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**Presidency University**

**Bengaluru**

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

**Summer-End-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**: CSE246

**Course Name**: Computer networks & Simulation

**Department: SoCSE & IS**

**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. Identify and describe the components of a Data Communication System. | 4 | CO1 | L1 |
| 1. Describe different network topologies and their advantages and disadvantages. | 6 | CO1 | L2 |
| 1. Apply the OSI reference model to explain the functionalities of each layer and how they interact in network communication. | 10 | CO1 | L3 |
| OR | | | | |
| 2 | 1. Describe the Data Flow and Representation. | 4 | CO1 | L1 |
| 1. Identify and explain the connective devices in a network. | 6 | CO1 | L2 |
| 1. Analyze the TCP/IP model by explaining the functionalities of each layer and how they contribute to data transmission over a network. | 10 | CO1 | L3 |

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| 3 | 1. Recall and explain three causes of transmission impairments. | 4 | CO2 | L1 |
| 1. Describe the stop-and-wait protocol. | 6 | CO2 | L2 |
| 1. Given the data-word 101001111 and the divisor 10111, demonstrate the generation of the CRC codeword at the sender site using binary division. | 10 | CO2 | L3 |

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| 4 | 1. Suppose a signal travels through a transmission medium and its power is reduced to one-half. Given that 𝑃2=12𝑃1*P*2​=21​*P*1​, calculate the attenuation (loss of power) for this case. | 4 | CO2 | L1 |
| 1. Describe the simplest protocol. | 6 | CO2 | L2 |
| 1. Assuming a sender’s window size of 3 and using the selective repeat protocol, calculate the total number of data transmissions needed if every 5th transmission is lost while sending 10 frames, including all necessary retransmissions. | 10 | CO2 | L3 |

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| 5 | 1. Write a short note on IPv4. | 4 | CO3 | L1 |
| 1. Show the different approaches in Packet Switching. Explain them in detail. | 6 | CO3 | L2 |
| 1. Explain ICMP v4. | 10 | CO3 | L3 |

OR

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| 6 | 1. Identify the class of these classful IP addresses: a. 130.34.54.12 b. 200.34.2.1 c. 245.34.2.8 d. 102.120.201.10. | 4 | CO3 | L1 |
| 1. Difference Between Distance Vector Routing and Link State Routing. | 6 | CO3 | L2 |
| 1. Describe IPv6 Addressing. | 10 | CO3 | L3 |

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| 7 | 1. List the responsibilities of the transport layer. | 4 | CO4 | L1 |
| 1. Discuss the File transfer Protocol (FTP)with a neat diagram. | 6 | CO4 | L2 |
| 1. Describe Telnet and include a diagram to illustrate how it works. | 10 | CO4 | L3 |

OR

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| 8 | 1. Describe the differences between TCP and UDP. | 4 | CO4 | L1 |
| 1. Explain how UDP (User Datagram Protocol) works. | 6 | CO4 | L2 |
| 1. Explain the operation of TCP with neat sketch. | 10 | CO4 | L3 |

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| 9 | 1. Convert the following IP addresses to binary notation: a. 110.11.5.88 b. 12.74.16.18 c. 201.24.44.32 d. 253.230.20.01. | 4 | CO1 | L1 |
| 1. Calculate the size of the block (N) in classless addressing for the given prefix lengths (n): a. n = 0 b. n = 14 c. n = 32. | 6 | CO1 | L2 |
| 1. Given a network with 6 routers (A to E) connected with links having specific weights, use the distance vector routing algorithm to solve the following: (CO3)   C:\Users\DELL\OneDrive\Desktop\Presidency\CSA2004 - Computer Networks\Routing example.png   * + 1. Construct the initial routing table for each router.     2. Update the routing tables for A to E after exchanging information.     3. Determine the minimum distance between Node A and Node E. | 10 | CO1 | L3 |

OR

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| 10 | 1. Define the principles of cryptography. | 4 | CO2 | L1 |
| 1. Explain the functionality of SMTP (Simple Mail Transfer Protocol). | 6 | CO2 | L2 |
| 1. Discuss how the Domain Name System (DNS) works and its importance in networking. | 10 | CO2 | L3 |