Code: CT32 **Subject: COMPUTER NETWORKS**
Time: 3 Hours **Max. Marks: 100**

MARCH 2011

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 **(7 × 4)**

a. What are the principle that were applied to arrive at the seven layers in OSI model?

b. Write short notes on NIC card.

c. What are the factors that affects in transmitting bits over a given medium?

d. Discuss Global System for Mobile Communications?

e. What is Pulse-Amplitude Modulation? What is their disadvantage?

f. How congestion is controlled in TCP?

g. What are the different threats that can arise in a network?

Q.2 a. Draw a basic block diagram of ARQ, and explain Selective Repeat ARQ method?

b. If the generator polynomial is $x^4 + x + 1$ and the message bits are 1101011011, obtain the CRC code? **(10+8)**

Q.3 a. Discuss with the help of a figure the frame structure of IEEE 802.11?

b. Suppose we have a ring that operates at a speed of R = 4 Mbps with M = 20 stations separated by 100 meters, $v = 2 \times 10^8$ and b = 2.5 bits. Also, we transmit a frame that is L = 400 bits long. Calculate
(i) Ring Latency in bits.
(ii) Efficiency. **(12+6)**

Q.4 a. Discuss the various goals of a routing algorithms? **(6)**

b. Discuss briefly the following polar encoding schemes:
(i) NRZ
(ii) RZ
(iii) Manchester
(iv) Differential Manchester **(4×2)**

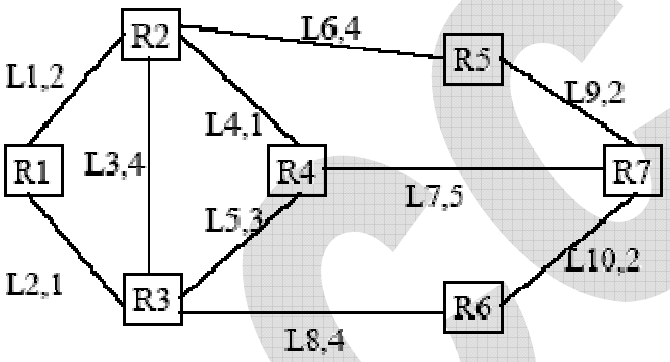
c. Find the minimum bandwidth for an FSK signal transmitting at 2000 bps. Transmission is in half-duplex mode, and the carriers are separated by 3000 Hz. **(4)**

Q.5 a. Distinguish between the following:
(i) Static and dynamic routing.
(ii) Centralized and distributed routing. **(5×2)**

b. Compare the two basic scheduling approaches in Medium access control? **(8)**

Q.6 a. What are the different services that TCP provides to Applications program? **(9)**

b. The figure below shows seven routers connected with links that have the indicated costs. Use the Hello protocol to show how the routers develop the same topology database for the network **(9)**



Q.7 Write Short notes on the following?

(i) SMTP
(ii) Data Encryption Standard (DES)
(iii) Advantages of IPv6 over IPv4. **(6+6+6)**