USN ☐☐☐☐☐☐☐☐☐☐

Third Semester MCA Degree Examination, Dec.2015/Jan.2016
Computer Networks

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions.*

1　a. Draw the OSI network architecture. Explain each layer in detail. (12 Marks)
　　b. Differentiate between connection oriented and connectionless services. (08 Marks)

2　a. Explain Transmission impairments. (10 Marks)
　　b. Explain the Nequest bandwidth and Shannon capacity formula. (06 Marks)
　　c. A telephone line normally has a bandwidth of 3000Hz assigned for data communications. The signal-to-noise ratio is usually 3162. Calculate the channel capacity for this channel. (04 Marks)

3　a. With the help of neat diagram, explain any two guided transmission media. (10 Marks)
　　b. Show the NRZ, Manchester and Alternate Mark Inversion (AMI) encoding for the bit pattern 100110111. (06 Marks)
　　c. Explain the Time Division multiplexing. (04 Marks)

4　a. Suppose we want to transmit the message 1101011111 using the generator $g(x) = x^4 + x + 1$.
　　　(i)　Use long division to determine the message that should be transmitted.
　　　(ii)　Suppose the lift bit of the message is inverted due to noise on the link. What is the result of the receiver CRC calculation? How does the receiver knows there is an error? (10 Marks)
　　b. Explain a simplex stop-and-wait protocol for an error free channel and discuss with the help of neat diagram Go-Back-N protocol. (10 Marks)

5　a. Explain with the help of a diagram pure ALOHA. (07 Marks)
　　b. Explain the 802.11 frame structure. (07 Marks)
　　c. Explain Bluetooth protocol architecture. (06 Marks)

6　a. Explain distance vector routing algorithm. (10 Marks)
　　b. What is traffic shaping? Explain leaky bucket algorithm. (06 Marks)
　　c. Explain Tunneling. (04 Marks)

7　a. Explain three way hand shake with the help of a neat diagram. (10 Marks)
　　b. Explain Real-Time transport protocol. (06 Marks)
　　c. Write a note on performance problem. (04 Marks)

8　a. Explain the TCP segment header. (10 Marks)
　　b. Write a short note on the following:
　　　i)　Electronic mail
　　　ii)　Content Delivery Networks. (10 Marks)

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