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No. of Printed Pages—3 **CS—602**

B. TECH.

SIXTH SEMESTER EXAMINATION, 2002-2003

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 of the following :— **(5×4=20)**

(*a*) Explain the differences between broadcast and point-to-point networks.

(*b*) What are the reasons for using layered protocols ?

(*c*) If a binary signal is sent over a 3-kHz channel whose signal-to-noise ratio is 20 dB, what is the maximum achievable data rate ?

(*d*) Explain the concept of a service with a suitable example.

(*e*) Compare and contrast OSI reference model with TCP/IP reference model.

(*f*) Explain ISDN in brief.

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

(*a*) Measurements of a slotted ALOHA channel with an infinite number of users show that 10 per cent of the slots are idle.

(*i*) What is the channel load, G ?

(*ii*) What is the through put ?

(*iii*) Is the channel underloaded or overloaded ?

(*b*) Sketch the manchester and differential manchester encoding for the bit stream :

0001110101

(*c*) What are different sliding window protocols ? Write an implementation of 1-bit sliding window protocol.

(*d*) Explain different error detection techniques with examples.

(*e*) What is IEEE 802·3 standard ? Explain binary exponential backoff algorithm.

(*f*) A 4-Mbps token ring has a token-holding timer value of 10 m sec. What is the longest frame that can be sent on this ring ?

3. Attempt any TWO parts of the following :— **(10×2=20)**

(*a*) What are different routing algorithms ? Write the implementation of shortest path routing.

(*b*) Compare and contrast virtual circuits and datagram subnets.

(*c*) (*i*) Give the classification of different IP addresses. Explain the concept of subnetting.

(*ii*) Explain, in brief, about bridges, repeaters and gateways.

4. Attempt any TWO parts of the following :— **(10×2=20)**

(*a*) (*i*) Explain different socket primitives used in TCP.

(*ii*) Explain the three-way handshake mechanism used in establishing a connection between two transport entities.

(*b*) Explain Data Encryption Standard algorithm in detail. Explain DES chaining.

(*c*) (*i*) Draw the TCP segment header format and explain its various fields.

(*ii*) Explain different quality of service parameters available at transport layer.

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

(*a*) (*i*) How is the BOOTP different from DHCP ?

(*ii*) What is the purpose of the Domain Name System ? Discuss the three main divisions of the domain name space.

(*b*) (*i*) How is TFTP different from FTP ?

(*ii*) What three functions can SNMP perform to manage network devices ?

(*c*) (*i*) Explain the concept of network virtual terminal.

(*ii*) Explain different basic functions that e-mail systems support.

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