Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech(CSE)/SEM-6/CS-601/2012

2012

COMPUTER NETWORKS

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : 10 × 1 = 10

   i) An example of full duplex transmission is

      a) Telephone channel b) Satellite channel

      c) Broadcast radio d) None of these.

   ii) The ..... layer handles the creation of data frames.

      a) Data link b) Network

      c) Transport d) Physical.

   iii) Which channel access methods is used in Ethernet networks ?

      a) Pure ALOHA b) CSMA/CD

      c) CSMA/CA d) Slotted ALOHA.

   iv) Which detection method can detect a single bit error ?

      a) CRC

      b) Two dimensional parity checks

      c) Simple parity check

      d) Previous all.

v) Which class of IP address is reserved for multicast communication ?

a) Class *A* b) Class *B*

c) Class *C* d) Class *D.*

vi) Total bandwidth required for AM is

a) zero b) 2 (1 + d) B

c) 2B d) none of these.

vii) At which layer circuit switching takes place ?

a) Transport layer b) Data link layer

c) Physical layer d) None of these.

viii) The address space of IPV4 is

a) 0 b) infinite

c) 2^{32} d) none of these.

ix) How much of channel output of slotted ALOHA will be in comparison to pure ALOHA ?

a) Same b) Double

c) Three times d) None of these.

x) For a 4 bit sliding window, sequence number range is

a) 1 to 16 b) 0 to 7

c) 0 to 15 d) 8 to 15.

GROUP – B
(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. What is Gateways ? Differentiate between hub and Switch. 2 + 3

3. Briefly explain leaky bucket algorithm for congestion control.

4. What are the disadvantages in NRZ encoding ? How RZ encoding solves this problem ?

5. a) Sketch the waveform for the bit steam 10110010 in differential Manchester encoding scheme.

   b) Write the difference between bit stuffing and character stuffing. 3 + 2

6. a) Differentiate between Circuit Switching and Packet Switching.

   b) Why is Medium Access Control technique required ? 3 + 2

GROUP – C
(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) Given a 10 bit sequence 1010011110 and a divisor of 1011. Find the CRC.

   b) What is the advantage of two dimensional parity over simple parity ? Explain with suitable example.

   c) Briefly discuss about the different guided media that are used in computer networks and make a comparison among them.

   d) What is TCP/IP reference model ? 5 + 3 + 5 + 2

8. a) Discuss CSMA/CA with the help of a flowchart.

   b) Why is CSMA/CD not implemented in WLAN ?

   c) Describe 802.3 frame formats. Why is padding required ?

   d) Why is acknowledgment numbered in stop and waits protocol ? Discuss the situation when unnumbered acknowledgments can create confusion in the sender and receiver end. 5 + 3 + 3 + 4

9. a) Differentiate between datagram and virtual circuit packet switching schemes.

   b) Discuss the IEEE 802.5 protocol. Draw the lower two layers of the IEEE 802.5 protocol.

   c) Distinguish between gateway and bridge. What is transparent bridge ? 5 + 5 + 5

10. a) What is distance vector routing protocol ? What is the difference between RIP and EGP ?

    b) Distinguish among the working principles of circuit switching, packet switching and message passing techniques.

    c) What is an autonomous system ? What is the difference between intra autonomous system and inter autonomous system routings ? Give an example of each routing protocol. 5 + 5 + 5

11. a) State the differences between IPV4 and IPV6.

    b) State the difference between static and dynamic routing.

    c) Describe any shortest path algorithm.

    d) Differentiate between ARP and RARP. 4 + 3 + 6 + 2

12. Write short notes on any *three* of the following : 3 × 5

    a) FTP

    b) CSMA/CD

    c) Satellite transmission

    d) SMTP

    e) DNS

    f) QoS in transport layer.