Seventh Semester B.E. Degree Examination, December 2012

Computer Communication Networks

Time: 3 hrs.  
Max. Marks: 100

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

PART – A

1. a. Describe the ISO OSI reference model of a computer Network. Discuss the function of each layer. (10 Marks)
   b. Describe the SS7 service and its relation to the telephone network. (05 Marks)
   c. Distinguish between a DSL modem and a DSLAM. (05 Marks)

2. a. Differentiate between character stuffing and bit stuffing with examples. (05 Marks)
   b. Explain different HDLC frames. (05 Marks)
   c. What are sliding window protocols? Explain Go-Back-N protocol for Noisy channel. (10 Marks)

3. a. Compare pure ALOHA with slotted ALOHA. What are the reasons for poor channel utilization in ALOHA systems? How the same is improved in CSMA. (08 Marks)
   b. Discuss the concepts of
      i) 1 – persistent CSMA    ii) Non-persistent CSMA. (06 Marks)
   c. Explain the working of CSMA/CD. Suppose a point to point link is set up between earth and a rover on MARS. The distance from earth to mars is approximately 55 Gm and data travels over the link at a speed of light $3 \times 10^8$ m/s. Calculate the minimum round trip propagation time. (06 Marks)

4. a. Compare the data rates for standard Ethernet, fast Ethernet, Gigabit Ethernet and Ten Gigabit Ethernet. (04 Marks)
   b. What is the difference between a unicast, multicast, and broadcast address? Define the type of the following destination addresses:
      i) 4A : 30 : 10 : 21 : 10 : 1A
      ii) 47 : BF : 1E : 2E : 08 : EE
      iii) FF : FF : FF : FF : FF : FF (08 Marks)
   c. Explain the following with respect to FAST Ethernet:
      i) Implementation  ii) Encoding  iii) 100 BASE-TX  iv) 100 BASE-FX. (08 Marks)

PART – B

5. a. Explain the following connecting devices:
      i) Repeater  ii) Bridge  iii) Router  iv) Gateway. (08 Marks)
   b. What is spanning tree? Explain with suitable example. (08 Marks)
   c. What is VLAN? Explain. (04 Marks)
6 a. Explain the address formats for IPv4 and IPv6 address?
b. List the classes in classful addressing and define the application of each class.
c. What is NAT? How can NAT help in address depletion?

7 a. What is the difference between a direct and an indirect delivery?
b. List and explain three forwarding techniques.
c. Explain dynamic routing table.

8 a. Compare the TCP header and the UDP header. List the fields in the TCP header that are missing from UDP header. Give the reason for their absence.
b. What are the three domains of domain name space? Explain.
c. How does recursion resolution differ from iterative resolution?