

Duration: 3 hours

Max marks: 80

Note the following instructions.

- i) **Question No.1 is compulsory.**
- ii) Total **four** questions need to be solved.
- iii) Attempt **any three** questions from remaining five questions.
- iv) Assume suitable data wherever necessary, justify the same.

- Q.1 (a) How iterative resolution differs from recursive resolution in DNS ? **[5]**
 (b) What is the role of registration server in tracking a callee ? **[5]**
 (c) Differentiate between Subnetting and Supernetting. **[5]**
 (d) Explain the connection establishment Process in TCP with suitable diagram. **[5]**
- Q.2 (a) What are the special addresses used in classful addressing? Explain any three with suitable example. **[10]**
 (b) Explain the various phases of congestion control in TCP with suitable diagram. How the window size is set in each phase? **[10]**
- Q.3 (a) Draw the DHCP packet format. With reference to this which field determines- **[10]**
 i) The no. of hops a packet can travel.
 ii) The command is a request or reply.
 iii) Why there is a need of transaction Id apart from IP address and port address ?
 iv) What is the maximum number of seconds that can be stored in the Number of Seconds field of a DHCP packet ?
 v) Which field determines that the response from the server is unicast or broadcast ?
 vi) If DHCP packet is request from client, which fields are used ?
 vii) If DHCP packet is a reply message from server, which fields are used ?
- (b) Name the various components of Email system. List the function of them. Which protocol defines the MTA client and server in internet ? **[10]**
- Q.4 (a) What are various schemes to improve QoS ? Explain any one in brief. **[10]**
 (b) Which protocol is used to communicate between public telephone network and computer on internet ? Explain its operation with suitable illustrations. **[10]**
- Q.5 (a) One of the addresses in a block is 17.63.110.114/24. Find the network address, network mask, number of addresses, the first address, and the last address in the block. **[10]**
 (b) Why do we need fragmentation at each router? Explain the various fields associated with fragmentation in IP header. A host is sending 100 datagrams to another host. If the identification no. of the first datagram is 1024. What is the identification no. of the last ? **[10]**
- Q.6 (a) Why there is need of ICMP Protocol at network layer ? List various messages used in ICMP protocol. Explain the function of any two messages in brief. **[10]**
 (b) Compare the TCP header and UDP header. List the fields in the TCP header that are not the part of UDP header. **[10]**
