This question paper contains **4** printed pages]

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

S. No. of Question Paper : **33**

Unique Paper Code : **234561** **G**

Name of the Paper : **Networks**

Name of the Course : **B.Sc. Mathematical Science**

Semester : **V**

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

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

Section A is compulsory.

Attempt any *five* questions from Section B.

Section A (Compulsory)

1. (*a*) Differentiate between star and bus topology. List *one* advantage and *one* disadvantage of star topology over bus topology. 2

(*b*) What are the *two* approaches to packet switching ? 2

(*c*) How does forward error correction differ from retransmission ? 2

(*d*) Show how the following data would change when bit stuffing is applied on it : 2

1000111111001111101000111111111111000011111

(*e*) Differentiate between half-duplex and full-duplex mode of data communication. 2

(*f*) What do you mean when we say that a bridge can filter traffic ? Why is filtering important ? 2

P.T.O.

(*g*) How does caching increase the efficiency of name resolution ? 2

(*h*) Identify the layers of OSI model responsible for performing the following operations : 3

(*i*) Logical Addressing

(*ii*) Synchronization of bits

(*iii*) Error Control.

(*i*) Name the layers on which the following networking devices operate : 3

(*i*) Bridge

(*ii*) Router

(*iii*) Gateway.

(*j*) Give full form of the following acronyms : 5

(*i*) TELNET

(*ii*) DNS

(*iii*) NVT

(*iv*) VPN

(*v*) WWW.

Section B (Attempt any *five*)

2. (*a*) What is the purpose of FTP ? Name and explain in brief the different FTP transmission modes. 5

(*b*) List the advantages of optical fiber over twisted-pair and coaxial cable. 3

(*c*) Define guided and unguided media. 2

3. (*a*) Define Virtual Circuit Network. Name and explain the three phases that a virtual circuit needs to go through. What kind of delay is involved in a virtual-circuit network ? 5

(*b*) List various issues to be considered while using bridges to connect different LANs. 5

4. (*a*) A block of IP addresses is granted to a small organization. One of the addresses is 205.16.37.39/28. What is the first and last address in the block ? Also, find the total number of addresses. 5

(*b*) What is the purpose of firewall ? Explain Packet-Filter firewall and Proxy firewall. 5

5. (*a*) Explain Stop-and-Wait Protocol with the help of an example. 5

(*b*) In Carrier Sense Multiple Access (CSMA) which three persistence methods can be adopted when a station finds a channel busy ? 3

(*c*) A network using CSMA/CD has a bandwidth of 10 Mbps. If the maximum propagation time (including the delays in the devices and ignoring the time needed to send a jamming signal) is 25.6 μs, what is the minimum size of the frame ? 2

6. (*a*) Even though circuit switched network is less efficient than datagram network, delay in these networks are minimal. Explain why ? 5

(*b*) What are *three* domains of the domain name space ? What is the purpose of the inverse domain ? 3

(*c*) How does recursive name-address resolution differ from iterative resolution ? 2

7. Differentiate between the following (any *five*) : 5×2=10

(*i*) Primary Domain Name Server and Secondary Domain Name Server

(*ii*) Static Routing Table and Dynamic Routing Table

(*iii*) Repeater and Amplifier

(*iv*) Passive Hub and Active Hub

(*v*) FQDN and PQDN

(*vi*) Router and Bridge.

8. Write notes on any *two* of the following : 2×5=10

(*i*) Cookies

(*ii*) Radio Waves

(*iii*) SMTP

(*iv*) HTTP.