53 (CS 815) TDIM

2017

TCP/IP DESIGN AND IMPLEMENTATION

Paper : CS 815

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. *(a)* Discuss in brief the various fields in an ethernet frame format. 6

   (b) Write short notes on ARP and RARP. 4+4

(c) A router with IP address 195.5.2.12 and ethernet physical address AA : 25 : AB : 1F : 67 : CD has received a packet for a destination with IP address 185.11.78.10. When the router checks it's routing table, it finds out that the packet should be delivered to a router with IP address 195.5.2.6 and ethernet physical address AD : 34 : 5D : 4I : 67: CD.

(i) Show the entries in the ARP request packet sent by the router. Assume no subnetting.

(ii) Show the entries in the ARP packet sent in response to part (i). 3+3

2. (a) Discuss limited broadcast and directed broadcast. 4+4

(b) What is the significance of loopback address ? 4

(c) Explain network address translation with the help of an example. 8

3. (a) An organization is granted the block-211.17.180.0/24. The administrator wants to create 32 subnets.

(i) Find the subnet mask.

(ii) Find the number of addresses in each subnet.

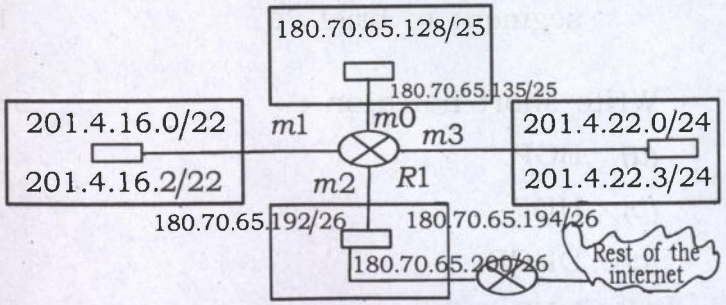
(iii) Find the first and last address in the first subnet.

(iv) Find the first and last address in the last subnet (subnet 32). (Show your calculations). 8

(b) What do you mean by address aggregation ? Explain with the help of an example. 6

(c) What do you mean by autonomous system ? Define intradomain and interdomain routing. 2+4

4. (a) Make a routing table for router R1 using the configuration given below : 5



(b) Show the forwarding process if a packet arrives at R1 in the network with the destination address 201.4.22.35. 5

(c) Compare link state routing with distance vector routing. Explain the count to infinity problem with the help of an example. 4+6

5. (a) Discuss how a routing table is created using OSPF for a large autonomous system with the help of an example network. 10

(b) Discuss the IPv6 frame format with the help of a diagram. 10

6. (a) Explain with diagram the three steps required for a TCP connection. 10

(b) Discuss the various fields in a TCP segment in brief. 10

7. Write short notes on : 5×4

(a) BGP

(b) UDP

(c) DHCP

(d) DNS.
