Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.Tech (CSE)/SEM-2/CST-621/2011

2011

NEXT GENERATION INTERNET AND MULTIMEDIA

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

1. Choices may be more than one. Justify your answer : $5 \times 2 = 10$

   i) You have a network address of 196.202.56.0 with four subnets. You want to allow for maximum number of hosts. What is the subnet mask you need to apply ?

   a) 255.255.255.224 b) 255.255.224.0

   c) 255.255.255.128 d) 255.255.255.192

   ii) You are asked to evolve a TCP/IP addressing scheme for your organization. How many network numbers (subnet IDsr) must you allow when you design the network for your organization ? [select 2 best answers]

   a) one subnet for each host

   b) one for each subnet

   c) one for each network card

   d) one for each WAN connection.

iii) Which of the following machines can be a DHCP server ?

a) Computer running Windows 95 Operating system

b) Computer running Windows 98 Operating system

c) Computer running Windows NT 4.0

d) Computer running NT work station 3·51 operating system.

iv) In a TCP connection, the initial sequence number at client site is 2171. The client opens the connection, sends only one segment carrying 1000 bytes of data, and closes the connection. What is the value of the sequence number in each of the following segments sent by client ?

a) The SYN segment

b) The data segment

c) The FIN segment.

v) Determine which of the following is an FQDN and which is PQDN :

a) xxx

b) xxx.yyy

c) xxx.yyy.net

d) zzz.yyy.xxx.edu

GROUP – B

Answer any *six* of the following. 6 × 10 = 60

2. a) What are the different types of addresses used in an internet using TCP/IP protocols ? Explain describing their necessity. 3

b) What is the maximum number of subnets in each case ?

i) Class B; mask 255.255.192.0

ii) Class C; mask 255.255.255.240 3

c) What is the requirement for Classless addressing scheme ? An ISP is granted a block of addresses starting with 112.56.4.0/20. The ISP wants to distribute these blocks to 25 organizations with each organization receiving 32 addresses only. Design the sub blocks and the slash notation for some sub block. Find how many addresses are still available after this allocation. 4

3. a) How router is forwarding packets with classfull addressing ? 4

b) The routing table for router *R*1 is given below. Draw the topology. 4

Mask	Network Address	Next-Hop Address	Interface number
/26	140.6.12.64	180.14.2.5	M2
/24	130.4.8.0	190.17.6.2	M1
/16	110.70.0.0	—	M0
/16	180.14.0.0	—	M2
/16	190.17.0.0	—	M1
Default	Default	110.70.4.6	M0

c) A host is sending 100 datagrams to another host. If the identification number of the first datagram is 1024, what is the identification number of the last ? Explain. 2

4. a) Describe RARP. 2

b) Explain checksum procedure of IP. 4

c) What do you mean by timestamp option of IP ? Where is the use of timestamp ? 2 + 2

5. a) Host *A* sends a datagram to host *B*. Host *B* never receives the datagram and host *A* never receives notification of failure. Give two different explanations of what might have happened. 2

   b) A computer receives timestamp request from another computer at 2:34:20 PM. The value of the original timestamp is 52, 453, 000. If the sender clock is 5 ms, what is one way time ? 3

   c) Why is UDP connectionless services ? 2

   d) Do port address need to be unique ? Why or why not ? Why port addresses are shorter than IP addresses ? 3

6. a) Describe the services of TCP in brief. 5

   b) Explain 3 way handshaking for connection establishment using state transition diagram. 5

7. a) What do you mean by silly window syndrome ? How is it handled ? 4

   b) When a packet is retransmitted by sender ? Explain with example. 6

8. a) Explain DHCP with various options and transition states. 4

   b) What is the requirement of IPv6 ? Describe IPv6 addresses. 6

9. a) Briefly explain ATM. 4

   b) What are the *I*, *P* and *B* frames in the context of MPEG coding standard ? What is MP3 ? 6

10. a) Describe JPEG for image compression. 6

    b) Explain VOIP. 4