USN ☐☐☐☐☐☐☐☐☐☐ **13MCA31**

Third Semester MCA Degree Examination, June/July 2015
Computer Networks

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1   a. Explain the uses of computer networks.   (05 Marks)
    b. Draw the OSI network architecture. Explain each layer in detail.   (10 Marks)
    c. Discuss about LAN and WAN.   (05 Marks)

2   a. Differentiate between an analog and a digital signal.   (05 Marks)
    b. Explain analog transmission and digital transmission. Which is the preferred method of transmission? Why?   (10 Marks)
    c. Define channel capacity. What key factors affect channel capacity?   (05 Marks)

3   a. Differentiate between optical fiber and copper wire.   (05 Marks)
    b. What is multiplexing and de-multiplexing? Explain TDM (Time Division Multiplexing).
                                                                                       (05 Marks)
    c. Explain GSM mobile network architecture with diagram.   (10 Marks)

4   a. A bit stream 1101011111 is transmitted using the standard CRC method. The generator polynomial is $x^4 + x + 1$. Show the actual bit string transmitted. Due to noise the least significant bit is inverted during the transmission. Show the bit string received and the error is detected at the receivers end   (10 Marks)
    b. Explain stop–and–wait protocol for a noisy channel with different scenario.   (10 Marks)

5   a. Explain the Ethernet architecture and its frame format.   (10 Marks)
    b. Explain spanning tree algorithm.   (10 Marks)

6   a. Explain link state routing algorithm.   (10 Marks)
    b. Explain IPv4 header, along with a diagram.   (10 Marks)

7   a. Explain the concept of three way hand shake.   (05 Marks)
    b. Explain UDP header format.   (05 Marks)
    c. Explain the architecture of the e-mail system.   (10 Marks)

8   Write a short notes :
    a. DNS
    b. TCP
    c. ARPANET
    d. Bluetooth.   (20 Marks)

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