EASTERN UNIVERSITY, SRILANKA

THIRD EXAMINATION IN SCIENCE - 2004/2005

Repeat

FIRST SEMESTER (Jan./Feb.,2006)

CS302 – Computer Network

Answer all questions **Time: 2Hours**

Q1.

(a) List the seven layers of the OSI reference model and briefly describe the function of each layer.

(b) Define the following terms used in data transmission:

- Frequency
- Spectrum
- Bandwidth

(c) Describe each of the following types of transmission media:

(i) Optical fiber cable

(ii) Twisted pair

(iii) Satellite microwave

Q2.

(a) Briefly describe the characteristics of the following multiplexing:

i) Frequency-Division Multiplexing

ii) Synchronous Time-Division Multiplexing

(b) Describe each of the following switching techniques:

i) Circuit switching

ii) Packet switching

(c) List and describe the main types of network topologies currently in widespread used for LANs.

Q3.

(a) Briefly describe the services provided by the data link layer to the network layer.

(b) Describe the following:

i) Character oriented transmission with character stuffing

ii) Bit oriented transmission with bit stuffing

(c) Describe the CRC error detection method.

Suppose a series of 8-bit message blocks (frames) is to be transmitted across a data link using a CRC for error detection and a generator polynomial, $G(x)=x^4+x+1$.

Generate the CRC code for the message 1101011011.

Q4.

(a) Briefly describe the data link protocol '**Simplex Protocol for Noisy Channel**'.

(b) With the aid of suitable examples describe each of the following sliding window protocol:

- ✓ using Go-Back-N
- ✓ using Selective repeat

Suppose a sliding window protocol is used in a computer network with three bits for the packet sequence number.

Find out the maximum window size in each of the above cases.