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MANIPAL INSTITUTE OF TECHNOLOGY

(Constituent Institute of MANIPAL University)
MANIPAL-576104

SIXTH SEMESTER B.TECH. (CS&E) MAKEUP EXAMINATION- JULY. 2014

SUBJECT: NETWORK PROTOCOLS (CSE-304)
DATE: 2-7-2014

TIME: 3 HOUR **MAX.MARKS: 50 M**

Instructions to the Candidates
- Answer ANY FIVE full Questions.
- Missing data can be suitably assumed

1A.What is a network mask? Write the default network mask for each of classes in class full addressing. Explain how routers use network mask to extract network address.

1B. Explain with proper diagram the process of address translation in NAT.

1C. An organization is granted a block of addresses with the beginning address 14.24.74.0/24. The organization needs to have 3 subblocks of addresses to use in its three subnets as shown below.
a. One subblock of 120 addresses.
b. One subblock of 60 addresses.
c. One subblock of 10 addresses.
Find total number of addresses in block. Design each subblock to ensure proper operation and give slash notation for each sub block.

1D.In a block of addresses, we know the IP address of one host is 182.44.82.16/26. What is the first address and the last address in this block? (3+2+3+2)

2A. Draw a neat diagram of ARP package and explain following modules.
a. Output module b. Cache control module.

2B. Explain with example the concept of IP Timestamp option. What is the maximum number of routers that can be recorded if the timestamp option has a flag value set to 1? Why?

2C. Draw a neat diagram of IP datagram and explain the following fields.
a. Time to Live b. HLEN (5+3+2)

3A. A computer sends a timestamp request to another computer. It receives the corresponding timestamp reply at 3:46:07 AM. The values of the original timestamp, receive timestamp, and transmit timestamp are 13,560,000, 13,562,000 and 13,564,300, respectively. What is the sending trip time? What is the receiving trip time? What is round trip time? What is the difference between the sender clock and receiver clock?

3B. Create a home agent advertisement message using 1456 as the sequence number and lifetime of 3 hours. Select your own values for the bits in the code field. Calculate and insert

the value of length field. Show the encapsulation of the advertisement message created in an IP datagram. What is the value of protocol field?

3C.Consider the below given UDP control-block at some instance of time. Update the below given Control-block for the following continues events. Explain the process of updation for each event.

Note: Assume required data

State	Process ID	Port Number	Queue Number
IN-USE	2,345	52,010	34
IN-USE	3,422	52,011	
FREE			
IN-USE	4,652	52,012	38
FREE			

a. A user datagram arrives with destination port number 52,012.
b. After few seconds a process starts.
c. A user datagram now arrives for port 52,011 (4+3+3)

4A. Explain the TCP's general policy for handling congestion.
4B. With the required diagram explain the connection establishment using three way handshaking process in TCP.
4C. Explain the following TCP timers.
a) Persistence
b) Keepalive (5+3+2)

5A. The state of a receiver is as follows:
a. The receiving queue has chunks 1 to 8, 11 to 14, and 16 to 20.
b. There are 1800 bytes of space in the queue.
c. The value of lastAck is 4.
d. No duplicate chunk has been received.
e. The value of cumTSN is 5.
Show the contents of the receiving queue and the variables.
Show the contents of the SACK message sent by the receiver.

5B. With required diagram explain the TELNET option negotiation for enabling and disabling an option between client and server.

5C. Draw and explain the different states of "simultaneous open" scenario in SCTP.

5D. A resolver sends a query message to a local server to find the IP address for the host"chal.fhda.edu". Show the response message with one answer record and one authoritative record which defines "fhda.edu" as the authoritative server. (4+2+2+2)

6A.With neat diagram explain FTP control connection and data connection. Explain how error control is handled in TFTP.

6B.Write any four comparisons betweenIPV4 and IPV6 headers. Explain the three strategies used for transition from IPV4 to IPV6.

6C. What is request line and status line in HTTP? Define with required fields. ((2+2)+ (1+3)+2)