

IT4400 – Advanced Networking

Test #1 - Spring 2008

Name: _____

Instructions:

- Complete the task as instructed
- The value of each task is listed in ()'s after the number
- You may or may not want to complete in order of appearance
- You will have until 10:15am to complete this exam.

Tasks:

1. (20) Make me a cable from scratch. The cable you are to make will be a **CROSSOVER** cable. Use your crimpers and the two RJ45s I will provide. You may want to wait until the end to make this cable. If you mess up with the two RJ45s you get docked points.
2. (7) Make a list of the layers found in the OSI model. Number the layers accordingly.
3. (3) Describe what devices might be used for communication at layer#1.
4. (3) Describe what devices might be used for communication at layer #2.
5. (3) Describe what devices might be used for communication at layer #3.
6. (2) ATM packets are called _____
7. (2) The payload of an ATM packet is how many bytes?
 - a. 48 bytes
 - b. 52 bytes
 - c. 53 bytes
 - d. 1500 bytes
8. (2) How many DS0 channels will fit within a DS3?
 - a. 24
 - b. 28
 - c. 48
 - d. 96
 - e. None of the above
9. (2) How many DS1 channels will fit within a DS3?
 - a. 24
 - b. 28
 - c. 48

- d. 96
- e. None of the above

10. (2) How many kbps is a DS0?
11. (2) How many bits are contained in a MAC Address?
12. (2) How many bytes are contained in an IP address?
13. (2) How many bits are contained in a private IP address?
14. (2) How many bits is the network portion of a class A address?
15. (2) How many bits is the network portion of a class B address?
16. (2) How many bytes is the host portion of a class C address?
17. (3) Name three network topologies?

18. (4) We talked about two different WAN leased line protocols. What were they called?

19. (2) What is the name of the WAN protocol for leased lines that is Cisco proprietary?

20. (2) What kind of cable do you use for a console access to a Cisco switch and router?
 - a. Magic Cable
 - b. Power cable
 - c. Crossover Cable
 - d. T568A to T568B cable
 - e. Rollover Cable

21. (3) Explain when you might have devices in the same collision domain?

22. (2) What kind of Layer3 address would you use to communicate with more than one device at a time?
23. (2) What kind of Layer2 address might you use to communicate with more than one device at a time?
24. (16) You will have 16 blanks to fill in with the appropriate cabling for the T568A and T568B standards. Fill in the blanks with the appropriate cable colors for the TIA standard. Consider the left most blank position 1 on both lines.

T568A _____

T568B _____

25. (2) Given a Class B Network address, what are the values that are valid for the first octet?
 - a. 0 to 128
 - b. 128-192
 - c. 192-255
 - d. 127-191
 - e. None of the Above

26. (2) Given a Class C Network address, what are the values that are valid for the first octet?
 - a. 0 to 255

- b. 128-255
- c. 192-255
- d. 192-224
- e. None of the above.

27. (2) Given a Class A Network address, what are the values that are valid for the first octet?

- a. 0 to 127
- b. 0 to 128
- c. 1 to 127
- d. 1 to 128
- e. 1 to 126

28. (2) How many octets are 2 bytes when referring to an IP address?

29. (2) T or F. 10.0.0.0/12 is unregistered IP space used for private addressing.

30. (2) T or F. 192.168.0.0/24 is unregistered IP space used for private addressing.

31. (2) T or F. 172.16.0.0/12 is unregistered IP space used for private addressing.

32. (6) What are the three different packets (in order, left to right) that are sent to establish a new TCP session?

32. (8) What are the four packets (in order, left to right) that are sent or used when terminating a TCP session?

33. (4) Explain what an OTDM is used for and how it is used in a fiber network.

34. (4) Explain how can you use a single fiber strand for both TRANSMIT and RECEIVE?

35. (2) True or False. Multimode fiber is used for longhaul connection.

36. (2) True or False. Singlemode fiber is less expensive than Multimode fiber.

37. (2) True or False. GBICs are fixed modules used in routers and switches to provide connectivity with fiber.

38. (2) True or False. SFPs are perform the same function as a GBIC module but in a larger form factor.

39. (2) What type of router memory is used to store the operating system for low-level debugging and not for normal operation?

- a. RAM
- b. Flash
- c. ROM
- d. NVRam
- e. None of the above.

40. (2) Explain the benefit to having NVRAM and what it stores.

41. (2) What is ARP used for?

42. (2) What does NV stand for in NVRAM?

43. (2) What does ARP stand for?
44. (2) What does the Flash store on a router or switch?
45. (3) Given the IP address of 144.38.1.151 and the mask of 255.255.252.0 what is the Network Address?
46. (3) Given the same IP as question 45, what is the Broadcast Address?
47. (3) Write the subnet mask of question 45 in binary form
48. (4) Given the IP of 201.83.73.90 and the mask of 255.255.255.248 what is the Network address AND the broadcast address?
49. (3) Give me three different private IP addresses. Each from a different unregistered private network.
50. (3) Given the IP address of 209.33.200.200/23 what is the Network address?
51. (3) Given the IP address of 209.33.250.249/29 what is the Network address and broadcast?
52. (2) How many /24's are there in a /14 network?
53. (2) How many IP addresses are usable in a /21 network? (power notation is accepted)

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54. (30) IP Design:

You are given an IP network of 144.38.200.0/22

You need to break up the network and circle the appropriate network addresses given the following network sizes. UNDERLINE any unused network addresses that you don't need.

/24 /24 /25 /26 /27 /27 /27 /28 /29 /30 /30 /30