EAST WEST UNIVERSITY
Department of Computer Science and Engineering
B.Sc. in Computer Science and Engineering Program
Final Examination, Spring 2021 Semester

Course:	**CSE 405 Computer Networks**
Instructor:	**Dr. Anisur Rahman, Associate Professor, Department of CSE**
Full Marks:	**(7*5 marks) = 35 marks**
Time:	**1 hr 20 min**

Note: There are SEVEN questions, answer ALL of them.

---

1. **Solve** the followings for the following IP if 7 bits are taken to create subnets. Consider the following IP for all parts of the question. Please show the procedure.

"78.56.223.185"

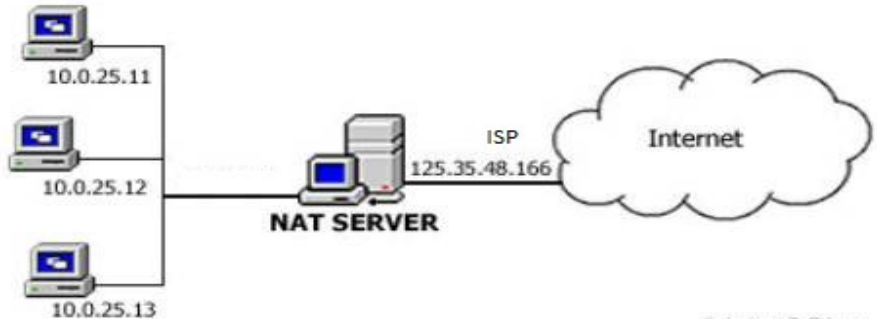
a) Subnet Mask in CIDR notation
b) Broadcast address of the 3rd subnet
c) 1st and last host of the 7th subnet

2. **Solve** the followings considering the following IP for all parts of the question. Please show the procedure.

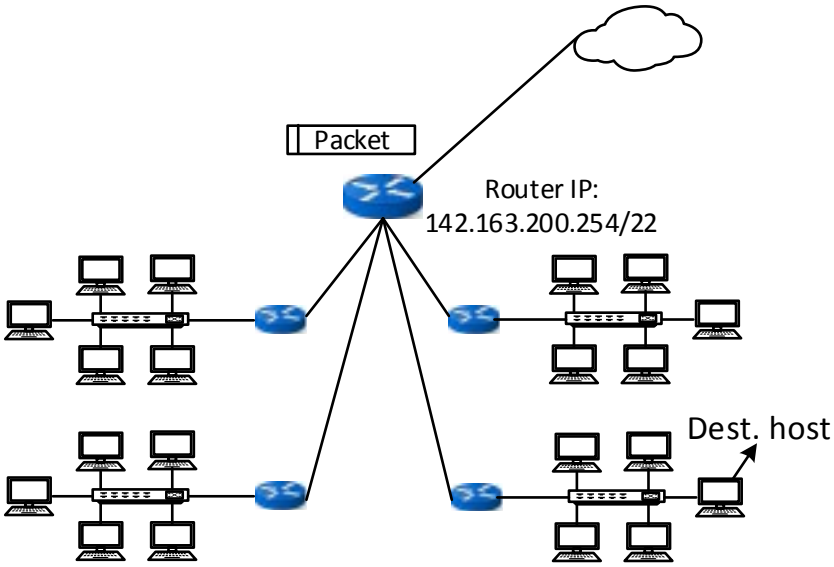
"142.240.232.73/26"

a) Number of usable subnets possible within the network
b) 1st and Last subnets IP
c) Last host IP of the 9th subnet

3. **Analyze** how NAT keeps track of the packets that are generated from 10.0.25.11 and 10.0.25.13 hosts of the following network when hosts communicate with web server (IP: 164.128.136.147) that is situated in a distant network.



4. **Choose** a destination host (IP) as you wish from the following network that has subnets, as shown in the diagram and **find** in which subnet (IP), the chosen host belongs to if its main router's address is 142.163.200.254/22. Find also the total number of hosts in 142.163.0.0 network following the present addressing scheme. Please show the calculation.



5. **Define** the function and implementation of leaky bucket algorithm. If the input to leaky bucket is 25MB/sec for 760msec; what would the duration of output for a leak considering network data rate is 4MB/sec?

6. An example graph of congestion control in transport layer is given below. If the present threshold is set to be 500 KB and the present congestion window (i.e. transmission size) is 128 KB, **find** the sizes of the next 8 consecutive congestion windows considering 504 KB is going to be the timeout point.

7. Following is the orientation of a typical server farm, which does not have shared cache memory because each processing node has its own cache memory. Briefly describe how this feature (i.e., having own cache memory for each processing node), is used to increase performance of the server farm further.