Chapter 3-4 Network Review 2009 Name:_____

1. A socket is made up of a(n) _____ and a _____. A connection is made up of _____ sockets.

2. UDP connections to a server by two different clients are made to the _____ socket(s) on the server.
3. Name the four things that identify a TCP connection

   _____ _____ _____ _____

4. An application on host A sends a segment to an application on host B. If the two hosts are on different subnets, what is the minimum number of interfaces that the segment must traverse? If you have doubts about the number you choose write a very short explanation.

   _____

5. Suppose you are given an IP of 216.55.37.77 and a subnet mask of 255.255.255.224. Find the network address and broadcast addresses.

   Network: _____ Broadcast: _____

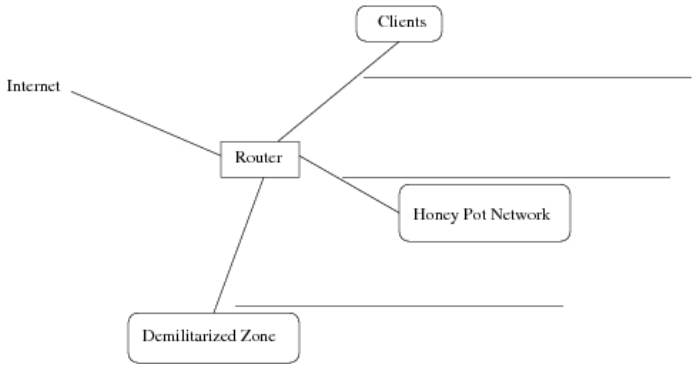

Figure 1: Subnetting Configuration

6. Suppose you are given the range of IP address: 209.50.17.0/23. You want to have a network with 250 clients, a demilitarized zone (DMZ) with 200 addresses and a honey pot network with 16 addresses. Break the range given into ranges of the form w.x.y.z/s on Figure 1.

7. Suppose we label the interfaces on the router in Figure 1 as follows: Clients=0, Honey Pot=1, DMZ=2, Internet=3. Give a forwarding table using your answer from Question 7. The prefix should be in binary and include all the digits needed!

	Prefix	**Interface**
Clients		
DMZ		
Honey Pot		
Other		

8. Write a short paragraph describing RIP and OSPF. Make sure to discuss the *problems* of Link state and distance vector and how RIP and OSPF mitigate the problems.

9. Using Figure 2 starting at node A highlight or darken the lines that Dijkstra's algorithm would use in forming a Minimum Spanning Tree

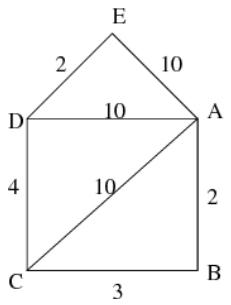

Figure 2

Matching

_____	Go-Back-N	A	Protocol(s) that provide process to process communication
_____	Selective Repeat	B	Fast Recovery (no Slow Start)
_____	Slow Start	C	Congestion window doubles every round trip
_____	Slow start phase	D	Translates routable IPs to private IPs
_____	Congestion avoidance phase	E	Delivering data in a segment to the correct socket
_____	Triple duplicate acknowledgement (phase trans)	F	Routing IP using Distance Vector
_____	Time out (phase trans)	G	The number of bytes received + 1
_____	Threshold value	H	TCP uses it to keep the sender from overwhelming the receiver
_____	Sequence number	I	Sliding window protocol
_____	Bottleneck link	J	Where congestion avoidance starts
_____	Flow control	K	Every multicast sender gets its own tree
_____	Congestion control	L	Routing protocol that uses Link State
_____	TCP/UDP	M	Process of collecting data and building forwarding tables
_____	Demultiplexing	N	Linear growth of the congestion window
_____	Forwarding	O	Protocol used between Autonomous Systems (AS)
_____	Routing	P	Exponential growth in the congestion window
_____	Packet loss on input ports	Q	When input links and fabric run faster than output links
_____	Packet loss on output ports	R	Class D address space contains _____
_____	RIP	S	Resends only those packets that were lost
_____	OSPF	T	Congestion window drops to 1
_____	BGP	U	The slowest link on a path traversed by a packet
_____	Multicast Addresses	V	A service that dynamically allocates IP addresses
_____	Group Shared Tree	W	When switching fabric is slower than input links
_____	Source based tree	X	Accomplished by checking for triple Acks and Timeouts
_____	DHCP	Y	A tree not rooted at a multicast source
_____	NAT	Z	The process of moving a packet from an input port to an output port.

No.	Time	Source	Destination	Protocol	Info
49	1.477075	216.249.119.54	216.249.119.5	TCP	50856 > http [SYN] Seq=0 [TCP CHECKSUM INCORRECT] Len=0 MSS=1460 WS=2
50	1.477304	216.249.119.5	216.249.119.54	TCP	http > 50856 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 WS=0
51	1.477342	216.249.119.54	216.249.119.5	TCP	50856 > http [ACK] Seq=1 Ack=1 Win=65700 [TCP CHECKSUM INCORRECT] Len=0
52	1.477816	216.249.119.54	216.249.119.5	TCP	50856 > http [PSH, ACK] Seq=1 Ack=1 Win=65700 [TCP CHECKSUM INCORRECT] Len=
53	1.478166	216.249.119.5	216.249.119.54	TCP	http > 50856 [ACK] Seq=1 Ack=546 Win=6540 Len=0
54	1.478840	216.249.119.5	216.249.119.54	TCP	http > 50856 [PSH, ACK] Seq=1 Ack=546 Win=6540 Len=640
55	1.479205	216.249.119.54	216.249.119.5	TCP	50856 > http [PSH, ACK] Seq=546 Ack=641 Win=65060 [TCP CHECKSUM INCORRECT]
56	1.480604	216.249.119.5	216.249.119.54	TCP	http > 50856 [ACK] Seq=641 Ack=1092 Win=7644 Len=1460
57	1.480705	216.249.119.5	216.249.119.54	TCP	http > 50856 [ACK] Seq=2101 Ack=1092 Win=7644 Len=1460
58	1.480721	216.249.119.54	216.249.119.5	TCP	50856 > http [ACK] Seq=1092 Ack=3561 Win=65700 [TCP CHECKSUM INCORRECT] Len
59	1.481170	216.249.119.5	216.249.119.54	TCP	http > 50856 [ACK] Seq=3561 Ack=1092 Win=7644 Len=1460
60	1.481234	216.249.119.5	216.249.119.54	TCP	http > 50856 [PSH, ACK] Seq=5021 Ack=1092 Win=7644 Len=1213
61	1.481251	216.249.119.54	216.249.119.5	TCP	50856 > http [ACK] Seq=1092 Ack=6234 Win=65700 [TCP CHECKSUM INCORRECT] Len
62	1.494299	216.249.119.54	216.249.119.5	TCP	50856 > http [PSH, ACK] Seq=1092 Ack=6234 Win=65700 [TCP CHECKSUM INCORREC
63	1.495378	216.249.119.5	216.249.119.54	TCP	http > 50856 [ACK] Seq=6234 Ack=1421 Win=8736 Len=1460
64	1.495459	216.249.119.5	216.249.119.54	TCP	http > 50856 [PSH, ACK] Seq=7694 Ack=1421 Win=8736 Len=1270
65	1.495476	216.249.119.54	216.249.119.5	TCP	50856 > http [ACK] Seq=1421 Ack=8964 Win=65700 [TCP CHECKSUM INCORRECT] Len
83	1.690717	216.249.119.54	216.249.119.5	TCP	50856 > http [PSH, ACK] Seq=1421 Ack=8964 Win=65700 [TCP CHECKSUM INCORREC
84	1.692210	216.249.119.5	216.249.119.54	TCP	http > 50856 [ACK] Seq=8964 Ack=1681 Win=8736 Len=1460
85	1.692215	216.249.119.5	216.249.119.54	TCP	http > 50856 [PSH, ACK] Seq=10424 Ack=1681 Win=8736 Len=544
86	1.692253	216.249.119.54	216.249.119.5	TCP	50856 > http [ACK] Seq=1681 Ack=10968 Win=65700 [TCP CHECKSUM INCORRECT] Le
87	1.692933	216.249.119.54	216.249.119.5	TCP	50856 > http [RST, ACK] Seq=1681 Ack=10968 Win=0 [TCP CHECKSUM INCORRECT] L

Figure 3

Figure 3 gives a capture form wireshark. Use it to fill in the following information:

Client IP Address _____

Server IP _____

Client Port _____

Server Port _____

Using the No. column, Identify the packets that setup the connection _____

How many errors are shown in this Figure? _____

Is this connection closed? If so which packet completes the close? _____

What application layer protocol is being used? _____

Identify the flags being used (e.g. ACK) _____

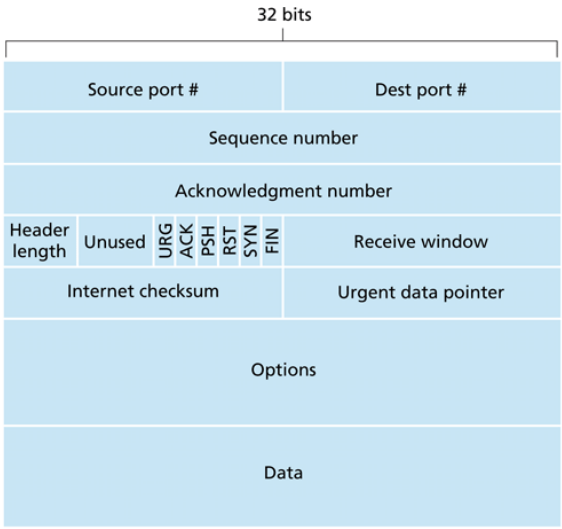

Figure 4

Using Figure 4 Identify the following:

Identifies the application sending the packet _____

Identifies how much data has been received _____

Advertises information used for flow control _____

Set to start a connection _____

Set to end a connection _____

Set on every segment except the first one _____

Supplies error checking information _____

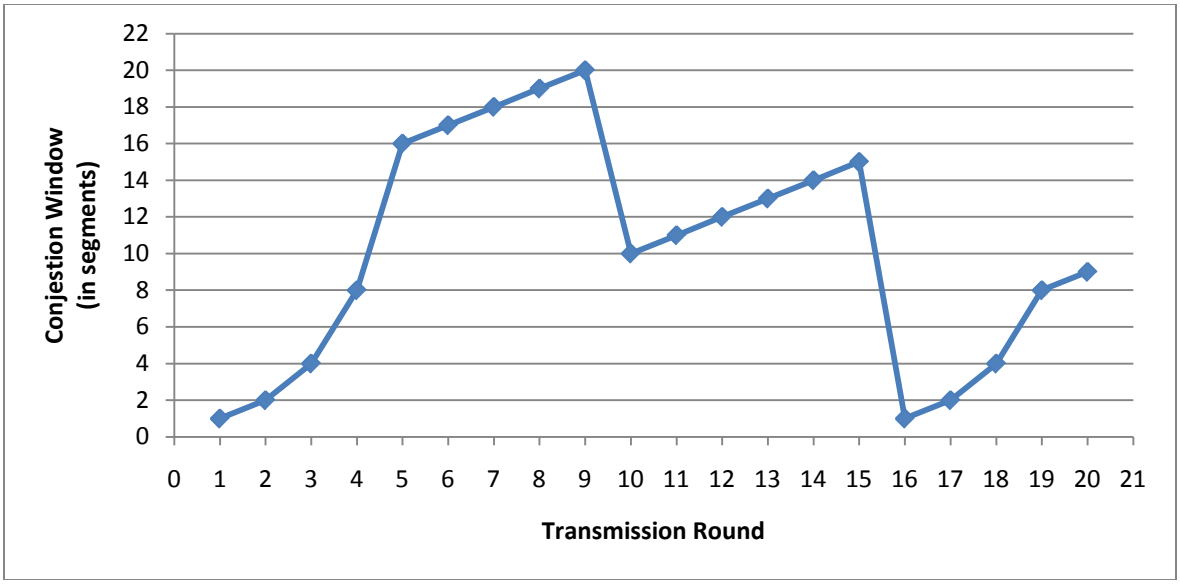

Figure 5: TCP Reno Graph

Identify **ALL** the phases/events in Figure 5 by writing down the ranges that fit the following categories:

Slow Start _____

Congestion Avoidance _____

Triple ACK _____

Time Out _____

Using Figure 2, show the steps of both the Distance Vector and Link State algorithms for Node A.