

Duration: 3hrs

[Max Marks: 80]

N.B.: (1) Question No 1 is Compulsory.

(2) Attempt any three questions out of the remaining five.

(3) All questions carry equal marks.

(4) Assume suitable data, if required and state it clearly.

- 1 Attempt any FOUR [20]
 - a What is the role of VPI and VCI in an ATM?
 - b Explain the different layers of the SONET architecture.
 - c What are the drawbacks of traditional routing methods? Explain in brief.
 - d Describe the various network security safeguards.
 - e Write a short note on the Real-time Transport Protocol (RTP).
- 2 a Explain the IEEE 802.11 architecture and the various services it provides in detail. [10]
 - b What is the need for DWDM? Explain the working principle of DWDM along with its advantages and disadvantages. [10]
- 3 a Discuss the congestion control mechanisms used in ATM networks and explain the importance of various Quality of Service (QoS) parameters. [10]
 - b Discuss the concept of STS multiplexing in SONET. Explain how the multiplexing of lower-order signals into higher-order STS signals works, illustrating with examples of STS-1 and STS-3c. [10]
- 4 a Explain Open Shortest Path First (OSPF) in detail and provide a comprehensive comparison between RIP and OSPF. [10]
 - b Describe the different types of firewalls commonly used in network security, while discussing their respective advantages and limitations. [10]
- 5 a Explain multicast routing protocols in detail with examples, and discuss why traditional unicast protocols struggle to efficiently route multicast packets. [10]
 - b Discuss the key principles of Application Layer Security and explain how specific protocols contribute to securing data in applications. [10]
- 6 a Explain the fundamentals of data compression by discussing the differences between lossless and lossy compression, providing examples of each and explaining their typical applications. [10]
 - b Explain the 3-tier Network design layers in detail and write a note on how this hierarchical structure contributes to effective network design. [10]
