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06CS55

Fifth Semester B.E. Degree Examination, June 2012
Computer Networks – I

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. What is data communication? What are the four important fundamental characteristics? **(06 Marks)**

b. What is a protocol? Briefly explain its key elements. **(05 Marks)**

c. Explain the responsibilities of transport layer in OSI reference model. **(09 Marks)**

2 a. Define bandwidth. A periodic signal has bandwidth of 20Hz. The highest frequency is 60Hz. What is the lowest frequency? Draw the spectrum if the signal contains all frequencies of the same amplitude. **(04 Marks)**

b. Calculate the Shanon channel capacity in the following cases :
i) Bandwidth = 20 kHz $SNR_{dB} = 40$; ii) Bandwidth = 200 kHz $SNR_{dB} = 6$. **(06 Marks)**

c. Define line coding. Describe unipolar NR2, polar NR2–L, bipolar AMI and Manchester encoding by applying on the information sequence 101011100. **(10 Marks)**

3 a. An analog signal has a bit rate of 8000 bps and a band rate of 1000 band. How many data elements are carried by each signal element? How many signal elements do we need? **(05 Marks)**

b. Explain phase modulation with a neat diagram. **(05 Marks)**

c. What is time division multiplexing? Explain how statistical TDM overcomes the disadvantages of synchronous TDM. **(10 Marks)**

4 a. Briefly explain the coaxial cable and optical fiber with their applications. **(08 Marks)**

b. Find the codeword, using CRC given data word "1001" and generator "1011". **(06 Marks)**

c. What is internet checksum? With an example list the steps undertaken by the sender and receiver for error detection. **(06 Marks)**

PART – B

5 a. Explain selection repeat ARQ with neat diagrams. **(08 Marks)**

b. What is piggybacking? List its usefulness. **(04 Marks)**

c. Explain the frame format and transitional phases of point-to-point protocol. **(08 Marks)**

6 a. A pure ALOHA network transmits 200-bit frames on a shared channel of 200 kbps. What is the throughout if the system produces 1000 frames per second. **(06 Marks)**

b. With a neat diagram explain CSMA/CD protocol. **(08 Marks)**

c. Explain the MAC sublayer of gigabit Ethernet **(06 Marks)**

7 a. Explain the architecture of IEEE 802.11. **(08 Marks)**

b. Differentiate between repeater and amplifier. **(02 Marks)**

c. How does a VLAN reducer network traffic? **(04 Marks)**

d. Differentiate between bus backbone and star backbone. **(06 Marks)**

8 a. Explain in detail, the architecture of a SONET system. **(10 Marks)**

b. Give the architecture of ATM. Show how VPs and VCs are established. **(06 Marks)**

c. Write a short note on AMPS. **(04 Marks)**

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