ROLL NO. _____

Code: CT32 **Subject: COMPUTER NETWORKS**

ALCCS - NEW SCHEME

Time: 3 Hours **FEBRUARY 2013** **Max. Marks: 100**

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

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. Compare TCP/IP protocol with ISO-OSI protocol.

b. A system has a bandwidth of 4 kHz and a signal-to-noise ratio of 28 dB at the input to the receiver, calculate

(i) it's information carrying capacity.
(ii) the capacity of the channel, if its bandwidth is doubled while the transmitted signal power remains same.

c. With suitable example, explain error correction using CRC.

d. Mention the type of address for the following IP addresses:

(i) 126.33.44.56
(ii) 195.55.23.96
(iii) 132.133.134.136
(iv) 151.252.253.250

e. What is birth death process? Mention Laws of Motion for Birth-Death.

f. Briefly explain Simple Mail Transfer Protocol.

g. Compare IPv4 and IPv6 protocol. **(7 × 4)**

Q.2 a. Mention different layers of OSI model. Also explain in detail the various functions performed by the following layers:

(i) Data link layer
(ii) Network layer **(8)**

b. Explain different digital modulation techniques used in computer network. **(6)**

c. State and explain Shannon channel capacity theorem for a noisy channel. **(4)**

Q.3 a. Briefly explain CSMA-CD protocol. **(6)**

b. Explain the working of stop and wait and selective repeat ARQ protocols. **(8)**

c. Give the comparisons between Virtual circuit and datagram. **(4)**

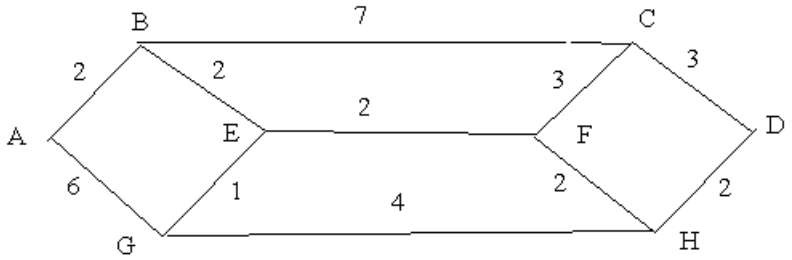
Q.4 a. Explain in detail different multiple accessing techniques used in computer networks. **(9)**

b. With neat diagram, explain the working of 802.3 protocol. **(5)**

c. Suppose that the ALOHA protocol is used to share a 56 kbps satellite channel. Suppose that packets are 1000 bits long. Find the maximum throughput of the system in packets/second. **(4)**

Q.5 a. Explain in detail circuit and message switching. **(8)**

b. Explain shortest path algorithm and using this algorithm find the shorted path from A to D. **(10)**



Q.6 a. What are the Characteristics of the Queue System and explain M/M/1 Queue model. **(6)**

b. Explain the working of User Datagram Protocol. **(6)**

c. Briefly explain HDLC Protocol. **(6)**

Q.7 a. With neat diagram explain IPv4 header format. **(9)**

b. Explain the working of DES algorithm. **(6)**

c. Explain Unicast, Multicast and Broadcast addressing in a computer network. **(3)**