CN-525 Internet of Things
QUIZ #1
Section – All

27 September 2018
Duration: 30 Minutes
Weightate 3%

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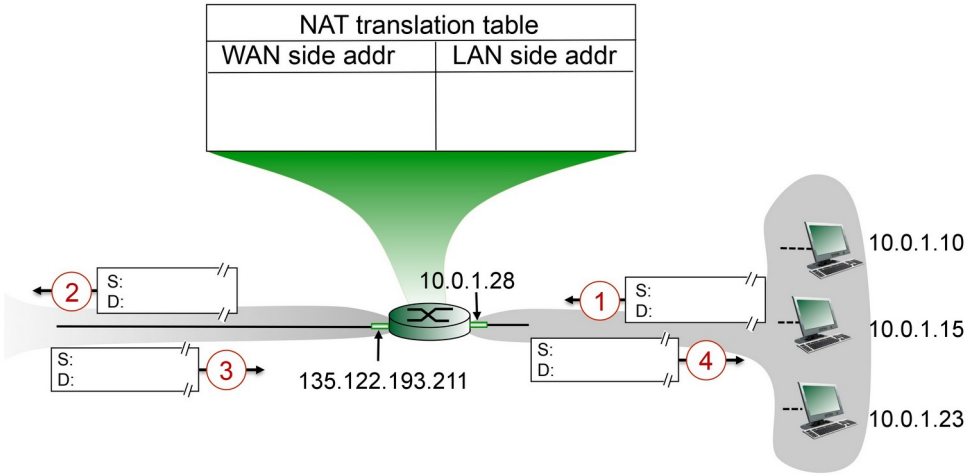
1. Consider the scenario below in which three hosts, with private IP addresses 10.0.1.10, 10.0.1.15, 10.0.1.23 are in a local network behind a NATted IoT gateway/router that sits between these three IoT nodes and the larger Internet. IP datagrams being sent from, or destined to, these three nodes must pass through this NAT router. The router's interface on the LAN side has IP address 10.0.1.28, while the router's address on the Internet side has IP address 135.122.193.211.

[10+10+10+10 =40 Marks]



Suppose that the IoT nodes with IP address 10.0.1.10 sends an IP datagram destined to an external cloud server with IP address 128.119.172.186. The source port is 3465, and the destination port is 80.

1.1 Consider the datagram at step 1, after it has been sent by the node but before it has reached the NATted router. What are the source and destination IP addresses for this datagram? What are the source and destination port numbers in this IP packet?

1.2 Now consider the datagram at step 2, after it has been transmitted by the NATted router. What are the source and destination IP addresses? What are the source and destination port numbers?

1.3 Now consider the datagram at step 3, just before it is received back by the NATted router. What are the source and destination IP addresses? What are the source and destination port numbers in this IP datagram?

1.4 Last, consider the datagram at step 4, after it has been transmitted by the NATted router but before it has been received by the IoT node. What are the source and destination IP address for this datagram? What are the source and destination port numbers being used in this IP datagram?

2. Subnetting questions:

[10+10+10 =30 Marks]

2.1. Enter the broadcast address for the network 10.88.0.0 with a subnet mask of 255.255.0.0:

2.2 What is the shorthand (/ notation) corresponding to a subnet mask of 255.255.240.0?

2.3 What is the last valid host on the network 172.17.240.0/20