

Time: 3 Hours

Marks: 80

NOTE: 1. Question no. one is compulsory.

2. Attempt any three questions out of remaining five questions.

3. Each question carries 20 marks.

- Q.1 Attempt any four questions out of five questions. 20m
- Compare star, bus and mesh Topology.
 - Explain design challenges in physical layer of OSI reference model.
 - Explain in detail BGP routing.
 - Draw and explain TCP Header.
 - Compare Telnet and SSH.
- Q.2 a Analyze CSMA-CA protocol in terms of collision avoidance. 10m
- b. Explain TCP/IP Model with functions of each layer. State its advantages and limitations. 10m
- Q.3 a. The following is the content of UDP header in hexadecimal format 5m
- CB8400D001C001C
- What is source port number?
 - What is the destination port number?
 - What is the total length of user datagram?
 - What is the length of data?
 - Is the packet directed from client to server or vice versa?
- b. Analyze how slotted ALOHA gives better throughput than pure ALOHA. 5m
- c. Explain HTTP protocol in detail. 5m
- d. Describe HDLC bit stuffing and destuffing. 5m
- Q.4 a. An ISP is granted a block of addresses starting with 190.100.0.0/16. The ISP needs to 10m
- Distribute these addresses to three groups of customers as follows:
- The first group has 64 customers: each needs 256 addresses.
 - The second group has 128 customers: each needs 128 addresses
 - The third group has 128 customers: each needs 64 addresses. Design the sub blocks and find out how many addresses are still available after these allocations.
- b. Explain how a connection is established, data transfer and connection termination happens in TCP using three-way handshaking. 10m
- Q.5 Explain each field in IPv4 datagram format. Also compare IPv4 and IPv6. 10m
- b. Analyze different types of ARQ methods. 10m
- Q.6 Write a short note on any four from the following: 20m
- Internet Control Message Protocol (ICMP)
 - Link state routing algorithm
 - Congestion control in transport layer
 - OSPF routing protocol
 - DSL-Broadband standard
