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10CS55

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 2.4×10^8 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 is 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)**

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