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10CS55

Fifth Semester B.E. Degree Examination, June/July 2017
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 protocol. List and explain key elements of a protocol. **(05 Marks)**

b. With a necessary diagram correlate TCP/IP with layers of OSI model. **(10 Marks)**

c. List and explain different addresses in TCP/IP. **(05 Marks)**

2 a. The signal-to-noise ratio is often given in decibels. Assume that $SNR_{dB} = 36$ and the channel bandwidth is 2 MHz. Calculate the channel capacity. **(06 Marks)**

b. Define line coding. Describe RZ encoding by applying on the information sequence 01001001. **(08 Marks)**

c. Distinguish between parallel and serial transmission. List and explain different ways of serial transmission. **(06 Marks)**

3 a. Define spread spectrum and its goal. List and explain two spread spectrum techniques. **(10 Marks)**

b. Compare and contrast a circuit switched network and a packet switched network. **(06 Marks)**

c. List and explain two types of addressing of virtual circuit network. **(04 Marks)**

4 a. Given dataword "1010" and divisor "1011". Using CRC find the codeword. **(06 Marks)**

b. With a necessary diagram, explain structure of the encoder and decoder for Hamming code with 4 bit dataword. **(10 Marks)**

c. Consider the table shown to represent code.

Dataword	Codeword
0	00000
1	01011
2	10111
3	11111

Check whether the code is linear code or non-linear code. **(04 Marks)**

PART – B

5 a. List and explain three types of HDLC frames. How HDLC is different from PPP? **(10 Marks)**

b. Explain the importance of framing and piggybacking technique. **(04 Marks)**

c. Explain simplest protocol with a neat diagram. **(06 Marks)**

6 a. A pure ALOHA network transmits 200 bit frames on a shared channel of 200 kbps. What is the throughput if system produces (i) 1000 frames/sec (ii) 500 frames/sec (iii) 250 frames/sec. **(06 Marks)**

b. Explain 802.3 MAC frame format. **(08 Marks)**

c. What is the difference between Unicast, multicast and broadcast address? Define the type of the following destination addresses:

(i) 47 : 20 : 1B : 2E : 08 : EE

(ii) 4A : 30 : 10 : 21 : 10 : 1A

(iii) FF : FF : FF : FF : FF : FF **(06 Marks)**

7 a. Explain different kinds of services defined by IEEE 802.11 architecture. **(10 Marks)**

b. With a neat diagram, explain different categories of connecting devices. **(10 Marks)**

8 a. Draw format of an IPV6 datagram and explain. **(08 Marks)**

b. Explain the concept of tunneling in IPV6 communication. **(04 Marks)**

c. Draw IPV4 header format and explain. **(08 Marks)**

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