

## ALCCS – (OLD SCHEME)

Code: CS32  
Time: 3 Hours

Subject: COMPUTER NETWORKS  
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**
- What is OSI Reference Model? Draw the model with the help of a neat diagram.
  - If a periodic signal is decomposed into five sine waves with frequencies of 100, 300, 500, 700, and 900 Hz, what is its bandwidth? Draw the spectrum, assuming all components have a maximum amplitude of 10 V.
  - What are the various functions performed by the data link layer?
  - What is channelization? Define Time Division Multiple Access.
  - How the information about the other routers(nodes ) are maintained by a router on the network?
  - What is Fragmentation? Explain the fields related to Fragmentation.
  - What is World Wide Web? Explain the architecture of WWW. (7 × 4)
- Q.2**
- How the interaction between the various OSI Layers can be established? Define the services between various layers with the help of suitable diagrams. (9)
  - What is digital-to-analog conversion? What are the various types of Digital-to-Analog Conversion? Explain FSK in detail. (9)
- Q.3**
- Explain the Noisy Channel Protocol: Go-Back-N ARQ. (9)
  - Define the throughput of Pure Aloha? A pure ALOHA network transmits 200-bit frames on a shared channel of 200 kbps. What is the throughput if the system (all stations together) produces-
    - 1000 frames per second
    - 500 frames per second
    - 250 frames per second (9)

- Q.4** a. Write a brief note on CSMA/CD. (5)
- b. Prove that utilization of a server in M/M/1 queue is  $\rho$ . (5)
- c. What is the Isolated Routing? Explain one isolated routing in detail. (8)
- Q.5** a. What are IP Addresses? Categorize the IP addresses into various classes. (9)
- b. What is the IPv4 Protocol? Show the IPv4 datagram format with the help of a suitable diagram and briefly explain various fields therein. (9)
- Q.6** a. How does the Addressing Mechanism take place in the Transport layer? Explain the functioning in detail. (9)
- b. Briefly explain two protocols used in the Transport Layer for the Internet. Explain the TCP service model and segment header. (9)
- Q.7** a. Explain the functioning and steps used in Substitution and Transposition Ciphers. (9)
- b. What is the File Transfer Protocol? What are the various transmission modes of FTP? Explain briefly. (9)