ROLL NO. _____

Code: CT32 **Subject: COMPUTER NETWORKS**

ALCCS - NEW SCHEME

Time: 3 Hours **FEBRUARY 2012** **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 **(7 × 4)**

a. Draw OSI reference model and TCP/IP architecture.

b. 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.

c. Explain Stop and wait protocol for noiseless channels.

d. What are Random Access protocols? List three random access protocols.

e. Find the error, if any, in each of the following IPv4 addresses.
(i) 111.56.045.78
(ii) 221.34.7.8.20
(iii) 75.45.301.14
(iv) 11100010.23.14.67

f. How Multiplexing is done in transport layer and what are its advantages?

g. Explain DES and give its block diagram.

Q.2 a. Explain any two error detection and correction techniques. **(9)**

b. What are the functions performed by each and every layer of OSI Model? Explain briefly. **(9)**

Q.3 a. Explain frequency domain and time domain characteristics of communication channel. Define the terms:
(i) Bandwidth
(ii) Throughput
(iii) Latency **(9)**

b. Explain the Go-Back-N and selective repeat ARQ protocols. **(9)**

Q.4 a. Explain HDLC protocol and its frame in detail. **(9)**

b. How CSMA/CA works? Explain each term with respect to CSMA/CA in detail. **(9)**

Q.5 a. 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?
(i) 1000 frames per second.
(ii) 500 frames per second.
(iii) 250 frames per second. **(9)**

b. What is circuit switched networks? How communication is established in these networks? **(9)**

Q.6 a. Explain M/M/1 Queue model. **(4)**

b. Explain IP Addresses. Categorize the IP addresses into various classes. **(9)**

c. Explain Poisson's process in data traffic characteristics. **(5)**

Q.7 a. Give IPv4 datagram format. **(4)**

b. Briefly explain File Transfer Protocol and mention its various modes. **(9)**

c. Explain RSA algorithm. **(5)**