CCNA Review
ONLINE CURRICULUM GUIDE

9.1.1	1. What is the overall goal of communication protocols?	to allow a computer application on one computer to communicate with a computer application on another computer, regardless of the hardware platform or operating system of the two computers.	
9.1.2	2. What layer provides functions for application services?	Application Layer	
	3. What does SMTP stand for?	Simple Mail Transfer Protocol	
	4. What does DHCP stand for?	Dynamic Host Configuration Protocol	
9.1.3	5. What layer is responsible for data compression?	Presentation Layer	
	6. What are the 4 ways graphics can be presented?	TIFF	GIF
		JPEG	PICT
	7. What 3 types of files are converted for transmission at this layer?	Text Graphics Sound	
9.1.4	8. What layer controls dialog between hosts?	Session	
	9. 10. What protocol is NFS?	Network File System	
9.1.5	11. Why are unreliable protocols unreliable?	Because they may have little or no responsibility for establishing connections, acknowledgements, sequencing and flow control	
	12. What type of protocol uses a three-way handshake	reliable	
	13. What is the TCP/IP reliable Transport layer protocol called?	TCP	
	14. What is the TCP/IP unreliable Transport Layer protocol called?	UDP	
	15. Does RIP use UDP or TCP?	UDP	
9.1.6	16. Can the Network Layer provide connectivity between geographically diverse networks?	Yes	
	17. Name 2 examples of Network Layer protocols.	IP/IPX	
9.1.7	18. What type of addressing is the Data Link Layer concerned with?	Physical	

	19. What is line discipline?	how end systems use the network link	
	20. In an Ethernet network, what would the 2 data link addresses be known as?	Source MAC address and the Destination MAC address.	
	21. What 6 protocols are included at the Data Link Layer?	Ethernet	IEEE 802.5
		IEEE 802.3	HDLC (High-level Data Link Control)
		Token Ring	PPP (Point-to-Point Protocol)
9.1.8	22. What layer would voltage levels and physical connections be?	Physical	
	23. What are the baseband Physical Layer standards?	10BASE-T 100BASE-TX	
9.1.9	24. What are the steps of data encapsulation?	Data Segments Packets Frames Bits	
9.2.2	25. For a class B address with 3 bits borrowed, what is the subnet mask?	225.225.224.0	
	26. How many useable subnets are there in a Class B address with 12 bits borrowed?	4,094	
	27. How many useable subnets are there in a Class B address with 1,022 useable hosts?	62	
9.3.5	28. What is the command to enable PPP encapsulation on interface serial 0?	(config)#interface s0 (config-if)#encapsulation ppp	
9.3.6	29. What does the command #show dialer display?	Current status of the link	
	30. What does the command #debug idsn inactive display?	Status of the isdn connection when the call is in progress	
9.3.7	31. What protocol uses DLCIs?	Frame relay	
9.3.8	32. If I see the following command, what does the .2 tell me? (config)# interface s2.2 multipoint	It's a subinterface	
9.3.10	33. What does the command `show frame-relay map` display?	Statistics for PVCs for frame-relay interfaces	
9.4.1	34. What device can you use to help reduce network congestion?	use switches instead of hubs	
	35. In half-duplex communications, how many devices can communicate at a time?	only one device at a time	

	36. Do hosts that are connected to a hub operate in full-duplex or half-duplex?	Full-duplex Half-duplex
	37. How many collisions are on a full-duplex connection?	no collisions
	38. How many devices in a full-duplex connection? (How big is the collision domain?)	2
	39. How does the computer's NIC card get configured for full-duplex or half-duplex operation?	Today, most NIC cards are auto-sensing, and will adapt to the mode the switch is operating in.
9.4.3	40. Where is the MAC address on an Ethernet network interface card?	burned into the ROM chip on an Ethernet network interface card (NIC).
	41. How many bits is a MAC address?	48 bit number
9.4.4	42. After Host A sends out the frame, which Hosts will see this frame, more specifically, where does the frame go?	The answer is that all of the Hosts on this network, every host connected to Hub, will see at least part of this frame.
9.4.5	43. How does the switch associate what devices are connected to which switch port?	The switch table
	44. What does a switch do when the destination MAC address is not in its SAT table?	the switch **floods** it out all ports.
	45. What does a switch do when the destination MAC address knows which port the destination MAC address can be reached?	A switch **filters** a frame. This means that the switch knows which port the destination MAC address can be reached, and only forwards the frame out that port.
9.5.1	46. What is an advantage of a switch over a hub?	a switch allows for a dedicated path between two devices on the switch
	47. What is created on each switch port on a switch?	On a switch, each switch port creates a separate collision domain.
9.5.2	48. What's another advantage to a switch?	it has a buffer, or memory
9.5.3	49. What devices are in a flat network?	a LAN made up entirely of hubs and switches, no routers.
	50. What is a disadvantage of a flat network?	a single Layer 3 broadcast domain
	51. What will happen to a Layer 2 broadcast?	Layer 2 broadcast like an ARP Request will travel to every host and device on the LAN.

	52. What is one problem with Layer 2 broadcasts?	These and other layer 2 broadcasts can use up a great deal of a LANs available bandwidth
	53. What are two other disadvantages?	1. less manageability of network traffic 2. 2. security
9.5.4	54. What do the LAN interfaces on routers perform?	both the layer 2 function of a switch and the layer 3 function of a router.
	55. What do routers do with Layer 2 broadcasts?	they also do not propagate (forward) layer 2 broadcast requests, such as ARP Requests, out other interfaces.
9.6.1	56. When is an ARP request used?	when a sending device knows the IP address for the destination host, but does not know its MAC address
	57. How is an ARP table updated?	dynamically updated based on local network activity.
	58. Why do devices need to map a MAC Address to an IP Address?	The simple answer is to deliver the IP packet inside an Ethernet frame to the next device along the way in order to reach its final destination.
	59. What layer does TCP and UDP function at?	Transport
	60. What layer does ARP and RARP operate at?	Network
9.7.1	61. What is symmetric switching?	Symmetric switching is a switch with ports of the same bandwidth
	62. When is asymmetric switching appropriate?	when certain switch ports have devices that need more bandwidth, such as servers
9.7.2	63. What is the default method of switching?	Store-and-forward is typically the default method on most switches
	64. What is store-and-forward switching?	Complete frame is received before forwarding
	65. What does the switch check against it's own calculations before forwarding the frame?	it copies the entire frame into its buffers, checks the FCS (Frame Check Sequence) against its own calculations. If the FCS and its own calculations match, the frame is forwarded out the proper port
	66. What are the two types of cut-through switching?	1. Fast-forward 2. Fragment-free
	67. What is fast-forward switching?	Fast-forward switching begins to forward a frame out the proper switch port immediately after reading the layer 2 destination address and looking that address up that address in the switch's Source Address Table
	68. How much of the frame is received in fragment-free switching before forwarding?	waits until the first 64 bytes of the frame has been received before forwarding the first bytes
	69. Does fragment-free switching have more or less latency than store-and-forward?	Fragment-free switching is faster (less latency) than store-and-forward

	70. Does fragment-free switching have more or less latency than fast forward?	but slower (more latency) than fast-forward.
9.8.1	71. What is one reason a VLAN is created?	the creation of separate broadcast domains within a switched network
	72. What is another way that you can think of a VLAN?	A VLAN can be thought of as a subnetwork
	73. Without VLANS, who would see all layer 2 boradcast?	would be seen by all hosts on the switched network
9.8.2	74. What if you didn't use VLANs, what would happen with a layer 2 broadcast, such as an ARP Request?	All hosts, regardless of what subnetwork they belong to will receive the ARP request, as long as they are on the same switched network and there is no router between them and the ARP Request.
	75. What is a port-centric VLAN?	where the network administrator assigns each switch port to a specific VLAN
	76. Who will receive broadcasts on a VLAN?	only hosts on the same VLAN (VLAN 2), which are also on the same subnetwork, will receive the layer 2 broadcast, the ARP Request.
9.8.3	77. What device is needed to route information between different VLANS?	a router
	78. With the Router-on-stick method, how many physical interfaces are used?	only one physical Ethernet interface is used. The physical interface is divided into sub-interfaces, one for each VLANs (subnetworks).
	79. What is a disadvantage of the use of Router-on-a-stick?	The disadvantage to this is that this single link between the router and the switch will be used for all VLAN traffic to and from the switch
9.8.4	80. Why is tagging needed between switches, or a switch and a router?	to pass VLAN traffic, if a single link is used
	81. What is the IEEE tagging protocol called?	IEEE 802.1q
	82. What is tagging?	used to Identify which VLAN a frame belongs to
	83. What is a trunk?	a single link that carries multiple VLANs
	84. On some switches, there may only be a few ports that can be configured for tagging. Which ports are these?	These are usually the higher bandwidth ports (100 Mbps) on the switch.
	85. What would you do if your equipment did not do tagging, but you still wanted to do VLANs?	You would have to have a separate link for every VLAN between switches, and between a switch and a router. Be sure to configure the switch ports for the proper VLANs.
9.9.1	86. What is the main function of the **Spanning Tree Protocol (STP)?**	to allow redundant switched/bridged paths without suffering the effects of loops in the network.

	87. In Spanning Tree Protocol how many links are active?	one link is active (Forwarding mode)
	88. What is the mode called when Spanning Tree is active?	Forwarding
	89. What is mode called when all the other links are in standby mode?	Blocking
	90. What is a broadcast storm?	when frames keep getting duplicated on a switched network, until it finally overwhelms the network, and bringing the network down.