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**Presidency University**

**Bengaluru**

**School Of Computer Science and Engineering & Information Science**

**Summer Term Examinations, Aug 2024**

**Date**: 06.08.2024

**Time**: 1.00 pm - 4.00 pm

**Max Marks**: 100

**Weightage**: 50%

**Odd Semester**: 2023 - 24

**Course Code**: CSE2052

**Course Name**: Distributed Systems

**Department:** CSE

**Instructions:**

1. *Read the all questions carefully and answer accordingly.*
2. *Do not write any matter on the question paper other than roll number.*

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| **Q.No** | **Questions** | **Marks** | **CO** | **RBT** |
| 1 | 1. Summarize the recent trends in distributed system. | 4 | CO1 | L1 |
| 1. What is the need of distributed system? List the distributed system challenges. | 6 | CO1 | L2 |
| 1. Use the Google search engine as an example to illustrate the concept of resource sharing. | 10 | CO1 | L3 |
| OR | | | | |
| 2 | 1. Give an example of URL. | 4 | CO1 | L1 |
| 1. Give five types of hardware resource and software resource that can usually be shared. Give examples of their sharing as it occurs in practice in distributed system? | 6 | CO1 | L2 |
| 1. Use the World Wide Web as an example to illustrate the concept of resource sharing, client and server. What are the advantages and disadvantages of HTML, URLs and HTTP as core technologies for information browsing? Are any of these technologies suitable as a basis for client-server computing in general? | 10 | CO1 | L3 |

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| 3 | 1. Define reliability in group communication? Explain why it is different than reliability in direct communication. | 4 | CO2 | L1 |
| 1. Explain in detail about Architectural model with neat sketch. | 6 | CO2 | L2 |
| 1. Consider a simple server that carries out client requests without accessing other servers. Explain why it is generally not possible to set a limit on the time taken by such a server to respond to a client request. What would need to be done to make the server able to execute requests within a bounded time? Is this a practical option? | 10 | CO2 | L3 |

OR

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| 4 | 1. A service is implemented by several servers. Explain why resources might be transferred between them. Would it be satisfactory for clients to multicast all requests to the group of servers as a way of achieving mobility transparency for clients? | 4 | CO2 | L1 |
| 1. List out and explain the communication paradigms associated with a distributed system. | 6 | CO2 | L2 |
| 1. Consider two communication services for use in asynchronous distributed systems. In service A, messages may be lost, duplicated or delayed and checksums apply only to headers. In service B, messages may be lost. Delayed or delivered too fast for the recipient to handle them, but those that are delivered arrive order and with the correct contents.   Describe the classes of failure exhibited by each service. Classify their failures according to their effect on the properties of validity and integrity. Can service B be described as a reliable communication service? | 10 | CO2 | L3 |

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| 5 | 1. Mention the characteristics of peer to peer systems. | 4 | CO3 | L1 |
| 1. Explain the different types of file models in detail. | 6 | CO3 | L2 |
| 1. How does Andrew file system (AFS) ensure that the cache copies files are up to date when file may be updated by several clients? | 10 | CO3 | L3 |

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| 6 | 1. Define overlay network with an example. | 4 | CO3 | L1 |
| 1. Explain file service architecture in detail. | 6 | CO3 | L2 |
| 1. Explain Napster and its legacy with neat sketch. | 10 | CO3 | L3 |

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| 7 | 1. How to synchronize two clocks in **A** and **B**? | 4 | CO4 | L1 |
| 1. Explain the properties of transaction. | 6 | CO4 | L2 |
| 1. Explain election algorithm in detail. | 10 | CO4 | L3 |

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| 8 | 1. Define mutual exclusion. | 4 | CO4 | L1 |
| 1. Explain Concurrency control in detail. | 6 | CO4 | L2 |
| 1. Discuss the invocation semantics that can be achieved when the request-reply protocol is implemented over a TCP/IP connection, which guarantees that data is delivered in the order sent, without loss or duplication. Take into account all of the conditions causing a connection to broken. | 10 | CO4 | L3 |

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| 9 | 1. Mention the goals of process migration. | 4 | CO5 | L1 |
| 1. List out the desirable features of scheduling algorithm. | 6 | CO5 | L2 |
| 1. List out the issues in load balancing algorithm. Discuss about any four policies of load balancing algorithm. | 10 | CO5 | L3 |

OR

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| 10 | 1. List out the 3 concepts to achieve the goal of process management. | 4 | CO5 | L1 |
| 1. Initial exchanges of public keys are vulnerable to the man-in-the-middle attack. Describe as many defenses against it as you can. | 6 | CO5 | L2 |
| 1. Explain the process migration mechanism in detail. | 10 | CO5 | L3 |