SAMPLE TEST from past EXAMS

(This is only a sample from previous exam to use as a guide. This semester the questions may also include fill in the blanks and shall also include different nature of questions mostly from the text book. Selected solutions, provided in bold, are not all exact and full answers. These are just guides. Consult the book for more complete answers. Not all chapters included in your exam may have questions included in this sample)

1. Which type of switching uses the entire capacity of a dedicated link?
   a. circuit switching  b. datagram packet switching  c. virtual circuit packet switching  d. message switching

2. How many crosspoints are needed in a single-stage switch with 40 inputs and 50 outputs?
   a. 40  b. 50  c. 90  d. 2000

3. A switched virtual circuit involves ______
   a. connection establishment  b. data transfer  c. connection release  d. all of the above

4. To create a ______, combine crossbar switches in stages.
   a. multistage switch  b. crosspoint  c. packet switch  d. TSI

5. A cell’s header has a ______ field.
   a. VPI  b. VCI  c. port  d. a and b

6. The ______ layer adds a 5-byte header to a 48-byte segment.
   a. AAL  b. ATM  c. physical  d. SAR

7. The ATM layer accepts data in ______ byte segments from the AAL layer.
   a. 44  b. 45  c. 47  d. 48

8. VPI is an acronym for ______.
   a. virtual path identifier  b. virtual permanent identifier  c. virtual packet identifier  d. virtual port identifier

9. ATM is a cell relay protocol that ______.
   a. has moved software functions to hardware  b. is connection-oriented  c. can interface with existing systems  d. all of the above

10. What is the main problem in multiplexing packets of different sizes?
    a. Smaller packets are always transmitted first.  b. Larger packets are always transmitted first.  c. Smaller packets may experience delayed transmission  d. Packets are transmitted according to size.

11. The supplementary protocol that allows the use of non-ASCII characters in an e-mail is called the ______ protocol.
    a. MIME  b. POP  c. POP2  d. none of the above

12. The official network management protocol in TCP/IP protocol suite is called ______.
    a. SNTP  b. SNMP  c. SMTP  d. none of the above

13. In HTTP, the message sent from the client to the server is called a ______.
    a. response  b. request  c. demand  d. none of the above

14. In the URL HTTP://xxxx:yyyy/zzzz, the method is ______.
    a. HTTP  b. xxxx  c. yyyy  d. zzzz

15. A simple bridge does which of the following?
    a. filters a data packet  b. forwards a data packet  c. extends LANs  d. all of the above

16. The shortest path in routing can refer to
    a. the least expensive path  b. the least distant path  c. the path with the smallest number of hops  d. any or a combination of the above
17. Which routing algorithm requires more traffic between routers for setup and updating?
   a. distance vector   b. link state   c. Dijkstra   d. vector link

18. In distance vector routing, each router receives vectors from ____________
   a. every router in the network   b. every router less than two units away
   c. a table stored by the software   d. its neighbors only

19. If there are five routers and six networks in an internetwork using link state routing, how many routing tables are there?
   a. 1   b. 5   c. 6   d. 11

20. The ______ layer accepts transmissions from upper-layer services.
   a. AAL   b. ATM   c. physical   d. SAR

21. In a virtual connection identifier, the VCI is ______ bits in an UNI and ______ bits in an NNI.
   a. 8; 16   b. 16; 8   c. 8; 8   d. 16; 16

22. The ______ of a TSI controls the order of delivery of slot values that are store RAM.
   a. crossbar   b. crosspoint   c. control unit   d. transceiver

23. If there are five routers and six networks in an internetwork, how many link state databases are there?
   a. 1   b. 5   c. 6   d. 11

24. Gateways function in which OSI layers?
   a. the lower three   b. the upper four   c. all seven   d. all but the physical layer

25. Repeaters function in the ________ layer(s).
   a. physical   b. data link   c. network   d. a and b

26. Which type of bridge builds and updates its tables from address information on packets?
   a. simple   b. transparent   c. a and b   d. none of the above

27. In _______, each packet of a message need not follow the same path from sender to receiver.
   a. circuit switching   b. message switching
   c. the virtual approach to packet switching   d. the datagram approach to packet switching

28. In _______, each packet of a message follows the same path from sender to receiver.
   a. circuit switching   b. message switching
   c. the virtual approach to packet switching   d. the datagram approach to packet switching

29. Routers function in the _______ layers.
   a. physical and data link   b. physical, data link, and network
   c. data link and network   d. network and transport

30. In which routing method do all the routers have a common database?
   a. distance vector   b. link state   c. link vector   d. none of the above

31. A packet traveling from one Token Ring network to another Token Ring network uses the services of a _______. (Each network is an independent network.)
   a. simple bridge   b. repeater   c. router   d. transparent bridge

32. An IP address is ________ bits.
   a. 24   b. 32   c. 48   d. none of the above

33. A class E address starts with the ________ bit(s).
   a. 0   b. 10   c. 1110   d. 1111

34. In decimal notation, the first byte of a class E address should be between____ and ______.
35. What is the class of the address 200.66.10.21?

36. What is the netid of the address 200.66.10.21?
   a. 200  b. 200.66  c. 200.66.0  d. none of the above

37. What is the hostid of the address 12.11.1.21?
   a. 11.1.21  b. 1.21  c. 21  d. none of the above

38. In link state routing, flooding allows changes to be recorded by
   a. all routers  b. neighbor routers only  c. some routers  d. all networks

39. In an LSP, the advertiser is
   a. a router  b. a network  c. a data packet  d. none of the above

40. Which of the following can be handled by a gateway?
   a. protocol conversion  b. packet resizing  c. data encapsulation  d. a and b

41. What is the hostid of the address 200.66.10.21?
   a. 66.10.21  b. 10.21  c. 21  d. none of the above

42. What is the address of the network to which the host 130.8.119.1 is connected (no subnetting)?
   a. 130.8.119.0  b. 130.8.0.0  c. 130.0.0.0  d. none of the above

43. Using a host address 195.21.43.65 and the mask 255.255.255.192, the subnetwork address is ___________.
   a. 195.21.43.0  b. 195.21.0.0  c. 195.21.43.64  d. none of the above

44. IP addresses without subnetting have ________ level(s) of hierarchy.
   a. 3  b. 2  c. 1  d. none of the above

45. In SMTP, the entity that is used to transfer the message is called the__________.
   a. MTA  b. UA  c. MA  d. none of the above

46. The supplementary protocol that fetches e-mail from an e-mail server is called the__________ protocol.
   a. MIME  b. POP  c. POP2  d. none of the above

47. In a cell network, cells belonging to a single message ________.
   a. may follow different paths  b. may arrive out of order  c. require extensive additional addressing and control information  d. follow the same path

48. To change xxxx@yyyy.zzzz to an IP address, we should use the__________ protocol.
   a. TELNET  b. DNS  c. NVT  d. none of the above

49. The VPI identifies a__________.
   a. cell  b. station  c. virtual path  d. virtual packet

50. An ATM cell consists of ________ bytes.
   a. 48  b. 53  c. 256  d. a variable number of

51. A class C address starts with the__________bit(s).
   a. 0  b. 10  c. 110  d. 1110

52. In decimal notation, the first byte of a class D address should be between______ and ________.
   a. 0; 127  b. 128; 191  c. 224; 239  d. 240; 255

53. To change xxxx@yyyy.edu to an IP address, we should use the__________ domain in the DNS protocol.
   a. generic  b. country  c. inverse  d. none of the above

54. The main protocol for sending e-mail in the TCP/IP protocol suite is called_____.
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55. In the destination e-mail address xxxx@yyyy.zzzz.tttt, _______ defines the local part of the destination.
   a. tttt   b. xxxx   c. yyyy   d. none of the above

56. When an e-mail is received, it is first stored in a(n) __________.
   a. mailbox   b. spool   c. expander   d. none of the above

57. Bridges function in the _______ layer(s).
   a. physical   b. data link   c. network   d. a and b

58. What type of bridge must have its address table entered manually?
   a. simple   b. transparent   c. multiport   d. b and c

59. In the URL HTTP://xxxx:yyyy/zzzz, the name of the host (or an alias for it) is _________.
   a. HTTP   b. xxxx   c. yyyy   d. zzzz

60. HTML is mostly associated with a _______ document.
   a. static   b. dynamic   c. active   d. none of the above

61. In the TCP/IP protocol suite, the layer above the transport layer is called the _______ layer.
   a. session   b. presentation   c. application   d. none of the above

62. Which of the following best describes a cell network?
   a. All packets carry audio or video data.
   b. All packets are the same size.
   c. The packet size is variable, but less than 4096 bytes.
   d. all of the above

---------------------------Descriptive Questions----------------

1. a. What is the type of switch shown in the following figure?
   b. Calculate the number of cross points required in this switch.

   STS switch. No of crosspoint is 40 (5x2+5x2+5x2+5x2)

c. What are the two popular approaches of packet switching? Discuss with examples and figures.
( Discuss on the Datagram approach and virtual circuit approach)

d. Define the terms: SVC, PVC, Blocking, Message Switching.

2. Complete the following table to compare a circuit switched network with a packet-switched network.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Circuit-Switched</th>
<th>Packet-Switched</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedicated Path</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Store and Forward</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Need for connection Establishment</td>
<td>Yes</td>
<td>no (datagram) and yes (VC)</td>
</tr>
<tr>
<td>Routing Table</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Delay</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

14-51
3. Show the output of the ATM multiplexer in the following figure.

![Figure 19.1](Exercise 80)

4. a. How many virtual connections are defined in a UNI interface? How many virtual interfaces are defined in an NNI interface? **2^24 in a UNI and 2^28 in an NNI.**
   b. What are the categories quality of services in ATM. Define the QOS terms with examples: SCR, PCR, MCR, CVDT, CLR, CTD and CDV and CER.
   c. Explain with examples the service classes used in ATM. (CBR, VBR, ABR, UBR)

5. a. In routing, what does the term shortest mean?

   21-13. In routing shortest means either requiring the smallest number of hops, or the fastest, cheapest, most reliable, or secure. Usually it is a combination of all of the qualities that make a specific route more attractive than others for a particular transmission.

   b. What is the function of a gateway? Explain with examples.

6. a. What are the 3 main elements of link state routing?

   21-23. Knowledge about the neighborhood, sending information to all the routers in the internetwork, and information sharing only when there is a change.

   b. What are the 3 main elements of distance vector routing?
   21-21. Knowledge about the whole network, sharing information only with the immediate neighbors, and sending the information at regular intervals.

   c. What algorithm does link state routing use to calculate the routing tables?
   21-24. Link state routing uses the Dijkstra algorithm to calculate the routing tables.

7. A router using distance vector routing has the following routing table:

   Net2  6  A
   Net3  3  A
   Net4  4  E
   Net6  1  B
   Net7  2  D

   The router receives the following packet from router C:
   Net2  4
   Net3  2
   Net4  5
   Net6  2
   Net7  3

   Show the updated routing table for the router.

8. a. If a bridge sends data from a Token Ring network to an Ethernet network how is a collision handled by the bridge?
A bridge acts as a station in the Ethernet network. So the collision should be handles normally as in case of any other station.

21-55

b. what is router's role in controlling the packet lifetime?

21-15. Each router that relays a packet subtracts one from its lifetime value and passes it on. When the value reaches 0 the packet is destroyed.

9. a. How does MIME enhances SMTP?

25-13 SMTP is designed to support electronic mail on the Internet.

b. Why is NVT needed in remote login?

25-10 Via NVT the client TELNET translates characters from various systems into a universal character set, and the server TELNET translates the NVT data into a form acceptable by the remote computer.

10. Find the subnetwork address for the following. Show the steps for your calculation.

   IP address: 200.34.22.156  Mask: 255.255.255.224  200.34.22.144 class C

11. What is the maximum number of subnets in the following site? Show how you calculated the number.

   Site address: 217.14.8.0  Mask: 255.255.255.224  16

12. What you mean by encryption and decryption? Name some conventional methods of encryption and decryption with examples of their functions. Name two encryption/decryption standards. (Ch. 23)


   b. What is compression and why is necessary? Explain with examples lossy and lossless compression.

14. Given the following network. Boldface numbers indicate network addresses. (6 point question)

Answer the following questions:

a. How many IP address the gateway G1, G2, and the router R1 should have?
b. Choose an appropriate address for network1?

c. Choose the appropriate addresses for gateway G1 (based on your previous answers).

d. Choose an appropriate addresses for host1 and host2.

host1:        host2:

15. a. What is the purpose of domain name system?

    The DNS is a protocol that can map a name to an IP address and vice versa.

b. What is the difference between boundary-level masking and nonboundary-level masking?

    In boundary-level masking, the mask numbers are either 0 or 255, while in non-boundary-level masking, the numbers can range from 1 to 254.

16. a. What are the 3 switching methods?

    Circuit switching, packet switching, and message switching

b. How many cross points are needed in a single-stage switch with 41 inputs and 52 outputs?

    2132

17. a. Explain ARP and RARP protocols (pg. 719).

b. Explain BOOTP and DHCP protocols (pg. 739). Explain what you mean by DNS.

c. Explain the terms: Telnet, NVTFTP, SMTP, MTA, UA.

19. Given the following network. Find the shortest path tree and routing table for router B.