This question paper contains 3 printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **1439**

Unique Paper Code : **2341302** **F-7**

Name of the Paper : **Data Communication and Computer Networks**

Name of the Course : **B.Tech. (Computer Science)**

Semester : **III**

Duration : **3 Hours** Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

All Questions in Section A are compulsory.

Attempt any *four* questions in Section B.

Section A

All questions are compulsory.

1. (*a*) Define the following terms : 3

   (*i*) Broadcasting

   (*ii*) Piggybacking

   (*iii*) Selective flooding.

   (*b*) Explain TCP protocol header with the help of a diagram. 6

   (*c*) What are the differences between OSI model and TCP/IP model ? 3

   (*d*) Give *two* features of thick and thin Ethernet LAN. 2

   (*e*) Briefly explain Go-Back-N sliding window protocol. 4

   (*f*) Compare ARP and RARP. 4

   (*g*) Discuss the methods to convert digital signal into analog signal. 4

P.T.O.

(*h*) What is an URL ? Give an example. 3

(*i*) A router inside an organization receives a packet with the destination address 190.240.34.95. If the subnet mask is /19, find the subnet address. 2

(*j*) At what layer(s) do the following protocols operate in TCP/IP protocol : 4

(*i*) DHCP

(*ii*) CSMA

(*iii*) FTP

(*iv*) ICMP.

Section B

Attempt any *four* questions from Section B.

2. (*a*) Discuss collision detection process in CSMA/CD Protocol. 5

(*b*) What are the minimum and maximum frame sizes of Ethernet Frames ? 2

(*c*) Explain the concept of byte stuffing used in framing. 3

3. (*a*) Briefly explain the role of RPC. 4

(*b*) Explain TCP connection establishment and release processes with the help of a diagram. 6

4. (*a*) Draw a diagram showing : 6

(*i*) Structure of IP header

(*ii*) A, B, C, D and E IP address formats.

(*b*) Compare the static and dynamic routing algorithm. 4

5. (*a*) Draw the pulse diagram for bit stream 101010101011, for the following encoding techniques : 6

(*i*) RZ

(*ii*) Manchester

(*iii*) Differential Manchester.

(*b*) Generate the transmitted bit string when the message bit string "11001010101" is sent using CRC where the generator string is given by 1001. 4

6. Write short notes on the following : 10

(*a*) HTTP

(*b*) BOOTP

(*c*) PCM and

(*d*) DNS.

7. (*a*) Briefly explain Frequency Division Multiplexing and Time Division Multiplexing. 6

(*b*) Differentiate between packet switching and circuit switching. 4