EASTERN UNIVERSITY, SRILANKA
DEPARTMENT OF MATHEMATICS
SPECIAL REPEAT EXAMINATION IN SCIENCE – 2007/2008
THIRD YEAR, FIRST AND SECOND SEMESTER (FEB, 2010)

CS 302 – COMPUTER NETWORK

Answer all questions   **Time allowed: 2 Hours**

Q1)

a. What do you mean by a 'Computer Network' and explain their usage?

b. Write the short notes on the following topologies with the aid of diagrams:

    i.   Bus topology;

    ii.   Ring topology;

    iii.   Star topology.

c. Describe each of the following switching techniques:

    i.   Circuit switching;

    ii.   Packet switching.

Q2)

a. Briefly describe the '**ISO-OSI**' reference model, stating the major responsibilities of each layer.

b. Describe the process of data transmission through the layers of '**ISO-OSI**' reference model.

c. Describe how the following methods handle collision in a network:

    a. CSMA / CD;

    b. Token ring.

Q3)

a. Describe how the flow control is handled in the '**Stop and Wait Protocol**'?

b. Analyse the transmission of a data frame that uses 'Stop and Wait protocol' for the following situations:

    i.   Lost or damaged frame;

    ii.   Lost acknowledgement;

    iii.   Delayed acknowledgement.

c. What you understand by piggybacking? Describe the advantages of piggybacking.

Q4)

a. List three types of extended versions of the Phase Shift Keying (PSK) technique and explain how they are achieved.

b. The following raw bits are to be sent along a network;

> 1100111 1011101 0111001 0101001

Use the Two-Dimensional parity check method on the data bits and find out data sent to the recipient.

c. Suppose a series of 8 bit message blocks (frames) are to be transmitted across data link using a CRC for error detection and correction.

If the generator polynomial is $G(x) = x^4 + x$, then generate the CRC code for the message bit **1110110110**.