NOTE:

> 1. **Answer question 1 and any FOUR from questions 2 to 7.**
> 2. **Parts of the same question should be answered together and in the same sequence.**

Time: 3 Hours   **Total Marks: 100**

1.
a)   Differentiate between Virtual Paths and Virtual Channels.
b)   Explain Closed Queuing Network.
c)   Briefly explain Continuous State Leaky-Bucket Algorithm.
d)   What is the difference between traffic shaping and traffic policing?
e)   Discuss the steps followed in Streaming Media and its advantages.
f)   List out the features of Session Initiation Protocol (SIP).
g)   How congestion is controlled in TCP? Explain briefly.

(7x4)

2.
a)   Compare IPV6 fixed and extension headers.
b)   What is Real Time Transport Protocol (RTP)? Briefly discuss its header format details. What is the most common RTP data that RTCP tracks?

(9+9)

3.
a)   Compare and contrast Constant Bit Rate (CBR), Variable Bit Rate (VBR), Available Bit Rate (ABR) and Unspecified Bit Rate (UBR)
b)   Discuss the goals of TCP/IP Reference model. List and explain the functions, protocols and services of each layer. Also, compare TCP/IP and OSI Reference Models.

(9+9)

4.
a)   Is TCP checksum necessary or could TCP allow IP to checksum the data? Explain Three-Way Handshake Mechanism used by TCP to terminate a Session reliably.
b)   What is Multicast Transmission? List various multicast forwarding algorithms. Discuss any two multicast forwarding algorithms, in detail.

(8+10)

5.   Write short note on:
a)   Multicast Backbone (MBONE)
b)   Distance Vector Multicast Routing Protocol (DVMRP)
c)   Voice over Internet Protocol (VOIP)

(6+6+6)

6.
a)   What is Virtual Private Network (VPN)? List various activities performed by VPN. Discuss its components and types.
b)   What are Integrated Services? How these are different from Differential Services? Discuss Integrated Services Architectures with its service classes for QoS.

(9+9)

7.
a)   Consider the Pure ALOHA, Slotted ALOHA, and Non-persistent CSMA. Which one will you use at high load? Why?
b)   Ten thousand airline stations are competing for the use of a single slotted ALOHA channel. The average station makes 18 requests/hour. A slot is 125 micro-sec. What is the approximate total channel load?
c)   What is Internet and Intranet? Discuss the similarities and differences between them.

(6+6+6)