EASTERN UNIVERSITY, SRI LANKA
DEPARTMENT OF MATHEMATICS
EXTERNAL DEGREE EXAMINATION IN SCIENCE ~~2008/2009~~ (2010/2011)
THIRD YEAR, SECOND SEMESTER(April /May, 20~~17~~)
EXTCS 302 – COMPUTER NETWORKS
REPEAT

Answer all questions   **Time allowed: 02 hours**

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a) Define the terms *Networking* and *Internet* stating how they differ from one another.

b) Describe the following network types:

    i. Local Area Network (LAN);
    ii. Wide Area Network (WAN);
    iii. Metropolitan Area Network (MAN);

c) List the advantages and disadvantages of the star topology.

d) Write short notes on the following types of physical media:

    i. Shielded twisted pair cable;
    ii. Fiber optic cable;
    iii. Satellite microwave;
    iv. Coaxial cables;

a) What is the purpose of using standard models such as OSI in networking systems?

b) Briefly describe the ISO-OSI reference model, stating the major responsibilities of each layer.

c) Describe the process of data transmission via the layers of ISO-OSI reference model.

d) Describe how the CSMA / CD handle collision in a network.

03.

    a) Describe briefly the *analog modulation* and *digital modulation*.

    b) List different types of digital modulation techniques and explain how they are achieved.

    c) Discuss the process of Two-Dimensional parity bit error detection method by using following data:

        010110 1001010 0110100 0100101 1011000 1111011

    d) Suppose a message frame is to be transmitted across a data link using a CRC for error detection and correction. If the generator polynomial is,
$$G(x) = x^3 + 1;$$

        i. generate the CRC code for the message bit **1101011011**.
        ii. find the actual bit stream.
        iii. Suppose fourth bit from the left is inverted during transmission. Show that this error is detected at the receiver side.

04.

    a) What do you understand by piggybacking in data transmission?

    b) Briefly explain the process of Frequency Division Multiplexing (FDM).

    c) What are the drawbacks of frequency division multiplexing?

    d) Analyze the transmission of a data packet for a system that uses Stop and wait protocol for the following situations: (Use appropriate figures to support your answer.)

        i. Lost or damaged frame;
        ii. Lost acknowledgement;
        iii. Delayed acknowledgement;