Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER 2012

Subject code: 715304 Date: 11-01-2013

Subject Name: Advanced Computer Networks

Time: 02.30 pm – 05.00 pm Total Marks: 70

Instructions:

1. **Attempt question 1, which is compulsory and answer any five from the rest.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right hand indicate the marks.**

Q. No. 1 Briefly answer the following: [2 Marks X 10 = 20 Marks]

a) Explain simplex, half-duplex & full-duplex communications.
b) What are the functions of MAC?
c) How secret key is different from public key?
d) Briefly explain bit stuffing and byte stuffing.
e) What do you understand encapsulation in the layers of OSI model?
f) What is multicast? What is the difference between Unicast and Multicast?
g) What is HIPPI standard?
h) Enumerate the difference between public key and private key algorithms?
i) What are the addresses we use at data link layer, network layer and transport layer in OSI model?
j) What is the support for QoS in IPv6?

Q. No. 2 [4+3+3 Marks]

a) What is the necessity of using 7 layers concept in OSI model? Explain the functioning of 7 layers of OSI model.
b) What are the critiques of TCP/IP model?
c) Distinguish between a router and a bridge.

Q. No. 3 [4+3+3 Marks]

a) Explain the persistent and non-persistent CSMA techniques. Enumerate the difference between Aloha protocols and CSMA protocols.
b) Explain the working of FDDI.
c) Explain the different types of modems.

Q. No. 4 [4+3+3 Marks]

a) What is the subnet work address if the destination address is 200.45.34.56 and the subnet mask is 255.255.240.0?
b) Explain the IEEE 802.11 wireless LANs.
c) Discuss the error correction and detection techniques in Data Link Layer.

Q. No. 5 [4+3+3 Marks]

a) Briefly explain RSA algorithm with suitable example.
b) Explain Deffie-Hellman key exchange.
c) What is key distribution? How are the key distributed in private key algorithms?

Q. No. 6 [4+3+3 Marks]

a) Explain the operations of Mobile IP.
b) Explain the block cipher modes of operation.
c) Give a note on digital signatures and digital certificates.

Q. No. 7 [4+6 Marks]

a) What are problems with IP multicasting in IPv4?
b) Explain the different features of IPv6? What are the differences between IPv4 and IPv6? Explain the strategies of tunnelling from IPv4 to IPv6.

Q. No. 8 [4+(2x3) Marks]

a) Explain the format of IPv6 header and security issues in IPv6.
b) Explain the following terms given below:
    i. IPSec
    ii. SSL algorithm
    iii. MD5 algorithm

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