Reg. No.										

INTERNATIONAL CENTRE FOR APPLIED SCIENCES

(Manipal University)

IV SEMESTER B.S. DEGREE EXAMINATION – APRIL / MAY 2017

SUBJECT: COMPUTER COMMUNICATION AND NETWORKS (CS 248)

(BRANCH: CE)

Saturday, 29 April 2017

Time: 03 Hours **Max. Marks: 100**

- ✓ **Answer ANY FIVE full Questions.**
- ✓ **Missing data, if any, may be suitably assumed**

1A. What is a computer Network? Explain following Terms in Computer Network: Broadcast link, Point -to- Point Link, Unicasting and Broadcasting.

1B. Draw a neat Diagram of OSI- Reference Model and Explain Physical, Data Link and Network Layers

1C. Explain the following terms with respect to communication between two devices: simplex, half-duplex and full-duplex. Give the examples to each.

[4+10+6]

2A. Explain Delay Distortion and its effects in transmission Media?

2B. List and Explain FOUR types of noise in Transmission Media.

2C. Explain Nyquist Bandwidth Limitation on data Rate in Communication Channel.

[5+10+5]

3A. Explain the Physical Description and working principle of Optical Fiber Cables.

3B. For the bit stream 01001100011, sketch the waveform in NRZ-L, NRZI, Bipolar AMI, Pseudo-ternary, Manchester and Differential Manchester. Assume that the Signal level for the preceding bit for NRZI was low, the most recent preceding bit (AMI) has a negative voltage; and the most recent preceding 0 bit (pseudo-ternary) has a negative voltage.

3C. Give the B8ZS and HDB3 encoding for a digital data stream 100000000110000010. (Assume odd number of 1s since last substitution for HDB3)

[5+10+5]

4A. Explain Amplitude Shift Keying with mathematical expression.

4B. Given the bit pattern 00110100010, encode this data using ASK, BFSK, and BPSK. Draw Neat Waveforms

4C. Draw Diagram of QPSK and OQPSK modulators. Give QPSK and OQPSK waveforms for the data stream 1011000111 (1 is represented by +ve voltage and 0 is represented by -ve voltage)

[4+6+10]

5A. Using the polynomial P= 10001000000100001, generate the 16-bit CRC code for a message consisting of a 1 followed by 15 0s. Use Binary long division.

5B. List the station types supported by HDLC. Describe each

5C. What is Flow Control? Explain Stop-and-Wait Flow Control technique with diagrams.

5D. Explain Selective-Reject ARQ with neat Diagram.

[5+5+5+5]

6A. Explain Sliding window protocol with the help of suitable diagrams of senders and receiver's perspectives.

6B. Explain the process of frequency Division Multiplexing and De-Multiplexing with neat Diagram.

[10+10]

7A. Explain Pure ALOHA Protocols of MAC Sublayer

7B. What are the three different Carrier Sense Multiple Access Protocols. Explain.

7C. Explain the basic Bit-Map Protocol with a diagram.

7D. What is Hidden Station Problem and Exposed Station Problem in wireless LANs? Explain with Diagram.

[4+6+6+4]

8A. Explain the implementation of Connection Oriented Service with simple Diagram.

8B. Distinguish between virtual-circuit and datagram networks.

8C. Distinguish between static, dynamic routing Algorithms.

8D. List and explain in brief the approaches to congestion control in networks.

[5+5+4+6]