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**Fifth Semester B.E. Degree Examination, June/July 2013**  
**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. Explain OSI reference model. (10 Marks)
- b. Explain categories of network and differentiate between them. (10 Marks)
- 2 a. Represent the given sequence 01001110 in unipolar, NRZ-L, Manchester, AMI, Pseudoternary? (06 Marks)
- b. The loss in a cable defined in debels/km (dB/km). If the signal at beginning of a cable with -3 dB/km has a power of 3 mW. What is the power of the signal at 5 km? (06 Marks)
- c. Explain the PCM encoder. (08 Marks)
- 3 a. Explain frequency hopping spread spectrum (FHSS). (10 Marks)
- b. Four 1 Kbps connections are multiplexed together. A unit is 1 bit. Find
  - i) The duration of 1 bit before multiplexing.
  - ii) The transmission rate of the link.
  - iii) The duration of a time slot.
  - iv) The duration of a frame. (05 Marks)
- c. Differentiate between circuit switched, datagram networks and virtual circuit networks. (05 Marks)
- 4 a. Explain structure of encoder and decoder for hamming code. (08 Marks)
- b. Find the codeword, using CRC given dataword 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 stop-and-wait ARQ protocol with neat diagram. (08 Marks)
- b. What is framing? Explain bit and character stuffing with an example. (04 Marks)
- c. Write short notes on HDLC. (08 Marks)
- 6 a. Explain CDMA. (06 Marks)
- b. A slotted ALOHA network transmits 200 bit frames using a shared channel with 200 Kbits/sec bandwidth. Find throughput if system produces i) 1000 frames/sec ii) 500 frames/sec iii) Frames/sec. (06 Marks)
- c. Explain 802.3 MAC frame format. (08 Marks)
- 7 a. Explain the architecture of IEEE 802.11. (10 Marks)
- b. Explain connecting devices. (10 Marks)
- 8 a. Draw IPV4 header format and explain. (08 Marks)
- b. A ISP is granted a block of address starting with 190.100.0.0/16 (655, 536 address). The ISP needs to distribute these addressing to 3 groups of customers.
  - i) First group has 64 customers each needs 256 address.
  - ii) Second group has 128 customers each needs 128 address.
  - iii) The third group has 128 customers each needs 64 address.
 Design the subblock and findout. How many addresses are still available after their allocations? (07 Marks)
- c. Compare between IPV4 and IPV6. (05 Marks)

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