SEPTEMBER 2010

ALCCS

Code: CS32 **Subject: COMPUTER NETWORKS**
Time: 3 Hours **Max. Marks: 100**

NOTE:

- **Question 1 is compulsory and carries 28 marks. Answer any FOUR questions from the rest. Marks are indicated against each question.**
- **Parts of a question should be answered at the same place.**

Q.1 a. Differentiate

(i) LAN and WAN
(ii) Monolithic and structured protocols.

b. Explain the working of TCP/IP model.

c. What signal to noise ratio is required to put T1 carrier on 50 kHz line?

d. For the binary data 01101001, plot different digital shift keying modulated wave form and explain the same.

e. Explain the working of CSMA/CA and CSMA/CD protocol.

f. Why data encryption is required in networks? Also explain in brief about DES.

g. Write a note on World Wide Web. **(7 × 4)**

Q.2 a. Explain the functions performed by each layer in a ISO-OSI reference model with the help of a neat diagram.

b. Explain different types of multiplexing techniques.

c. Using CRC a bit stream 1101011011 is to be transmitted. If the generator polynomial is $1+X^3+X^4$, find the transmitted code. Explain decoding procedure by adding single bit error in the received code. **(6+6+6)**

Q.3 a. Explain ALOHA and slotted ALOHA protocol. Compare the efficiency in each case.

b. Write a brief note on working of the following **(Any <u>ONE</u>):**
(i) SNMP
(ii) Electronic mail
(iii) FTP

c. Suppose a group of N stations share a 56 kbps pure ALOHA channel. Each station outputs 1000 bit frame on an average of once every 100 sec, even if the previous one has not yet been sent (e.g. the stations can buffer outgoing frames). What is the maximum value of N? **(8+6+4)**

Q.4 a. Discuss Markov chain model and explain M/G/1 queues.

b. Explain token ring protocol and obtain the expressions for its throughput in different cases.

c. T1 carrier has a channel capacity of 1.544×10^6 bits / sec. If 3000 km long T1 trunk is used to transmit 64 byte frames using Go – back – N protocol. How many bits the sequence number should be if the propagation speed is 6 μs/km. **(6+8+4)**

Q.5 a. Explain the working of Stop-and-Wait ARQ and Go-Back-N ARQ protocol.

b. Explain the working of distance vector routing algorithm.

c. In a network with 720 IMPs, find the number of table entries required for one, two and three level

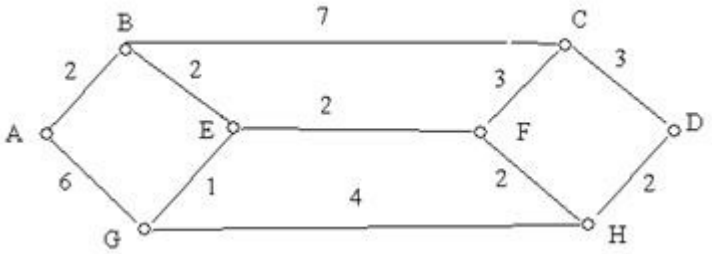
hierarchy.

(8+6+4)

Q.6 a. Explain IPv4 header format with the help of a neat diagram. State four major improvements of IPv6 over IPv4.

b. Explain the working of User Datagram Protocol.

c. Using Dijkstra algorithm to find the shortest path from A to D. **(8+6+4)**



Q.7 a. Explain how the connection is released in a TCP.

b. Explain the working of RSA algorithm.

c. Encode the 5 symbols, s_0, s_1, s_2, s_3, and s_4, generated by a digital source with probabilities of occurrence of 0.4, 0.1, 0.25, 0.05 and 0.2. **(6+6+6)**