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**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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