53 (CS 815) TDIM

2013

(May)

TCP / IP DESIGN & IMPLEMENTATION

Paper : CS 815

Full Marks : 100

Pass Marks : 30

Time : Three hours

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

*Answer **any five** questions.*

FIRST HALF

1. *(a)* What is layering ? What is a TCP / IP protocol suite ? Explain the responsibility for each layer of the TCP / IP protocol suite. 2+2+6=10

   (b) Draw the TCP / IP layering overview when two networks are connected through a router. 4

(c) Explain how encapsulation is achieved in each layer of the TCP / IP protocol suite when data goes down the protocol stack. What is demultiplexing ? 4+2=6

2. (a) What are TCP, IP and VDP ? How do applications coexist over TCP and VDP ? 6+4=10

(b) (i) What IP addresses would you assign to machine on a private internet ?

(ii) Does IP protect data on the network ?

(iii) Explain how to setup a gateway to internet that translates IP addresses so that you don't have to change all of the internal addresses of the official network ? 3+2+5=10

3. (a) What are ARP and RARP ? Explain the operation of ARP when the user types "ftp hostname". 4+6=10

(b) (i) Briefly explain the arp packet format with diagram

(ii) arp–a command can be used to see the ARP cache and after typing the arp-a command we see the cache as

cithost $ arp – a

cse-host (140.252.13.33) at 8:0:20:3:f 6.9

mesh-host (140.252.13.34) at 0:0:C0:C2:42:26

What will be the arp cache if you invoke the command "ping 140.252.1369.

Assume dummy MAC address if applicable.

(iii) Is a separate frame type field required for RARP ? 6+2+2=10

SECOND HALF

4. (a) (i) What is ICMP ? Explain the situation that generates a ICMP redirect error message with diagram. 6+4=10

(ii) Explain the ICMP redirect message format.

(b) (i) What is routing ? 2+6+2=10

(ii) Explain IP×4 Header format.

(iii) What is the maximum length of IP×4 header ?

5. *(a)* *(i)* What is dynamic routing ? 2+3=5

(ii) Mention in a table the various routing daemons used by RIP, OSPF, EGP and BGP.

(b) Explain *any three* of the following : 5×3=15

(i) RIP version 2

(ii) OSPF

(iii) BGP

(iv) CIDR

(v) BOOTP.

6. *(a)* *(i)* Explain TCP connection establishment and TCP connection termination protocol. 3+3+4=10

(ii) What is the difference between TCP half open and TCP half close ?

(b) *(i)* Explain the visualisation of Sliding Window Protocol. 4

(c) What is SMTP ? Explain internet Email exchange using TCP / IP. 2+4=6
