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No. of Printed Pages—4

CS-602

B. TECH.

SIXTH SEMESTER EXAMINATION, 2003-2004

COMPUTER NETWORKS

Time : 3 Hours *Total Marks : 100*

Note : (1) Attempt **ALL** the questions.
(2) All questions carry equal marks.

1. Attempt any FOUR parts :— **(5×4=20)**

(*a*) What are the advantages of multipoint connection over point-to-point connection ?

(*b*) What do you understand by Network Topology ? Explain the network topologies known to you.

(*c*) Explain TCP/IP reference model of networking.

(*d*) Explain the functions of Data Link Layer.

(*e*) Differentiate between Circuit Switching and Packet Switching.

(*f*) Explain the terms :

(*i*) Internet

(*ii*) Intranet

(*iii*) Extranet

(*iv*) Virtual Private Network

2. Attempt any FOUR parts :— **(5×4=20)**

(*a*) Find relationship between Redundancy bits required to correct a given number of m data bits.

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(*b*) Given a 10-bit sequence 1010011110 and a divisor of 1011. Find the CRC. Check your answer.

(*c*) Explain Selective Repeat ARQ Error Control technique, in brief.

(*d*) Draw format of IEEE 802·3 MAC frame. Explain each field, in brief.

(*e*) Differentiate between PURE ALOHA AND SLOTTED ALOHA.

(*f*) In token ring network, where the length of ring is 1000 m, and medium propagation speed is 2×10^8 m/s, calculate the following :—

(*i*) Maximum propagation delay

(*ii*) Average frame bit-length

(*iii*) Average frame transmission time

(*iv*) Bit-length of a frame

(*v*) Value of parameter *a*

3. Attempt any FOUR parts :— **(5×4=20)**

(*a*) Draw the header of IP datagram. Explain its field.

(*b*) Explain Routing Information Protocol (RIP), in brief.

(*c*) Suppose 198.53.202.0. is a network address and we want 4 subnets. Find the following :—

(*i*) Number of bits required for subnetting

(*ii*) Standard subnet mask

(*iii*) Custom subnet mask

(*iv*) Starting Host ID and Last Host ID of each subnet

(*v*) Broadcast address for each subnet

(*d*) What is Congestion ? Explain Leaky Bucket algorithm.

(*e*) Explain IP Addressing Scheme.

(*f*) Write advantages of Next-generation IP (IPV_6) over IPV_4.

4. Attempt any FOUR parts :— **(5×4=20)**

(*a*) Encrypt the following message, using monoalphabetic substitution with key = 4 :—

MONDAY COMES AFTER SUNDAY

(*b*) Write algorithm of RSA Encryption.

(*c*) Write functions of Transport Layer.

(*d*) Explain Nagle's algorithm, in brief.

(*e*) Explain three types of Socket Interfaces.

(*f*) What is MIME ?

5. Attempt any TWO parts :— **(10×2=20)**

(*a*) (*i*) Explain addressing scheme used by SMTP.

(*ii*) Explain Mail Access Protocols.

(*b*) Explain the usage of the following :—

(*i*) TELNET

(*ii*) FTP

(*iii*) SNMP

(*iv*) PING

(*v*) DNS

(*vi*) ARP

(*vii*) ICMP

(*viii*) DHCP

(*ix*) RARP

(*x*) HTTP

(*c*) (*i*) How does quantization contribute to compression ?

(*ii*) Differentiate between Spatial compression and Temporal compression.

(*iii*) Explain three types of frames used in MPEG.