU JUNE 2023 KTU OCT 2023
2	Differentiate between whole file serving and whole file caching in Andrew file System.	3	KTU JUNE 2023
3	Which are the assumptions made in Consensus and Agreement Algorithm	8	KTU JUNE 2023
4	Explain about the file service architecture	6	KTU JUNE 2023

5	Explain SUN NFS architecture	8	KTU JUNE 2023 KTU OCT 2023
6	Explain about Google File System.	6	KTU JUNE 2023 KTU OCT 2023
7	Define Byzantine agreement problem	3	KTU OCT 2023
8	Explain consensus algorithm for crash failures under synchronous systems	8	KTU OCT 2023

CST 434

NETWORK SECURITY PROTOCOLS

	Module I		
Sl. No	Questions	Marks	Year
1	Explain any 3 general means of authenticating a user's identiy,which can be used alone or in combination.Also,provide example for each	3	KTU Oct 2023
2	Explain any 3 requirements of Kerberos	3	KTU Oct 2023
3	Explain PKI trust models	7	KTU Oct 2023
4	Explain the fields present in X.509 certificate.	7	KTU Oct 2023
5	What is mutual authentication?Explain Needham-Schroeder Protocol and Denning protocol?	8	KTU Oct 2023
6	What is Kerberos realm?Explain the steps to provide the service if client and server are in different realms?	3	KTU Oct 2023
7	Different approaches of mutual authentication to overcome replay attack?	3	KTU June 2023
8	What is the purpose of the X.509 standard?	3	KTU June 2023
9	Explain the concept of PublicKey Infrastructure?	14	KTU June 2023
10	Discuss the overview of Kerberos?	10	KTU June 2023
11	Explain simple Authentication Dialogue and more Secure Authentication Dialogue in Kerberos Version4?	4	KTU June 2023
12	Explain the significance of chain of certificate?	6	Model Question

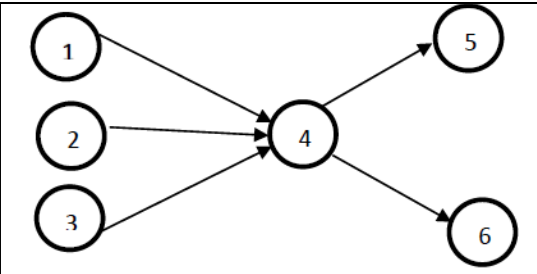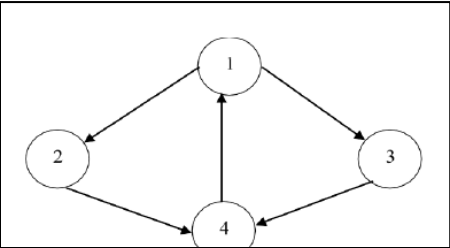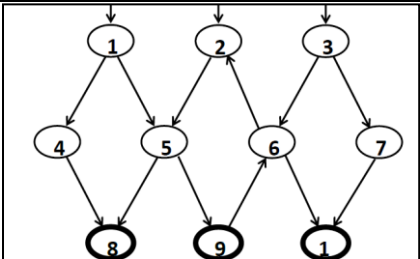|	Module II		
	Module II		
1	Illustrate the general structure of Private Key Ring used in Pretty Good Privacy (PGP)?	3	KTU June 2023
2	List the three trust fields in PGP public key management?	3	KTU June 2023
3	Explain the sequence of steps involved in the message generation and reception in PGP with block diagrams?	14	KTU June 2023
4	Briefly explain about S/MIME functionality and S/MIME Messages?	14	KTU June 2023
5	What are the 3 requirements with respect to keys in PGP?	3	KTU Oct 2023
6	Which are the cryptographic algorithms used in S/MIME? Also, explain the use of each.	3	KTU Oct 2023
7	With the help of necessary diagrams, explain PGP operations in detail.	7	KTU Oct 2023
8	Explain the PGP message format	7	KTU Oct 2023
9	Explain MIME header fields in detail. Also elaborate on content types and subtypes.	10	KTU Oct 2023
10	With the help of neat diagram, explain how message generation done in PGP.	4	KTU Oct 2023
	Module III		
1	List out the benefits of IPSec?	3	KTU June 2023
2	Give the header format of IKE?	3	KTU June 2023
3	Explain the format of IPSec ESP header and AH header?	8	KTU June 2023
4	Compare transport mode and tunnel mode functionalities in IPSec?	6	KTU June 2023
5	Explain the phases of SSL Handshake Protocol for establishing a new session.Draw a diagram which shows the action of Handshake Protocol?	14	KTU June 2023
6	Explain Authentication Header format in IPSec.	3	KTU Oct 2023
7	Draw SSL record format and explain the fields	3	KTU Oct 2023
8	Explain key management in IPSec. What are the roles of Oakley key determination protocol and ISAKMP in IPSec?	7	KTU Oct 2023
9	What is the significance of Security Policy Database (SPD)? Explain the selectors that determine an SPD entry	7	KTU Oct 2023
10	With neat diagram, explain the phases in SSL handshaking.	9	KTU Oct 2023
11	Explain Secure Socket Layer (SSL) protocol stack.	5	KTU Oct 2023
	ModuleIV		

1	List the different real time communication security techniques?	3	KTU Jun 2023
2	Illustrate the relevance of dual signature in SET?	3	KTU Jun 2023
3	Explain in detail about HTTPS?	4	KTU Jun 2023
4	Describe the working of SSH Transport Layer Protocol?	10	KTU Jun 2023
5	Explain the sequence of operations required for Secure Electronic Transaction.	14	KTU Jun 2023
6	Analyse the methods to provide Denial of Service protection in real time communication security?	3	KTU Oct 2023
7	What is Perfect Forward Secrecy? Write an example protocol with Perfect Forward Secrecy	3	KTU Oct 2023
8	Explain connection initiation and closure in HTTPS.	6	KTU Oct 2023
9	Explain SSH protocols.	8	KTU Oct 2023
10	Explain in detail the sequence of events to form a Secure Electronic Transaction	10	KTU Oct 2023
11	What is the significance of dual signature in SET and how is it formed?	4	KTU Oct 2023
Module V			
1	How trusted systems work with the help of reference monitor?	3	KTU Jun 2023
2	List the services provided by IEEE802.11i?	3	KTU Jun 2023
3	Explain the different types and configurations of firewalls?	14	KTU Jun 2023
4	Describe the authentication and encryption process in WEP and WPA?	14	KTU Jun 2023
5	List 3 characteristics of firewalls.	3	KTU Oct 2023
6	What is WPA? Explain how data protection is achieved in WPA.	3	KTU Oct 2023
7	Explain the phases of operation in IEEE802.11i.	10	KTU Oct 2023
8	Explain the concept of a trusted system. Illustrate no-read up and no-write down policies.	4	KTU Oct 2023
9	Explain firewall configurations.	6	KTU Oct 2023
10	Explain the techniques used by firewalls to control access.	8	KTU Oct 2023

CST 458 SOFTWARE TESTING

	MODULE 1		
SL.NO	**QUESTIONS**	**MARK**	
1	Define Software Quality and state the five views of quality in comprehensive manner.	3	OCT 2023
2	Write the differences between Failure ,Error ,Fault and Defect.	3	OCT 2023
3	Testing is performed at different levels involving the complete system or parts of a throughout the life cycle of a software product. Justify	7	OCT 2023
4	Explain the key idea behind Black box testing and White box testing	7	OCT 2023
5	With the help of a neat diagram explain testing activities.	6	OCT 2023
6	How is verification and validation differ's in software testing?	8	OCT 2023
7	State the four objectives of testing and define Test Case	3	JUNE 2023
8	Explain Regression testing at different software testing levels with neat diagram.	3	JUNE 2023
9	Discuss various types of testing methods with examples a. Black Box Testing b. White Box Testing c. Gray box Testing	6	JUNE 2023
10	Explain coverage criteria for testing and identify the characteristics of a good coverage criteria.	8	JUNE 2023

11	Explain the following code fragment based on the following coverage criteria a) Functional Coverage b) Statement Coverage c)Branch Coverage d)Conditional Coverage
	 int foo(int x,int y){
	 int z=0;
	 if ((x>0) && (y>0)) {
	 z=x;}
	 return z;
	 }
		8	JUNE 2023

12	Write the positive and negative testcases for an ATM machine	6	JUNE 2023

	MODULE 2		
1	Explain the two complementary phases in unit testing	3	OCT 2023
2	Give the importance of code review rework and validation	3	OCT 2023
3	With a neat diagram explain dynamic unit testing.	7	OCT 2023
4	Explain Junit framework for unit testing.	7	OCT 2023 JUNE 2023
5	Explain with suitable example the concepts of mutation testing, mutant, mutation score, killable mutant, and stubborn mutant. What do you mean by equivalent mutant?	6	OCT 2023
6	Name the four techniques used for selection of input test data.	8	OCT 2023

7	Suppose that the C programming language is chosen in project. Recommend a detailed code review checklist to the review team.	3	JUNE 2023
8	Describe the special role of a recordkeeper	3	JUNE 2023
9	What is Dynamic unit testing and Control flow testing.	7	JUNE 2023
10	Discuss the concept of mutation testing with testing process.	6	JUNE 2023
11	Explain seven types of mutation operators with examples	8	JUNE 2023

MODULE 3

1	Explain parameter coupling using Caller and Callee	3	OCT 2023
2	With a neat graph explain touring ,side trips and detours.	3	OCT 2023
3	Explain edge pair coverage covering multiple edges	6	OCT 2023
4	Explain simple path coverage and complete path coverage with the help of CFG.	8	OCT 2023
5	With the help of case study explain black box testing with Junit.	6	OCT 2023
6	Explain structural graph coverage for Design Elements	3	JUNE 2023
7	Define Tour, Tour with side trips and Tour with Detours.	3	JUNE 2023
8	1.Give the sets N0 ,N f, N and E for the above graph. 2.Give a path that is not a test path. 3.List all test paths in the above graph. 4.From the above graph, find test case inputs such that the corresponding test path visits edge (n1, n3).	8	JUNE 2023
9	Draw Control Flow Graph for the following function .	6	JUNE 2023

	{
	int low, high, mid;
	low = 0; high = n - 1;
	while (low <= high) { mid = (low + high)/2;
	if (X< V[mid])
	high = mid - 1; else if (X > V[mid])
	low = mid + 1;
	else
	return mid;
	}
	return -1;
	}		

10	Draw CFG fragment for a) Simple if b) Simple while loop c) Simple for loop d) switch	8	JUNE 2023
11	Explain path selection criteria with reference to i. All path coverage criteria ii. Statement Coverage Criteria iii. Branch Coverage Criteria iv. Predicate Coverage Criteria	6	JUNE 2023
MODULE 4			
1	Summarize the testing concepts of Howden	3	OCT 2023
2	Define partitions of set and input domain modelling.	3	OCT 2023
3	How is Boundary Value Analysis differ from Equivalence Partitioning	8	OCT 2023
4	List the characteristics of functionality based approach and interface based approach.	6	OCT 2023
5	Consider a situation in real life and explain concept of decision table.	6	OCT 2023
6	Explain the following terms a. Pair-wise coverage b. T-wise coverage c. Base choice coverage d. Multiple base choice coverage	8	OCT 2023
7	What is functional testing and highlight the important steps.	3	JUNE 2023
8	Preconditions are excellent sources for functionality -based characteristics. Justify	3	JUNE 2023
9	Explain orthogonal Array Testing	6	JUNE 2023
10	List the guidelines for performing Boundary value Analysis.	8	JUNE 2023
11	Define call graphs and classes.	6	JUNE 2023
12	Illustrate Random Testing with four steps.	8	JUNE 2023
MODULE 5			
1	What are the advantages of Grey box testing.	3	OCT 2023
2	Explain the concept of symbolic execution with an example.	3	OCT 2023
3	What is Parameterized Test in Junit? Explain with a Java program.	6	OCT 2023

4	Explain the statistical testing approach especially useful when system to be tested has huge data inputs.	8	OCT 2023
5	Write the advantages of Symbolic execution with respect to grey box testing.	6	OCT 2023
6	Consider the code fragment given below . 1 SUM: PROCEDURE (A,B,C); 2 X <--- A + B; 3 Y<---B + C; 4 Z<---X + Y-- B; 5 RETURN (Z); 6 END; Explain the symbolic execution of POWER (α1 , α2)	8	OCT 2023
7	Write the difference between Regression Testing and Orthogonal Array Testing.	3	JUNE 2023
8	What is Parameterized Unit testing.	3	JUNE 2023
9	Explain symbolic testing and Symbolic Execution Tree.	6	JUNE 2023
10	Why Grey Box testing is chosen and write the methodology behind it.	8	JUNE 2023
11	Discuss any two techniques of Grey Box Testing.	8	JUNE 2023

12	Draw the symbolic execution tree for the following program code and explain execution of testme(α1 ,α 2).
	 int twice (int v) {
	 return 2 * v ;
	 }
	 void testme (int x ,int y) {
	 z =twice (y) ;
	 if (z = = x) {
	 if (x> y+ 10)
	 ERROR ;
	 }
	 }
	 int main( ) {
	 x = sym input ( );
	 y=sym input ( );
	 testme (x ,y);
	 return (0);
	 }
		6	JUNE 2023

S.No.	Questions	Mark	Month & Year
Module-1			
1.	Explain different types of middleware and gateways required in the architecture of mobile computing	3	Oct/2023 June/2023 Sept -2020& May/2019 April/2018
2.	What are the three segments of the ubiquitous Internet? Identify the advantages of semantic web	3	june/2023 Oct/2023
3.	With a neat diagram explain the three tier architecture of mobile computing.	9	june/2023 Oct/2023
4.	Explain the various applications of mobile computing	5	june/2023 sept/2020
5.	Discuss any five functions of mobile computing.	5	june/2023
6.	Explain any four design considerations of mobile computing in detail.	8	Oct/2023
7.	Discuss the two aspects of mobile computing.	3	Sept -2020/ Oct- 2023
8.	What are the functions of Transcoding Middleware? Give two examples?	4	Sept -2020
9.	Explain the purpose of Internet Content Adaptation Protocol.	5	Oct/2023 Sept -2020
10.	List out and explain the design issues for mobile computing	4	Sept -2020
Module-2			

1.	Explain how localization done using satellite systems?	3	April/2018
2.	Compare and contrast Satellite systems-GEO, LEO and MEO	3	June/2023 Oct/2023 April/2018
3.	Discuss the effects of hidden and expose terminals,near and far terminals in wireless networks	6	Oct/2023 April/2018
4.	What are the security mechanisms provided by GSM.	8	Oct/2023 & Sept-2020
5.	Explain Cellular Concepts, Channel assignment strategies and Hand-off strategies in detail using appropriate diagrams	9	April/2018 & Sep-2020
6.	Explain the architectural components and services of GSM technology with suitable diagrams	9	Oct/2023 June/2023 May/2019 & Sept -2020
7.	Why spread spectrum is used in wireless communication? List the benefits?	3	Sept -2020 June 2023
8.	Apply direct sequence spread spectrum (DSSS) to the user data 01 using the chipping sequence 0110101.Draw the encoding step.	4	OTC/2023 June/2023 Sept -2020
Module-3			
1.	Explain in detail the architecture, multiple access and addressing mechanisms in IEEE 802.11 wireless LAN standard	9	June/2023 April/2018, May/2019

2.	Distinguish between Adhoc network and Infrastructure network	3	June/2023 May/2019
3.	Discuss the protocol architecture of hyper LAN	7	Oct/2023
4.	Draw and explain MAC frame format of IEEE 802.11	8	Oct/2023 May/2019
5.	Explain the working procedure and protocol architecture of IEEE 802.11.	10	June/2023 May/2019 &
6.	Bluetooth technology with suitable diagrams	7	Jun/2023,Sept - 2020
7.	What is piconet in Bluetooth.	3	Oct/2023
8.	Describe different states in Bluetooth device.	6	Oct/2023
9.	Discuss three applications of Bluetooth.	3	June/2023
Module-4			
1.	Describe the working of DHCP in Mobile computing with neat diagrams	7	June/2023, April/2018, Sept -2020 & May/2019
2.	Discuss the service enhancements in wireless diagram protocol for transfer of data.	7	June/2023
3.	How is IP pocket delivery done using mobile IP	5	June/2023
4.	How is registration of mobile node done using mobile IP	3	Oct/2023
5.	List advantages of mobile TCP.	3	Oct/2023

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6.	Explain the architecture of mobile IP in detail with neat diagram	7	Oct/2023
7.	How does WTP achieve reliability?	3	June/2023
8.	How data packets are encapsulated using generic routing encapsulation.	3	June/2023
9.	Write the limitations of conventional TCP (for wired network) to be used in mobile networks	3	Sept -2020
10.	With a neat diagram Describe the working of Dynamic host configuration protocol.	9	June/2023, Sept -2020
11.	How does a WTLS establish a secure session.	3	Oct-2023
12.	With neat sketches and illustration, discuss the WAP architecture in detail.(Features)	10	June/2023 Oct/2023 Sept -2020

	Module-5		
1.	How does multi factor security increases the security of information.	3	Oct/2023
2.	Mention advantages of orthogonal frequency division multiplexing.	3 8	Oct/2023 June/2023
3.	Explain any three security techniques to secure information in mobile computing & Comparison.	8	Oct/2023 June/2023
4.	What is the purpose of multi protocol label switching.How is pocket forwarding done using MPLS.	6	Oct/2023
5.	What are the security issues in 5G wireless technology?	6	Oct/2023

6.	Describe the features of 5G	3	June -2023
7.	Describe in detail 10 pillers of 5G	6	June -2023
8.	Discuss any four security modes used for information security in mobile computing environment.	June - 20238	Oct/2023
9.	Discuss the components of information security.	3	June -2023