**53 (CS 815) TDIM**

**2014**

# 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 5 (five)** questions out of 7 (seven).*

1. *(a)* Draw and explain the layered architecture of TCP/IP protocol suite. 10

   *(b)* Show how data is encapsulated as it goes down each layer in the TCP/IP protocol stack. 4

   *(c)* Draw the Ethernet frame format and describe each field in brief. 6

2. *(a)* What do you mean by directed broadcast and limited broadcast ? Explain with examples. 4+4=8

(b) An organization has a class C network 200.1.1 and wants to form subnets for 4 (four) departments A, B, C, D with host requirements as follows :

A : 72 hosts

B : 35 hosts

C : 20 hosts

D : 18 hosts

Use variable length subnet masking (VLSM) and subnet the network according to the host requirements given. 8

(c) Discuss the concept of supernetting with the help of an example. 4

3. (a) IP is unreliable, best-effort, connectionless protocol. Justify the statement. 4

(b) What is ARP ? Explain its functionality. How does it differ from RARP ? 6+2=8

(c) What is the use of proxy ARP ? 3

(d) What is DHCP ? How does it differ from BOOTP ? 2+3=5

4. (a) Describe the various services offered by TCP. 7

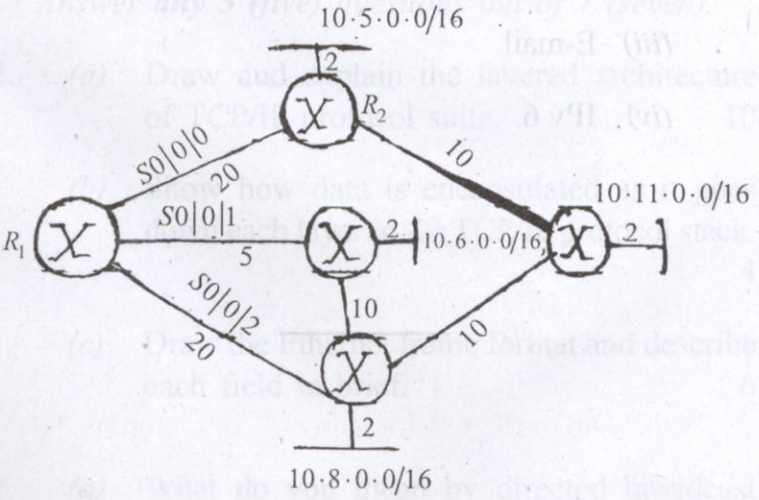
(b) Explain the datagram format of UDP. List out some of the uses of UDP. 5+3=8

(c) How does FTP work? Explain the connection establishment procedure between a client and a server in FTP. 5

5. (a) What do you mean by a routing protocol? 2

(b) Define intradomain and interdomain routing. 4

(c) Use link state routing in the network given below and show how the routing table is created for the router R1. Mention each of the steps explicitly. 10



(d) What are the advantages of link state routing over distance vector routing ? 4

6. (a) Discuss the concept of OSPF with the help of an example. 10

(b) Write a detailed note on BGP (Border Gateway Protocol). 10

7. Write short notes on : 4×5=20

(i) DNS

(ii) Remote login

(iii) E-mail

(iv) IPv 6.