浙江大学 2004 – 2005 学年春夏季学期

《计算机网络基础》课程期末考试试卷

开课学院：计算机学院 ，考试形式：闭，允许带_____入场

考试时间： 2005 年 7 月 5 日,所需时间： 120 分钟

考生姓名：_____学号：_____专业：_____

题序	一	二	三	四	五				总 分
得分									
评卷人									

注意事项：

1．请把答案写在答题纸对应的题号内；

2．有关 IP 地址表达方式，如果没有特别的掩码标明，则均按标准地址分类表示。

一、 Please select the best choice for following questions ***(50 points)***

1. What is the advantage of using a layered model of networking?
   A. Simplified the network
   B. For the purpose of standardization
   C. Divides the complexity of internetworking into discrete, more easily learned operation subsets
   D. All of the above
2. What is the name of protocol data unit (PDU) at the network layer of the OSI reference model?
   A. Transport
   B. Frame
   C. Packet
   D. Segment
3. Which is true when a broadcast is sent out in an Ethernet 802.3 LAN?
   A. The broadcast is sent only to the default gateway.
   B. The broadcast is sent only to the destination hardware address in the broadcast.
   C. The broadcast is sent to all devices in the collision domain.
   D. The broadcast is sent to all devices in the broadcast domain.
4. Segmentation of a data stream happens at which layer of the OSI model?
   A. Physical
   B. Data Link
   C. Network
   D. Transport
5. Which of following international standard defines for Fast Ethernet?
   A. IEEE 802.3
   B. IEEE 802.3z

C. IEEE 802.3u
D. IEEE 802.3ae

6. What does the Data Link layer use to find hosts on a local network?
   A. Logical network addresses
   B. Port numbers
   C. Hardware addresses
   D. Default gateways
7. What were the key reasons the ISO released the OSI model?
   A. To allow companies to charge more for their equipment
   B. To help vendors create interoperable network devices
   C. To help vendors create and sell specialized software and hardware
   D. So the IBM mainframe would be replaced with the PC
8. What is used at the Transport layer to stop a receiving host's buffer from overflowing?
   A. Segmentation
   B. Packets
   C. Acknowledgments
   D. Flow control
9. When *data* is encapsulated, which is the correct order?
   A. Data, frame, packet, segment, bit
   B. Segment, data, packet, frame, bit
   C. Data, segment, packet, frame, bit
   D. Data, segment, frame, packet, bit
10. What does the term "Base" indicate in 100Base-TX?
   A. The maximum distance
   B. The type of wiring used
   C. A LAN switch method using half duplex
   D. A signaling method for communication on the network
11. What is the maximum distance of 100Base-T?
   A. 100 feet
   B. 1000 feet
   C. 100 meters
   D. 1000 meters
12. Which of the following would describe a transport layer connection that would ensure reliable delivery?
   A. Routing
   B. Acknowledgments
   C. Switching
   D. System authentication
13. Which of the following is not considered a reason for LAN congestion?
   A. Low bandwidth
   B. Too many users in a broadcast domain
   C. Broadcast storms
   D. Routers
14. Which of the following are two basic types of dynamic routing?
   A. Static and default
   B. TCP and UDP exchange

C. Distance-vector and link-state
D. None of the above

15. If your LAN network is currently congested and you are using only hubs in your network, what would be the BEST solution to decrease congestion on your network?
A. Cascade your hubs.
B. Replace your hubs with switches.
C. Replace your hubs with routers.
D. Add faster hubs.

16. What technology is a used by most switches to resolve topology loops and ensure that data flows properly through a single network path?
A. RIP
B. STP
C. IGRP
D. Store-and-forward

17. Which of the following is one of the characteristics of IP?
A. reliable and connectionless
B. unreliable and connectionless
C. reliable and connection-oriented
D. unreliable and connection-oriented

18. What is the valid host range for subnet 172.16.10.16 (Mask 255.255.255.240)?
A. 172.16.10.20 through 172.16.10.22
B. 172.16.10.16 through 172.16.10.23
C. 172.16.10.17 through 172.16.10.31
D. 172.16.10.17 through 172.16.10.30

19. What range of addresses can be used in the first octet of a Class B network address?
A. 1–126
B. 128–190
C. 128–191
D. 129–192

20. Which of the following is not true?
A. IP is connectionless and provides routing.
B. ARP is used to find an IP address of a host.
C. UDP is connectionless.
D. TCP is connection oriented.

21. Which class of IP address provides a maximum of only 254 host addresses per network ID?
A. Class A
B. Class B
C. Class C
D. Class D

22. Which protocol tool use ICMP?
A. Telnet
B. Ping
C. ARP
D. FTP

23. Which of the following is an IEEE standard for frame tagging?
A. 802.1X

B. 802.3Z
C. 802.1Q
D. 802.3U

24. A client will use ____ to send emails to mail-server.
A. POP3
B. SMTP
C. TELNET
D. FTP

25. Which protocol used in PPP allows multiple Network layer protocols to be used during a connection?
A. LCP
B. NCP
C. HDLC
D. X.25

26. When too many packets are present in the subnet, performance degrades. What is this situation called?
A. dead lock
B. congestion
C. network fault
D. network busy

27. Which language can be used to realize the client-side dynamic web page generation?
A. CGI
B. ASP
C. JavaScript
D. PHP

28. The two-wire connections between each subscriber's telephone and the end office are known in the trade as the____.
A. trunk B. local loop C. link D. switch

29. When web page is transmitted over SSL, the protocol used is _____.
A. HTTP B. SHTTP C. HTTPS D. SSL

30. Nyquist proved that if an arbitrary signal has been run through a low-pass filter of bandwidth H, the filtered signal can be completely reconstructed by making only _____ (exact) samples per second
A. H B. 0.5H C. 2H D. 4H

31. To convert a binary message to an ASCII message in email system, we can use _____ encoding, which break up groups of 24 bits into four 6-bit units, with each unit being sent as a legal ASCII character.
A. base64 B. quoted-printable C. SMTP D. POP3

32. A CRC generator polynomial is G(x)= $X^8+X^5+X^2+1$. How many bits will the checksum be?
A. 7 B. 8 C. 9 D. 10

33. If the length of sequence is 4 bits, the maximum sending window size should be ____.
A. 13 B. 14 C. 15 D. 16

34. In 802.11, to solve the _____ station problem and the hidden station problem, we can use CSMA/CA protocol. According this protocol, before the station sending a data, it must send RTS frame and wait a CTS frame back.
A. fault B. mobile C. exposed D. wireless

35. If the congestion window size is 20KB, and the receive window size is 30KB, what is the maximum bytes can the TCP entity transmit?
    A. 20KB B. 30KB C. 50KB D. 10KB
36. Port numbers below _____ are called well-known ports and are reserved for standard services.
    A. 256 B. 1024 C. 4096 D. 1000
37. _____, which are overlay networks on top of public networks but with most of the properties of private network.
    A. PBX B. VPN C. CDMA 1X D. GPRS
38. The problem of running out of IP addresses is not a theoretical problem that might occur at some point in the distant future. Some people felt that a quick fix was needed for the short term. This quick fix came in the form of _____.
    A. IP6 B. DHCP C. RARP D. NAT
39. Public-key algorithms have the property that _____ keys are used for encryption and decryption and that the decryption key cannot be derived from the encryption key. These properties make it possible to publish the public key.
    A. one time B. random C. same D. different
40. The main public-key algorithm is _____ which derives its strength from the fact that it is very difficult to factor large numbers.
    A. DES B. AES C. MD5 D. RSA
41. Various schemes have been devised for digital signatures, using both symmetric-key and _____-key algorithms.
    A. public B. private C. one time D. one way
42. Often, authentication is needed but secrecy is not, based on the idea of a one-way hash function that takes an arbitrarily long piece of plaintext and from it computes a fixed-length bit string. This hash function, MD, often called a _____.
    A. message digest B. packet-switched C. message-detect D. mini data
43. URL(Uniform Resource Locator) have three parts: the _____, the DNS name of the machine on which the page is located, and a local name uniquely indicating the specific page.
    A. protocol B. address C. port number D. name
44. HTTP1.1, which supports _____ connections. With them, it is possible to establish a TCP connection, send a request and get a response, and then additional requests and get additional response.
    A. one time B. persistent C. stop and wait D. one-way
45. _____, when it is used, a bad frame that is received is discarded, but the good frames received after it are buffered.
    A. selective repeat B. go back N C. sliding window D. stop and wait
46. How does the FDM multiplexing schemes work like?
    A. each user having exclusive possession of some band
    B. each user take turns, periodically getting the entire bandwidth for a litter burst of time
    C. each user transmit over the entire frequency spectrum all the time with different coding
    D. each user transmit over a shared fiber using different wavelength
47. When we use a modem, which use 16 phases signal to modulation, then how much can we get the maximum data rate in a 2400 baud channel (in noiseless channel)?
    A. 400bps B. 2400bps C. 9.6kbps D. 14.4kbps
48. _____ is a small java program that has been compiled into binary instruction running in JVM,

and can be embedded into HTML pages, interpreted by JVM-capable browsers.

A. JavaScript B. JavaBean C. Applet D. JSP

49. Which of the following best describes the function of the OSI reference model's transport layer?
    A. It sends data by using flow control
    B. It provides the best path for delivery
    C. It determines network addresses
    D. It provides error-correcting
50. What is the most efficient subnet mask to use on point-to-point WAN links?

A. 255.255.255.0 B. 255.255.255.224 C. 255.255.255.252 D. 255.255.255.248

二、 Please choose true(T) or false(F) for the following questions *(15 points)*

1. Error-correcting and error-detecting are two types of technique in error control.
2. Link state dynamic routing algorithms operate by having each router maintain a table giving the best known distance to each destination and which line to use to get there. These tables are updated by exchanging information with the neighbors.
3. With Manchester encoding, each bit period is divided into two equal intervals. A binary 1 bit is sent by having the voltage set high during the first interval and low in the second one. A binary 0 is just the reverse: first low and then high.
4. A connection is established in TCP by means of the two-way handshake.
5. The range of frequencies transmitted without being strongly attenuated is called bandwidth.
6. Shannon's major result is that the maximum data rate of a noisy channel whose bandwidth is H Hz, and whose signal-to-noise ratio is S/N, is given by

   Maximum number of baud/sec = H $\log_2$ (1+S/N)
7. Two different switching techniques are widely used nowadays: circuit switching and packet switching.
8. The protocols used to determine who goes next on a multi-access channel belong to a sub-layer of the data link layer called the LLC sublayer.
9. The basic function of RTP is to multiplex several real-time data streams onto a single stream of UDP packets.
10. The Internet solution is to realize that two potential problems exist network capacity and receiver capacity and to deal with each of them separately. To do so, each sender maintains two windows: the window the receiver has granted and a second window, the congestion window.
11. Selective repeat, is for the receiver simply to discard all subsequent frames, sending no acknowledgments for the discarded frames.
12. The IPSec is a set of open standards that provides data confidentiality, data integrity, and authentication between participating peers at the IP layer.
13. B2C, the full name is Business to Company.
14. One type of person-to-person communication often goes by the name of end-to-end communication, to distinguish it from the client-server model.
15. An issue that occurs at every level is how to keep a fast sender from swamping a slow received with data. This subject is called flow control.

三、 Please answer the following questions briefly.

1. What are the principal differences between connectionless communications and connection-oriented communications? (***5 points***)

2. Data link protocols almost always put the CRC in a trailer rather than in a header. Why? (***5 points***)

3. Suppose that the TCP congestion window is set to 18KB and a timeout occurs. How big will the window be if the next four transmission bursts are all successful? Assume that the maximum size of segment is 1KB. (***5 points)***

四、 A large number of consecutive IP address are available starting at 198.16.0.0. Suppose that four organizations, A, B, C, and D, request 4000,2000,4000, and 8000 addresses, respectively, and in that order. For each of these, give the first IP address assigned, the last IP address assigned, and the mask in the ***w.x.y.z/s*** notation. (***8 points***)

(Notice: To start with, all the requests are rounded up to a power of two.)

五、 The following figure describes a simple authentication protocol. Assume you are Trudy, please use reflection attack to attack Bob.

(1). Draw the attack figure and give clear the steps of the attach

(2). What are the differences between **authentication** and **authorization?** (***12 points***)