Unit 4: Network Layer

- 1. Explain the implementation of Connection-less Services at network layer with example (Datagram Approach).
- 2. Explain the implementation of Connection-oriented Services at network layer with example (Virtual Circuit Approach).
- 3. List and briefly explain the differences between Virtual Circuit and Datagram approach.
- 4. Draw header format for IPv4 Packet. Explain each field in brief.
- 5. Define Fragmentation. Explain various fields related to fragmentation in IPv4 packet header.
- 6. What are the differences between classful addressing and classless addressing in IPv4?
- 7. Explain why most of the addresses in class A are wasted. Explain why a medium-size or large-size corporation does not want a block of class C addresses.
- 8. Briefly define Subnetting and Supernetting. How does the subnet mask differ from a default mask in classless addressing?
- 9. Explain shortest path routing algorithm with a suitable illustration.
- 10. Explain the distance vector routing algorithm with example.
- 11. Mention and explain the limitations of distance vector routing algorithm.
- 12. Explain the link state routing algorithm with example.
- 13. Explain the requirement of Hierarchical Routing with example.
- 14. What is Broadcast Routing? Explain broadcast routing methods based on Spanning Tree and Reverse Path Forwarding.
- 15. Explain Multicast Routing with example.

Unit 5: Transport Layer

- 1. Explain Transport Layer Multiplexing and Demultiplexing with diagram.
- 2. Explain the various fields of UDP header with the help of a neat diagram.
- 3. Explain the various fields of TCP header with the help of a neat diagram.
- 4. Explain the various steps followed to establish and release transport level connection.
- 5. What is Congestion? Explain TCP Congestion Control Mechanism in detail.

Unit 6: Application Layer

- 1. Explain FTP with diagram.
- 2. Explain the message transfer using SMTP Protocol.
- 3. Explain the delivery of email to the end user using POP3 and IMAP Protocols.
- 4. What is HTTP? Draw and explain header format for HTTP Request and Response Messages in brief.
- 5. Compare HTTP and FTP.
- 6. Explain the working of Domain Name System.
- 7. Explain Recursive and Iterative Ouery Resolution in DNS.