1. You're asked to make subnet addressings of 4 building in your company. Below are the number of PCs for each building. Assume that the 131.155.192.0/19 address block is reserved for your company. Specify the addresses of the 4 subnets you created in the table below. Show your work. [Firmanızdaki 4 binanın subnet adreslemelerini yapmanız isteniyor. Aşağıda her bir bina için PC sayıları verilmiştir. 131.155.192.0/19 adres bloğunun firmanız için ayrıldığını varsayınız ve aşağıdaki tabloda yarattığınız 4 subnetin adreslerini belirtiniz. İşlemleri gösterin.]

Building	**# PC**	**Subnet Address**
1	2200	
2	1620	
3	511	
4	510	

What is the size of the largest single CIDR address block that you can assign from the unassigned addresses in the address block 131.155.192.0/19 remaining after you assigned the addresses to these 4 buildings?

2. I decided to start a small company. I asked my ISP, myISP, to give me enough addresses for **3472** hosts. myISP owns the IP address block **151.18.0.0/16** and allocated a block from this address range and told me to use the following addresses (* can be any number in the range 0-255):

151.18.8.*
151.18.9.*
151.18.10.*
151.18.11.*
151.18.12.*
151.18.13.*
151.18.14.*
151.18.15.*
151.18.16.*
151.18.17.*
151.18.18.*
151.18.19.*
151.18.20.*
151.18.21.*

Since the sizes of the Internet routing tables have grown to huge proportions, I decided to announce **the fewest number of CIDR prefixes** to exactly cover all my company's IP addresses. Give the IP address block(s) that I need to use for advertising all addresses in my network, but no other addresses (use address/prefix format of CIDR).

3. What does a router do when it receives a packet with source IP address 192.168.214.20 and destination IP address 192.168.22.3? Explain. [Aşağıda yönlendirme tablosu verilen yönlendirici, kaynak ip adresi 192.168.214.20 ve hedef IP adresi 192.168.22.3 olan bir paket aldığında ne yapmaktadır. Açıklayınız.]

Destination	Subnet Mask	Next Hop / Gateway	Flags	Interface
127.0.0.1	255.0.0.0	127.0.0.1	UH	Loopback
192.168.215.0	255.255.255.0	192.168.20.2	UG	Serial0
192.168.115.0	255.255.255.0	192.168.20.2	UG	Serial0
192.168.30.0	255.255.255.0	192.168.20.2	UG	Serial0
192.168.20.0	255.255.255.0	192.168.20.2	U	Serial0
192.168.214.0	255.255.255.0	192.168.214.1	U	Eth0

4.

Target Network	Next Hop
139.179.222.0/25	R1
139.179.128.0/17	R2
139.179.120.0/21	R3
139.179.216.0/21	R4
139.179.0.0/16	R5

According to routing table above, which output ports are IP packets with destination addresses below routed to? **Show your work in detail.**

i. 139.179.60.1
ii. 139.179.226.4
iii. 139.179.124.55
iv. 139.179.223.18
v. 139.179.127.222

5. Suppose host A transmits a 1900-byte IP packet over a 2-hop path to host B. The MTU of the first link (A to router) is 900 bytes, and the MTU of the second link (router to B) is 500 bytes. Assuming that IP header does not contain any options, indicate the length (in bytes), more flag, and offset field values (specify the offset values in units of 8 bytes) of the fragment(s) transmitted over each link in the tables below. (20 Byte IP header)

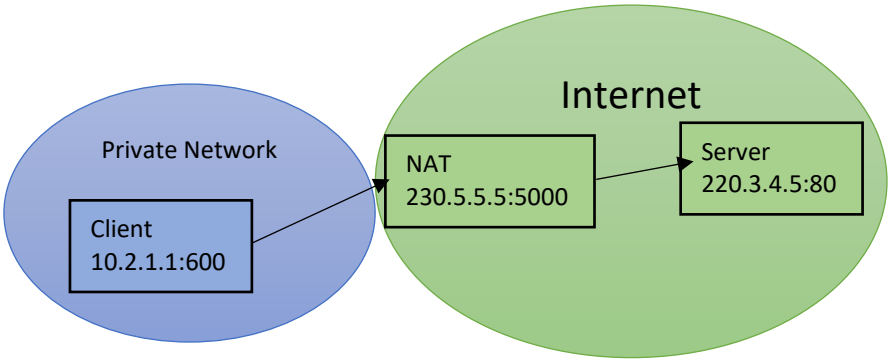
First Link

Fragment	Length	Offset	Flag
1			
2			
3			
4			
5			
6			

Second Link

Fragment	Length	Offset	Flag
1			
2			
3			
4			
5			
6			

6. You receive an ADSL service from an ISP company. The ISP gives a single real IP address to each apartment and you use a NAT-enabled modem to connect you and your friend's computers to the Internet via this IP address.
   a. Can you and your friend connect to a remote FTP server with a single real IP address at the same time behind NAT? (The FTP server only accepts connections from 21 ports.)
   b. You and your friend both want to set up an FTP server on diferent computers in your home to share files with people outside. Can external people connect to both of your servers on the same port at the same time?
   c. There is a client in a private network using network address translation, and a server in Internet. Fill in the source and destination addresses/ports of a packet that is sent from client to server, at the time it left the client and arrivet at server.



Packet leaving the client (P1)

Source IP	
Destination IP	
Source Port	
Destination Port	

Packet arriving the client (P3)

Source IP	
Destination IP	
Source Port	
Destination Port	

Packet arriving the server (P2)

Source IP	
Destination IP	
Source Port	
Destination Port	

Packet leaving the server (P4)

Source IP	
Destination IP	
Source Port	
Destination Port	

7. Calculate the network prefix and host address for the following IP address and subnet mask (in binary):

IP Address	11001000.00101000.00001011.00001101
Subnet Mask	11111111.11111111.11111111.11100000
Network Prefix	
Host Address	

8. How would you represent this IP address in classless form?

200.40.11.0/27 (11001000.00101000.00001011.00000000/27)