

IT4400 Advanced Networking

Final Exam

Spring 2008

NAME: _____

Instructions:

- Answer each question.
- Read the question completely before answering.
- You may or may not want to complete in order of listing.
- You have until 10am to complete this.
- No book, notes, or cheating.
- On true or false. True = A and False = B.

Problems:

1. Which of the following layers is layer #3 in the OSI model?
 - a. Application
 - b. Session
 - c. Data-Link
 - d. Transport
 - e. None of the above
2. Which of the following layers is layer #4 in the OSI model?
 - a. Application
 - b. Session
 - c. Data-Link
 - d. Transport
 - e. None of the Above
3. True or False. STP stands for Spanning Topology Protocol.
4. True or False. RSTP stands for Rapid Spanning Tree Protocol.
5. True or False. EIGRP is a Cisco proprietary routing protocol.
6. True or False. PPP is an open standard routing protocol.
7. Which of the following is a Cisco proprietary trunking protocol?
 - a. ISL
 - b. 802.1q
 - c. IEEE 802.1u
 - d. CDP
 - e. None of the above
8. Which of the following is a public standard for VLAN tagging?
 - a. ISL
 - b. 802.1q
 - c. IEEE 802.1u
 - d. CDP
 - e. None of the above
9. Which of the following advertises VLAN information to neighboring switches?
 - a. ISL
 - b. 802.1q
 - c. IEEE 802.1u
 - d. CDP
 - e. None of the above
10. In a LAN which of the following terms best equates to the term "VLAN"?
 - a. Collision Domain
 - b. Broadcast Domain

- c. Subnet domain
 - d. Repeated domain
 - e. None of the above
11. Which of the following IP addresses are not in the same network as 144.38.80.80 with a mask of 255.255.252.0?
- a. 144.38.81.0
 - b. 144.38.82.0
 - c. 144.38.83.0
 - d. 144.38.84.0
 - e. None of the above
12. Which of the following IP addresses is the network address of the IP 144.38.1.66 with a mask of 255.255.255.252
- a. 144.38.1.68
 - b. 144.38.1.60
 - c. 144.38.1.64
 - d. 144.38.1.62
 - e. None of the above.
13. Which of the following IP addresses is the network broadcast address of 144.38.67.0/21?
- a. 144.38.69.255
 - b. 144.38.71.255
 - c. 144.38.73.255
 - d. 144.38.75.255
 - e. none of the above
14. True or false. A Layer3 switch can be used to route packets between VLANs.
15. True or False. How many DS1/T1 channels fit within a DS3?
- a. 24
 - b. 28
 - c. 32
 - d. 48
 - e. None of the Above
16. How many DS0 channels will fit within a DS1/T1?
- a. 24
 - b. 28
 - c. 32
 - d. 48
 - e. None of the Above
17. How many 64kbps channels will fit within a T3?
- a. 572
 - b. 576
 - c. 652
 - d. 672
 - e. None of the above
18. The signaling name for a T3 is:
- a. OC3
 - b. M3
 - c. T3
 - d. DS3
 - e. None of the above
19. ATM uses two fields in its header for identifying each virtual circuit, what is one?
- a. DLCI
 - b. VC
 - c. VP
 - d. VCI
 - e. None of the Above
20. How many bytes are in an IP address?

- a. 8
 - b. 16
 - c. 24
 - d. 32
 - e. None of the above
21. True or False. RIP v2 is a public standard.
22. True or False. HDLC is a public Layer2 Encapsulation.
23. True or False. When data is encapsulated at Layer2 a header and a footer are put around the datagram.
24. True or False. When data is encapsulated at Layer3, a header and a footer are put around the datagram.
25. How many bits are in an IP address?
- a. 8
 - b. 16
 - c. 24
 - d. 32
 - e. None of the above
26. How many bytes make up a MAC address?
- a. 4
 - b. 6
 - c. 8
 - d. 12
 - e. None of the above
27. How many octets are in an IP address?
- a. 4
 - b. 32
 - c. 64
 - d. 128
 - e. None of the above
28. What is the valid range for the values of the first octet in a Class B IP network?
- a. 127 to 191
 - b. 128 to 192
 - c. 128 to 191
 - d. 192 to 224
 - e. None of the above
29. What is the valid range for the values of the first octet in a Class A IP network?
- a. 0 to 128
 - b. 0 to 127
 - c. 1 to 127
 - d. 1 to 128
 - e. none of the above.
30. NV in NVRAM stands for?
- a. Nothing-Varying
 - b. Non-Volatile
 - c. Non-Varying
 - d. No-Versioning
 - e. None of the above
31. In which of the following configuration modes of the CLI would you issue a command to reboot the router?
- a. User mode
 - b. Enable Mode
 - c. Global Enable Mode
 - d. Config Mode
 - e. None of the above.

32. WebHost1 is a host with an IP of 10.1.1.1 in subnet 10.1.1.0/25. Which of the following things can a standard ACL do?
- Match the destination IP address.
 - Match the source IP network
 - Match the source port
 - Match the destination port
 - None of the above
33. Which of the following wildcard masks is most useful for matching all IP packets in subnet 10.1.128.0/25
- 0.0.0.0
 - 0.0.0.31
 - 0.0.0.127
 - 0.0.0.128
 - None of the above
34. Which of the following fields cannot be compared based on an extended IP ACL?
- Protocol
 - Source IP
 - Destination IP
 - URL
 - None of the above
35. How many /24's can you fit in a /20 network?
- 8
 - 12
 - 16
 - 24
 - None of the above
36. UTP stands for:
- Universal Transfer Protocol
 - Unabridged Termination Point
 - Unshielded Twisted Pair
 - A and C
 - None of the above
37. True or False. BDR and DR routers in OSPF listen on a multicast IP for OSPF updates from routers in the area.
38. True or False. DR in OSPF stands for Designated Router
39. True or False. BGP is a public routing protocol.
40. How many bits are available for an AS number to be?
- 4 bits
 - 8 bits
 - 16 bits
 - 32 bits
 - None of the above.
41. Which of the following network commands, following the command 'router ospf 1' tells the router to start using OSPF on interface whose IP network is 10.128.0.0/25
- Network 10.0.0.0 0.0.255.255 area 0
 - Network 10.128.0.0 0.0.127.255 area 0
 - Network 10.128.0.0 0.0.0.127 area 0
 - Network 10.128.0.0 0.127.255.25 area 0
 - None of the above.
42. True or False. OSPF is a public routing protocol.
43. Which of the following is not a RSTP state
- Discarding
 - Learning
 - Forwarding
 - Blocking
 - None of the above

44. Which of the following is not a STP state
 - a. Discarding
 - b. Blocking
 - c. Listening
 - d. Learning
 - e. None of the above
45. Which of the following features prevents loops by advertising an infinite metric when a route fails?
 - a. Holddown timer
 - b. Split horizon
 - c. Route poisoning
 - d. Link-state route
 - e. None of the above
46. When you do a 'sho ip-route connect' on a Cisco router, what is shown?
 - a. All IP routes
 - b. Connected IP routes
 - c. The default gateway
 - d. BGP routes
 - e. None of the above
47. True or False. In OSPF an area ID can be a number or an IP address.
48. What is the backbone area of OSPF?
 - a. Area 0.0.0.0
 - b. Area 0
 - c. Area 0.0
 - d. Area 100
 - e. None of the above
49. VLSM stands for:
 - a. Very long subnet mask
 - b. Variable length subnet mask
 - c. Vector loop summarization masks
 - d. Variable length subnetting masks
 - e. None of the above
50. What type of router memory is used to store the configuration used by the router when it is up and working?
 - a. Flash
 - b. ROM
 - c. NVRAM
 - d. RAM
 - e. None of the above.

THIS IS THE END OF THE SCANTRON PORTION OF THE TEST

NOW COMES THE ESSAY PORTION. YEAH!

BE MORE DETAILED FOR MORE POINTS.

51. (15) A lot of time in class was spent setting up different routing protocols like RIP, EIGRP, OSPF, etc. What is purpose for learning how to set these up? When would you use it? Pros and cons of using one over another?

52. (15) We also spent a lot of time in class learning how to subnet IP addresses. Figure out subnet masks, network addresses, usable IP addresses, etc. Why is this useful? What is a real world example that you could apply this to? What are the benefits to knowing subnetting?

53. (50) You are setting up the new network design and infrastructure for the new Desert Hills High School. Everybody gets a public IP address. Here are the departments and machine numbers. Figure out how many IP addresses you need to request from UEN. Plan for minimal growth in each division. Draw out the infrastructure. How would you connect to UEN? How would you connect each lab? Would you build in Spanning tree? Where? Explain your decisions and document VLANs, STP, number of switches and routers you might need. (you should use the back of this page for your drawing) What else would you use? VTP? RSTP vs STP? You can use another page for documenting if you want. This is a biggy. Be more thorough for full points. Should probably document what size of subnet each department gets.

ADMIN: 30 machines **LAB1:** 60 machines **LAB2:** 80 machines
LAB3: 154 machines **LIBRARY:** 10 machines **TEACHERS:** 39 machines
WIRELESS: plan for up to 500 machines

JUSTIFY YOUR DESIGN HERE:

54. (20) Make a CROSSOVER cable. You get two RJ45s. that's it. Don't screw up or 0 points. Make sure the jacket of the cable is inside the RJ45. Make sure no string is hanging out. Make sure you use the correct pinouts.

55. (20) Make a STRAIGHT THROUGH cable. You get two RJ45s. same rules as #54.