CS 204: Computer Network

Assignment – 2

Date: 10th March 2021

Submission Instructions:

- **Answer all the questions and submit the answers in scanned PDF copy or any PDF document**
- **Answers should be clear and legible, unclear answers will not be acceptable.**
- **Last date for Submission: 17th March 2021, 11:55 PM**

1. An Internet Service Provider (ISP) has the following chunk of CIDR-based IP addresses available with it: 245.248.128.0/20. The ISP wants to give half of this chunk of addresses to Organization A, and a quarter to Organization B, while retaining the remaining with itself. Which of the following is a valid allocation of addresses to A and B? Justify your answer. (5 marks)
   (A) 245.248.136.0/21 and 245.248.128.0/22
   (B) 245.248.128.0/21 and 245.248.128.0/22
   (C) 245.248.132.0/22 and 245.248.132.0/21
   (D) 245.248.136.0/24 and 245.248.132.0/21

2. Suppose computers A and B have IP addresses 10.105.1.113 and 10.105.1.91 respectively and they both use the same netmask N. Which of the values of N given below should not be used if A and B should belong to the same network? Justify your answer. (5 marks)
   a. 255.255.255.0
   b. 255.255.255.128
   c. 255.255.255.192
   d. 255.255.255.224

3. If a class B network on the Internet has a subnet mask of 255.255.248.0, what is the maximum number of hosts per subnet? (2 marks)

4. The address of a class B host is to be split into subnets with a 6-bit subnet number. What is the maximum number of subnets and the maximum number of hosts in each subnet? (2 marks)

5. For each IP address in Group-I identify the correct choice of the next hop from Group-II using the entries from the routing table above. (4 marks)

Network No.	Net Mask	Next Hop
128.96.170.0	255.255.254.0	Interface 0
128.96.168.0	255.255.254.0	Interface 1
128.96.166.0	255.255.254.0	R2
128.96.164.0	255.255.254.0	R3
0.0.0.0	Default	R4

Group-I	Group-II
A. 128.96.171.92	1. Interface 0
B. 128.96.167.151	2. Interface 1
C. 128.96.163.121	3. R2
D. 128.96.165.121	4. R3
	5. R4

6. In class B if subnet mask is 255.192.0.0. Total Number of networks than can be joined _____ (2 marks)

7. A packet addressed to 128.48.64.0 came to a router having routing table as follows. Which interface will it be forwarded to _____? Why? (4 marks)

Destination	Subnet Mask	Interface
192.18.1.0	255.255.255.0	A
128.48.0.0	255.255.128.0	B
128.48.0.0	255.255.0.0	C
Default		D

8. The subnet mask 255.255.255.192 extends the network portion to:
   a. 16 bits
   b. 26 bits
   c. 36 bits

   Which of the above is correct? (2 marks)

9. The network 198.78.41.0 is a _____
   a. Class A network
   b. Class B network
   c. Class C network
   d. Class D network

   Which of the above is correct? (2 marks)

10. Range of IP Address from 224.0.0.0 to 239.255.255.255 are:
    a. Reserved for loopback
    b. Reserved for broadcast
    c. Used for multicast packets
    d. Reserved for future addressing

    Which of the above is correct? (2 marks)

11. The default subnet mask for a class B network can be_____ (2 marks)
    a. 255.255.255.0
    b. 255.0.0.0
    c. 255.255.192.0
    d. 255.255.0.0

12. In a class B subnet, we know the IP address of one host and the mask as given below:

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IP address: 125.134.112.66
      Mask: 255.255.224.0
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    What is the first address (Network address)? (2 marks)

13. In a classful addressing, the IP addresses with 0 (zero) as network number:
    a. refers to the current network
    b. refers to broadcast on the local network
    c. refers to broadcast on a distant network
    d. refers to loopback testing

    Which of the above is correct? (2 marks)

14. Which of the following is/are restriction(s) in classless addressing? (2 marks)

    a. The number of addresses needs to be a power of 2.

    b. The mask needs to be included in the address to define the block.

    c. The starting address must be divisible by the number of addresses in the block.

    d. All of the above

15. The broadcast address for IP network 172.16.0.0 with subnet mask 255.255.0.0 is _____ (2 marks)

16. The subnet mask for a network is 255.255.31.0. Which of the following pairs of IP addresses could belong to this network? Justify your answer. (4 marks)

    a. 172.57.88.62 and 172.56.87.23

    b. 10.35.28.2 and 10.35.29.4

    c. 191.203.31.87 and 191.234.31.88

    d. 128.8.129.43 and 128.8.161.55