KING SAUD UNIVERSITY COLLEGE OF COMPUTER AND INFORMATION SCIENCES COMPUTER SCIENCE DEPARTMENT		
CSC 329: Computer Network	**Tutorial 8**	**2nd Semester 1441**
Name:	**Student ID:**	

Part1: Multiple-Choice Questions

1. If an Ethernet destination address is 07:02:02:0A:04:05, then this is a _____ address.
   a. Unicast
   b. Multicast.
   c. Broadcast
   d. Any of the above
2. If an Ethernet destination address is 04-CE-86-84-44-33, then this is a _____ address.
   a. Unicast
   b. Multicast.
   c. Broadcast
   d. Any of the above

3. Ethernet source address should be?
   a. Unicast
   b. Multicast.
   c. Broadcast
   d. Non of the above

4. Which of the following could not be an Ethernet unicast destination?
   a. 47-4C-66-DE-l0-00
   b. 48-AE-C4-23-45-38
   c. 4A-06-09-1A-DE-C4
   d. AA-32-21-21-4D-34

5. Which of the following could not be an Ethernet multicast destination?
   a. B7-7B-6C-DE-10-00
   b. 4B-0A-01-A3-45-32
   c. 73-53-21-1A-DE-F4
   d. 8C-35-21-09-4D-34 (C= 1100)

8. An _____ provides an Ethernet station with a 6-byte physical address. Most of the physical and data-link layer duties are done by it.
   a. NIC (Network Interface Card)
   b. MAC suplayer
   c. Bridge
   d. Transceiver
9. An IP address consists of _____ bits.

a. 4
b. 8
c. 32
d. Any of the above

10. Identify the class of IP address 229.1.2.3.
    a. Class A
    b. Class B
    c. Class C
    d. Class D (229=11100101)

11. Given the IP address 18.250.31.14 and the subnet mask 255.240.0.0, what is the first subnet address?
    a. 18.0.0.14
    b. 18.31.0.14
    c. 18.240.0.0 (18.250.31.14 AND 255.240.0.0, 250 AND 240, 11111010 AND 11110000 = 11110000 = 240) Note : 255 AND X= X, 0 AND X= 0.
    d. 18.9.0.14

12. Class _____ has the greatest number of hosts per given network address.
    a. A
    b. B
    c. C
    d. D

Part2: Exercises

1. How does the Ethernet address 3A:2B:5A:4D:CF:52 appear on the line in binary?
   First convert:
   00111010 00101011 01011010 01001101 11001111 01010010
   On the line, it appears right to lift for each byte :
   01011100 11010100 01011010 10110010 11110011 01001010

2. The address 33:9C:6E:BE:11:32 has been shown as the source address in an Ethernet frame. The receiver has discarded the frame. Why?
   Because it is multicast(3 is odd 0011) and source is always unicast.

3. An Ethernet MAC sublayer receives 43 bytes of data from the upper layer. How many bytes of padding must be added to the data?

   Minimum payload length is 46 bytes, 3 bytes of padding should be added

4. An Ethernet MAC sublayer receives 1526 bytes of data from the upper layer. Can the data be encapsulated in one frame? If not, how many frames need to be sent? What is the size of the data in each frame?

Maximum payload length is 1500 bytes . No, We need two frames :

- First frame= 1500 byte
- Second frame= 46 byte (26 bytes of data + 20 padding bytes)

5. What is the ratio of actual data to the entire frame for the smallest Ethernet frame? What is the ratio for the largest frame?

Smallest frame: (min payload length/min frame length) 46/64 *100=71.87%
Largest frame: (max payload length/max frame length) 1500/1518 *100=98.81%

6. Find the class of the following IP addresses.
   a. 100.38.64.12 class A
   b. 10111001 10010000 00000110 00001000 class B (185=10111001)

7. Find the netid and the hostid of these IP addresses (assume classful addressing).
   a. 129.55.8.6 class B → netid: 129.55 **hostid: 8.6**
   b. 200.94.55.12. class C → netid: 200.94.55 **hostid: 12**

8. Write the following masks in slash notation (/n).
   a. 255.255.255.128 /25 (128=10000000)
   b. 255.240.0.0 /12 (240=11110000)

9. Find the range of addresses in the following classless blocks.
   a. 123.56.77.32/29
   123.56.77.32 → 123.56.77.39
   (32-29=3, change three bits to 000 and 111) (32 = 00100000)
   b. 17.34.16.0/23
   17.34.16.0 → 17.34.17.255
   (32-23=9, change nine bits to 0 and 1) (16= 00010000)

10. In a block of addresses, we know the IP address of one host is 172.49.82.16/27. What are the first address (network address) and the last address in this block?
    To find the first address we set the right most 32- n bits to 0s to any host addres
    set the right most 32- 27 = 5 bits to 0s
    172.49.82.16 --- >> 172.49.82.0

    To find the last address we set the right most 32- n bits to 1s to any host addres
    set the right most 32- 27 = 5 bits to 1s

172.49.82.16 --- >> 172.49.82.31