

## ALCCS

Time: 3 Hours

**FEBRUARY 2014**

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**
- Explain Peer-to-Peer communication between layers in OSI reference model.
  - Given a channel with an intended capacity of 20 Mbps, the bandwidth of the channel is 3 MHz. Find SNR to achieve this capacity. Assuming the same channel capacity, find the number of signal levels using Nyquist formula.
  - Differentiate between the connection oriented and connectionless transfer services with relevant diagrams.
  - 100 stations on a pure ALOHA system share a 1 Mbps channel. If the frame size is 1000 bits, find the throughput for each station sending 10 frames per second.
  - Explain in brief the two broad categories of schemes for sharing transmission medium.
  - Explain FIFO queuing with discard priority.
  - Draw the UDP header format and brief the function of each field. (7 × 4)
- Q.2**
- Draw the TCP/IP protocol graph and explain how the various layer work together in realizing internetworking. (8)
  - Explain the various line coding methods with suitable waveforms. (10)
- Q.3**
- How does selective repeat ARQ protocol differ from Go-back-N ARQ protocol; explain it with suitable diagrams. (7)
  - Describe the transitional phases of a PPP (Point-to-Point protocol) connection with the help of a phaser diagram. (7)
  - What is the need for bit stuffing in HDLC frames? Explain with an example. (4)
- Q.4**
- What is the reservation protocol? Explain with the help of an example. (6)

b. Explain CDMA technique with relevant diagrams. (8)

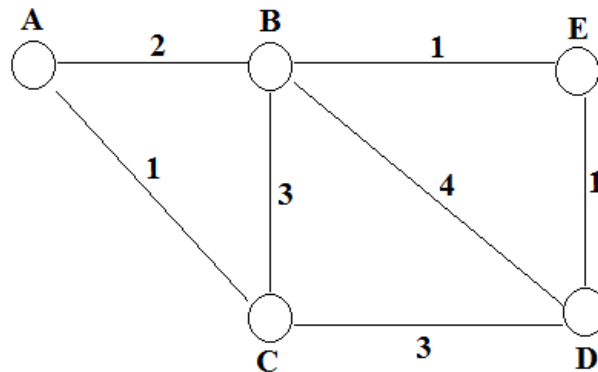
c. In a CSMA/CD network at 1 Gbps over 1km with no repeaters, find the minimum frame size. Assume the signal speed in the cable as  $200\text{m}/\mu\text{sec}$ . (4)

**Q.5** a. Explain IEEE 802.3 standard for Ethernet with the help of frame format. (8)

b. Compare virtual circuit and datagram packet switching with the help of timing of events diagram showing the delays in packet switching. (7)

c. How are routing techniques classified? (3)

**Q.6** a. Find the shortest path from A to D for the network shown (5)



b. Explain the arrival processes and service times with the help of a queuing system. (8)

c. How is subnet mask useful in IP addressing? Explain with an example. (5)

**Q.7** a. Draw the TCP segment format and explain the function of each field. (8)

b. What is secret key cryptography? Explain with a suitable block diagram. (6)

c. Write a note on FTP. (4)