

、英译汉（10 分）

1. TCP(Transmission Control Protocol)	传输控制协议
2. IP(Internet Protocol)	互联网协议
3. RFC(Requests for comments)	请求评议
4. SMTP(Simple Mail Transfer Protocol)	简单邮件传输协议
5. Congestion-control	拥塞控制
6. Flow control	流控制
7. UDP (User Datagram Protocol)	用户数据报协议
8. FTP(File Transfer Protocol)	文件传输协议
9. HTTP( Hyper-Text Transfer Protocol )	超文本传输协议
10. TDM	时分复用
11. FDM	频分复用
12. ISP(Internet Service Provider)	互联网服务提供商
13. DSL(Digital Subscriber Line)	数字用户线路
14. DNS(Domain Name System)	域名系统
15. ARQ(Automatic Repeat Request)	自动重发请求
16. ICMP(Internet Control Message Protocol)	网间控制报文协议
17. AS(Autonomous Systems)	自治系统
18. RIP(Routing Information Protocol)\	路由信息协议
19. OSPF(Open Shortest Path First)	开放最短路径优先
20. BGP (Border Gateway Protocol)	边界网关协议
21. HFC	光纤同轴电缆混合网
22. CRC(Cyclic Redundancy Check)	循环冗余检验
23. CSMA/CD	带冲突检测的载波侦听多路存取
24. ARP	地址解析协议
25. RARP	反向地址解析协议
26. DHCP	动态主机配置协议
27. RTT	循环时间
28. IETF(P5)	互联网工程任务组
29. URL(P88)	统一资源定位
30. API	应用程序编程接口
31. MIME	多用途互联网邮件扩展
32. MTU(P328)	最大传输单元

二、单项选择题 （每小题1分，共30分）

1. DSL divides the communication link between the home and the ISP into three nonoverlapping frequency bands, a upstream channel is in \_A\_\_\_\_\_.  
A)50 kHz to 1MHz band                      B) 1MHz to 2MHz band  
C)4 kHz to 50kHz band                      D) 0 to 4kHz band
2. As a data packet moves from the upper to the lower layers, headers are A \_\_\_\_\_.  
A) Added;      B) subtracted;      C) rearranged;      D) modified
3. What is the main function of the network layer? D  
A) node-to-node delivery;                      B) process-to-process message delivery  
C) synchronization;                      D) updating and maintenance of routing tables

4. Which of the following is the default mask for the address 168.0.46.201? B  
 A) 255.0.0.0; B) 255.255.0.0; C) 255.255.255.0; D) 255.255.255.255
5. A router reads the \_\_\_\_\_ address on a packet to determine the next hop. A  
 A) IP ; B) MAC; C) source; D) ARP
6. Which device can't isolate 隔离 the departmental collision domains. A  
 A) Hub; B) switch; C) router; D) A and B
7. Input port of a router don't perform \_\_\_\_\_ D \_\_\_\_\_ functions.  
 A) the physical layer functions B) the data link layer functions  
 C) lookup and forwarding function D) network management
8. HTTP has a mechanism 原理 机制 that allows a cache to verify 验证 that its objects are up to date. The mechanism is D  
 A) persistent connections B) cookies C) Web Caching D) conditional GET
9. A protocol layer can be implemented in \_\_\_\_\_ D \_\_\_\_\_.  
 A) software B) hardware C) a combination of the software and hardware D) All of the above
10. A protocol has three important factors, they are \_\_\_\_\_ A \_\_\_\_\_.  
 A) syntax, semantics, order B) syntax, semantics, layer  
 C) syntax, semantics, packet D) syntax, layer, packet
11. There are two broad classes of packet-switched networks: datagram networks and virtual-circuit networks. The virtual-circuit networks forward packets in their switches use \_\_\_\_\_ D \_\_\_\_\_.  
 A) MAC addresses B) IP addresses  
 C) e-mail addresses D) virtual-circuit numbers
12. TCP service model doesn't provide \_\_\_\_\_ D \_\_\_\_\_ service.  
 A) reliable transport service B) flow control service  
 C) congestion-control service D) guarantee a minimum transmission rate service.
13. Usually elastic 灵活的 applications don't include \_\_\_\_\_ B \_\_\_\_\_.  
 A) Electronic mail B) Internet telephony  
 C) file transfer D) Web transfer
14. A user who uses a user agent on his local PC receives his mail sited in a mail server by using \_\_\_\_\_ B \_\_\_\_\_ protocol.  
 A) SMTP B) POP3  
 C) SNMP D) FTP
15. Considering sliding-window protocol, if the size of the transmitted window is N and the size of the receiving window is 1, the protocol is \_\_\_\_\_ B \_\_\_\_\_.  
 A) stop-and-wait protocol B) Go-Back-N protocol  
 C) selective Repeat protocol D) alternating-bit protocol
16. which IP address is effective \_\_\_\_\_ B \_\_\_\_\_.  
 A) 202,131,45,61 B) 126.0.0.1  
 C) 192.268.0.2 D) 290.25.135.12
17. if IP address is 202.130.191.33, subnet mask is 255.255.255.0, then subnet prefix is \_\_\_\_\_ D \_\_\_\_\_.  
 A) 202.130.0.0 B) 202.0.0.0  
 C) 202.130.191.33 D) 202.130.191.0

18. The command Ping is implemented with   B   messages

- A) DNS
- B) ICMP
- C) IGMP
- D) RIP

19. Which layer-function is mostly implemented in an adapter?   A  

- A) physical layer and link layer
- B) network layer and transport layer
- C) physical layer and network layer
- D) transport layer and application layer

20. If a user brings his computer from Chengdu to Peking, and accesses Internet again. Now,   B   of his computer needs to be changed.

- A) MAC address
- B) IP address
- C) e-mail address
- D) user address

1. .traceroute is implemented with   B   messages.

- A) DNS
- B) ICMP
- C) ARP
- D) RIP

2. A router reads the   A   address on a packet to determine the next hop.

- A. IP ;
- B. MAC;
- C. source;
- D. ARP

3. There are two broad classes of packet-switched networks: datagram networks and virtual-circuit networks. The virtual-circuit networks forward packets in their switches use   D  .

- A) MAC addresses
- B) IP addresses
- C) e-mail addresses
- D) virtual-circuit numbers

4. About subnet, which underlying description isn't right

- A) device interfaces with same subnet part of IP address
- B) can't physically reach each other without intervening a router.
- C) all of the devices on a given subnet having the same subnet address.
- D) A portion of an interface's IP address must be determined by the subnet to which it is connected.

5. if IP address is 102.100.100.32, subnet mask is 255.255.240.0, then subnet prefix is   A  

- A) 102.100.96.0
- B) 102.100.0.0
- C) 102.100.48.0
- D) 102.100.112.0

6 If a user brings his computer from chengdu to beijing, and accesses Internet again. Now,   B   of his computer needs to be changed.

- A) MAC address
- B) IP address
- C) e-mail address
- D) user address

7. Input port of a router don't perform   D   functions.

- A) the physical layer functions
- B) the data link layer functions
- C) lookup and forwarding function
- D) network management

8. switching fabric is at the heart of a router, switching can be accomplished in a number of ways, don't include   D  

- A) Switching via memory
- B) Switching via crossbar
- C) Switching via a bus
- D) Switching via buffer

9. if a host wants to emit a datagram to all hosts on the same subnet, then the datagram's destination IP address is   B  

- A) 255.255.255.0
- B) 255.255.255.255

C)255.255.255.254

D) 127.0.0.1

10. The advantage of Circuit switching does not include

A) small transmission delay

B) small Processing cost

C) high link utilization

D) no limited to format of message

1. an ARP query sent to A

A) local network B) all over the Internet.

2. packet-switching technologies that use virtual circuits include B:

A) X.25, ATM, IP

B) X.25, ATM, frame relay.

C) IPX, IP, ATM

D) IPX, IP, TCP

3. In Internet, D protocol is used to report error and provide the information for un-normal cases.

A) IP B) TCP C) UDP D) ICMP

1. A is a Circuit-switched network.

A. TDM B. Datagram network C. Internet D. virtual circuit network

2. The store-and-forward delay is D

A. processing delay B. queuing delay C. propagation delay D. transmission delay

3. Which is not the function of connection-oriented service? D

A. flow control B. congestion control C. error correction D. reliable data transfer

4. The IP protocol lies in C

A. application layer B. transport layer C. network layer D. link layer

5. Which of the following is the PDU for application layer B

A. datagram; B. message; C. frame; D. segment

6. bandwidth is described in B

A) Bytes per second B) Bits per second

C) megabits per millisecond D) centimeters

7. A user who uses a user agent on his local PC receives his mail sited in a mail server by using A protocol.

A)SMTP

B) POP3

C)SNMP

D) FTP

8. As a data packet moves from the lower to the upper layers, headers are B.

A)Added; B. subtracted; C. rearranged; D. modified

三、填空题 (每空 1 分, 共 22 分 (注意: 所有填空题不能写中文, 否则中文答案对的情况下扣 0.5 分)

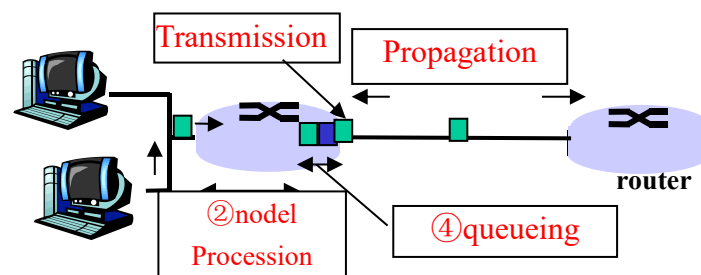
1. link-layer address is variously called a LAN address, a MAC address, or a physical address.

2 In the layered architecture of computer networking,  $n$  layer is the user of  $n-1$  layer and the service provider of  $n+1$  layer.

- A)  $n$     B)  $n+3$     C)  $n+1$     D)  $n-1$

Mechanism	Use
<b>Checksum</b>	Used to detect bit errors in a transmitted packet.
<b>Sequence number</b>	Used for sequential numbering of packets of data flowing from sender to receiver.
<b>Acknowledgment (或 ACK)</b>	Used by the receiver to tell the sender that a packet or set of packets has been received correctly.
<b>Countdown timer</b>	Used to timeout/retransmit a packet, possibly because the packet (or its ACK) was lost.
<b>Window, pipelining</b>	The sender may be restricted to sending only packets with sequence numbers that fall within a given range.

1. please fill in the types of delay in a router.



#### 四、判断题（每小题 1 分，共 10 分）

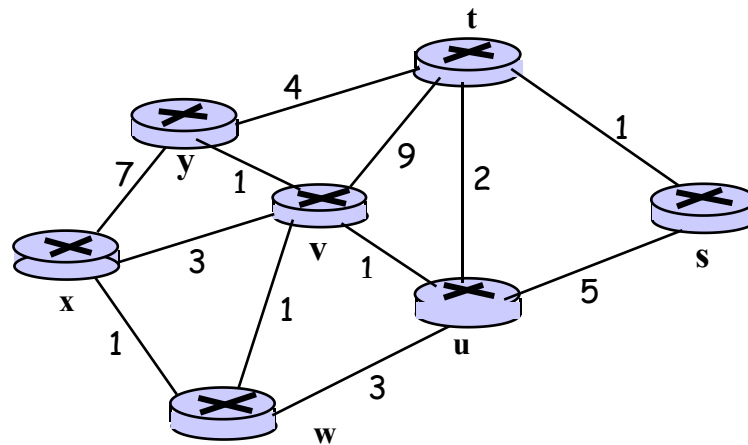
- ✓ The services of TCP's reliable data transfer founded on the services of the unreliable data transfer.
- ✓ Any protocol that performs handshaking between the communication entities before transferring data is a connection-oriented service.
- × HOL blocking occur in output ports of router.
- ✓ Socket is globally unique.
- ✓ SMTP require multimedia data to be ASCII encoded before transfer.
- × The transmission delay is a function of the distance between the two routers.
- × IP address is associated with the host or router. SO one device only have one IP address.
- ✓ In packet-switched networks, a session's messages use the resources on demand, and Internet makes its best effort to deliver packets in a timely manner.
- × UDP is a kind of unreliable transmission layer protocol, so there is not any checksum field in UDP datagram header.
- ✓ Forwarding table is configured 安装 by both Intra and Inter-AS routing algorithm

IP is a kind of reliable transmission protocol. **F**

8. Forwarding table is configured by both Intra and Inter-AS routing algorithm. **T**
9. Distance vector routing protocol use lsa to advertise the network which router knows. **F**
10. RIP and OSPF are Intra-AS routing protocols **T**
11. Packet switching is suitable for real-time services, and offers better sharing of bandwidth than circuit switching **F**

### 五、计算题 (28 points)

1. Consider the following network. With the indicated link costs, use Dijkstra's shortest-path algorithm to compute the shortest path from X to all network nodes.



Step	N'	D(s),p(s)	D(t),p(t)	D(U),p(u)	D(v),p(v)	D(w),p(w)	D(y),p(y)
1	<b>X</b>	$\infty$	$\infty$	$\infty$	3,x	1, x	7,x
2	<b>xw</b>	$\infty$	$\infty$	4,w	2,w		7,x
3	<b>xwv</b>	$\infty$	11,v	3,v			3,v
4	<b>xwvu</b>	8,u	5,u				3,v
5	<b>xwvuy</b>	8,u	5,u				
6	<b>xwvuyt</b>	6,t					
7	<b>xwvuyts</b>						

2 Given: an organization has been assigned the network number 198.1.1.0/24 and it needs to define six subnets. The largest subnet is required to support 25 hosts. Please:

- Defining the subnet mask; (2 分) **27bits or 255.255.255.224**
- Defining each of the subnet numbers; which are starting from 0# (4 分)  
**198.1.1.0/27 198.1.1.32/27 198.1.1.64/27 198.1.1.96/27 198.1.1.128/27**  
**198.1.1.160/27 198.1.1.192/27 198.1.1.224/27**
- Defining the subnet 2#'s broadcast address.(2 分) **198.1.1.95/27**
- Defining host addresses scope for subnet 2#. (2 分) **198.1.1.65/27--198.1.1.94/27**

3. Consider sending a 3,000-byte datagram into a link that has an MTU of 1500bytes. Suppose the original datagram is stamped with the identification number 422 . Assuming a 20-byte IP header, How many fragments are generated? What are their characteristics?(10 分)

Fragment	Bytes	ID	Offset	flag
1st fragment	1480 (1 分)	422 (0.5 分)	0 (1 分)	1(0.5 分)
2st fragment	1480 (1 分)	422 (1 分)	185 (1 分)	1 (0.5 分)
3st fragment	20 (1 分)	422 (1 分)	370 (1 分)	0(0.5 分)