

--	--	--	--	--	--	--	--	--	--

**Fifth Semester B.E. Degree Examination, Dec.2015/Jan.2016**

**Computer Networks – I**

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting at least TWO questions from each part.**

**PART – A**

- 1
  - a. Define network. With a neat diagram, explain the four basic topologies. (05 Marks)
  - b. With the help of a diagram, explain the functionalities of each layer of OSI reference model. (10 Marks)
  - c. List and explain the four levels of addresses used in an internet employing the TCP/IP protocols. (05 Marks)
  
- 2
  - a. Define latency. Briefly explain the components of latency. What are the propagation time and transmission time for a 5 Mbyte message (image), if the bandwidth of the network is 1 Mbps? Assume that the distance between the sender and receiver is 12000 km and that light travels at  $2.4 \times 10^8$  m/s. (08 Marks)
  - b. Explain the PCM technique used for analog to digital conversion. (Taking suitable example). (08 Marks)
  - c. What is line coding? Represent the sequence "01001110" using NRZ-L, NRZ-I and Manchester schemes. (04 Marks)
  
- 3
  - a. What is TDM? Explain in detail. (07 Marks)
  - b. Explain virtual circuit network with an example, and also briefly discuss the phases. (10 Marks)
  - c. Five channels, each with a 100 kHz bandwidth are to be multiplexed together. What is the minimum bandwidth of the link if there is a need for a guard band of 10 kHz between the channels to prevent interference? (03 Marks)
  
- 4
  - a. How does datawords and codewords is represented in block coding and also explain how can errors be detected and corrected by using block coding. (10 Marks)
  - b. Find the code word using CRC given data "1101" and generator "1100". (10 Marks)

**PART – B**

- 5
  - a. With a neat diagram, explain any two protocols of noisy channel. (12 Marks)
  - b. Explain the frame format of HDLC protocol. (08 Marks)
  
- 6
  - a. Describe pure ALOHA and slotted ALOHA. (10 Marks)
  - b. What is channelization? List and explain the channelization protocols. (10 Marks)
  
- 7
  - a. Explain the different types of addressing mechanism in IEEE 802.11. (05 Marks)
  - b. Define Bluetooth and explain the architecture of Bluetooth. (05 Marks)
  - c. With a neat diagram, explain the categories of connecting devices. (10 Marks)
  
- 8
  - a. Explain classful addressing and classless addressing with respect to IPV4. (08 Marks)
  - b. Explain in detail IPV6 packet format. (08 Marks)
  - c. Give a comparison between IPV4 and IPV6. (04 Marks)

\* \* \* \* \*