

TE Sem IV: C'scheme Summer 2025

[Time: 3 Hours]

[Marks:80]

N.B

CMPN
9/6/25

- (1) Question no. 1 is compulsory.
- (2) Attempt any 3 from the remaining questions.
- (3) Assume suitable data if necessary.
- (4) Figures to right indicate full marks.

Q.1 Attempt any four of the following

- | | | |
|----|---|---|
| a) | What are frames? Explain any 2 framing methods in detail. | 5 |
| b) | Explain TCP Timers. | 5 |
| c) | Explain the need of DNS? What are DNS name spaces? | 5 |
| d) | Compare the OSI & TCP/IP reference models. | 5 |
| e) | What is the use of checksum? Explain the CRC steps to calculate the checksum. | 5 |
| f) | Compare Subnet and Supernet? A network on the Internet has a subnet mask of 255.255.192.0. What is the maximum number of hosts it can handle? | 5 |

Q.2 Attempt the following

- | | | |
|----|---|----|
| a) | Compare and contrast coaxial cable & fiber optics cable? A 2 km long broadcast LAN uses CSMA has 10^9 bps bandwidth and uses CSMA/CD. The signal travels along the wire at 400000 km/s. What is the minimum packet size that can be used on this network? | 10 |
| b) | Explain the open loop congestion control and closed loop congestion control policies in detail. | 10 |

Q.3 Attempt the following

- | | | |
|----|--|----|
| a) | An ISP is granted a block of addresses starting with 190.100.0.0/16 (65,536 addresses). The ISP needs to distribute these addresses to three groups of customers as follows: | 10 |
| | a. The first group has 64 customers: each need 256 addresses. | |
| | b. The second group has 128 customers: each need 128 addresses. | |
| | c. The third group has 128 customers: each need 64 addresses. | |
| | Design the subblocks and find out how many addresses are still available after these allocations | |

- | | | |
|----|--|----|
| b) | Explain the TCP connection establishment and Connection release. | 10 |
|----|--|----|

Q.4 Attempt the following

- | | | |
|----|---|----|
| a) | Compare and Contrast TCP and UDP protocol? Explain the header format used at the transport layer by TCP protocol. | 10 |
| b) | Enlist and elaborate the issues in designing the layered protocol architecture | 10 |

Q.5 Attempt the following

- | | | |
|----|--|----|
| a) | Explain the concept of sliding protocol? Explain the selective repeat protocol with example? Compare the performance of Selective repeat & Go-back-N protocol. | 10 |
| b) | Explain Distance vector routing? Also elaborate the count to infinity problem and its solution. | 10 |

Q.6 Write a short note on

- | | | |
|----|------------|----|
| a. | ARP & RARP | 10 |
| b | DNS | 10 |
