答疑课—讲解试题

一、历年考题

I. Acronyms match the acronyms to the questions, using each acronym once: CNAME, Priority Packet Scheduling, RTT, RST, TCP, Flow Control, RFC, CSMACD, RTO, Flow Control, NAT, PPP, TLD, UDP, WTF, BGP, TTL, HOL, lEEE, Peer-to-Peer.（缩写词-含义配对）

1) The documents used by the IETF to describe protocol standards.
2) The term for a primary DNS zone such as .com or .org or .cn.
3) A counter in the IP header that keeps packets from circulating forever.
4) The DNS record type that provides the canonical name associated with a given hostname.
5) A widely used routing protocol that does not necessarily compute lowest-cost paths.
6) The most widely used reliable transport protocol.
7) A design style that involves many equivalent nodes,. rather than a few specialized servers.
8) A packet scheduling mechanism that allows a router to give better service to one class of packets.
9) How the sender keeps from overloading the receiver in a TCP connection.
10) A control flag used to terminate a TCP connection abruptly.

II. Decide true or false.（正误判断）

1）With non persistent connection between browser and origin server, it is possible for a single TCP segment to carry two distinct HTTP request message. ( )
2）In datagram network, each time an end system want to send a packet, it setups VC and then stamps the packet with the address of destination end system and pops the packet into the network. ( )
3）Congestion control reduces the transmission rate at the sender when the receiver is overloaded. ( )
4）The TTL(Time to Live) field, which is decreased at every hop in the network to avoid packet forwarding loop, is part of the TCP head. ( )
5）In an Ethernet, Ethernet hubs and repeaters learn addresses by looking at the destination address of packets as they pass by. ( )

III. Integrated Problem.（综合题）

1) Consider a router that interconnects three subnet, A, B, C. And suppose all of the interfaces in each of these three subnet are required to have the prefix

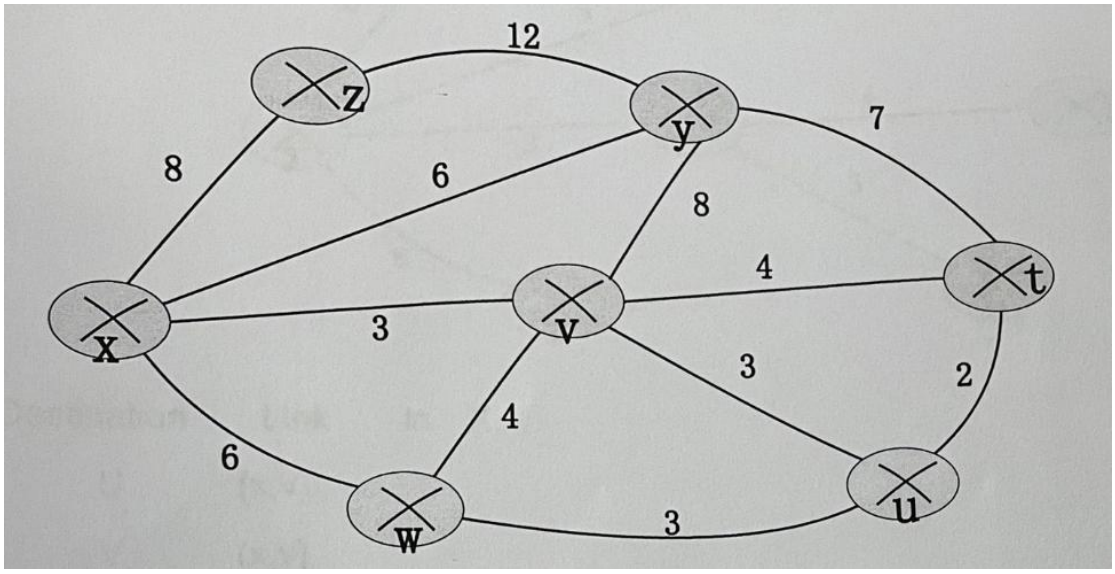
223.1.17.x/24. Also suppose that subnet A is required up to support up to 125 hosts, and subnet B, C are each required to support up to 60 hosts:

(1) Provide three network addresses that satisfy these constrain;

(2) Give out the address range of each subnet;

(3) mask of each subnets.

2) With the indicated link cost in the following network, use Dijkstra's algorithm to compute the shortest path form x to all other network nodes.



(1) Give out the table as following from node x to node t.

Step	N'	D(u),p(u)	D(v),p(v)	D(w),p(w)	D(y),p(y)	D(z),p(z)	D(t),p(t)
0							
1							
.							
.							

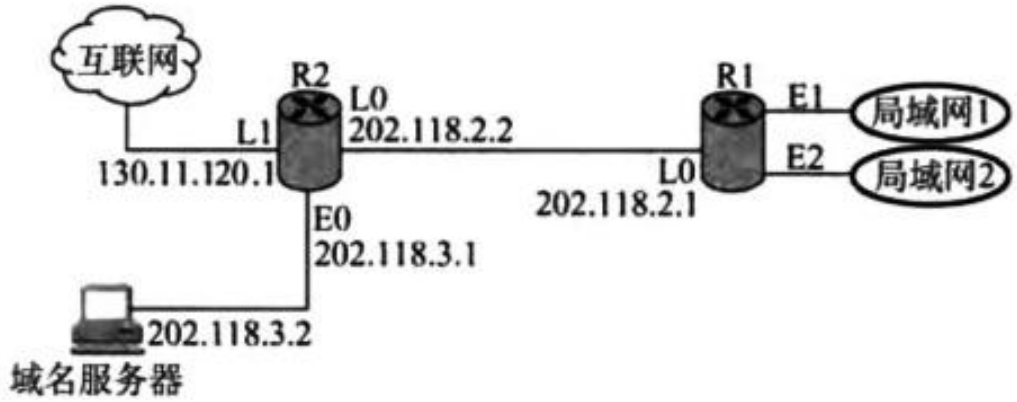
(2) Give out the shortest path form X to all other nodes, using table in (1).

(3) Give out the forwarding table for node x.

二、综合题补充

1.在数据传输过程中，若接收方收到的二进制比特序列为 10110011010，接收双方采用的生成多项式为 $G(x)=x^4+x^3+1$，则该二进制比特序列在传输中是否出错？如果未出现差错，那么发送数据的比特序列和 CRC 检验码的比特序列分别是什么？

2.[2009,考研统考]某网络拓扑图如下图所示，路由器 R1 通过接口 E1.、E2 分别连接局域网 1、局域网 2，通过接口 L0 连接路由器 R2，并通过路由器 R2 连接域名服务器与互联网。R1 的 L0 接口的 IP 地址是 202.118.2.1；R2 的 L0 接口的 IP 地址是 202.118.2.2，L1 接口的 IP 地址是 130.11.120.1，E0 接口的 IP 地址是 202.118.3.1；域名服务器的 IP 地址是 202.118.3.2。



R1 和 R2 的路由表结构如下：

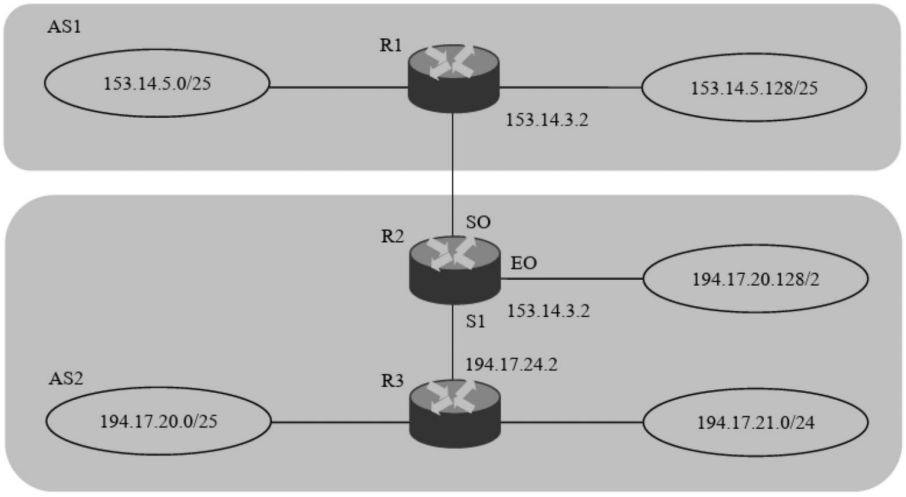
目的网络 IP 地址	子网掩码	下一跳 IP 地址	接口

1）将 IP 地址空间 202.118.1.0/24 划分为两个子网，分别分配给局域网 1 和局域网 2，每个局域网需分配的 IP 地址数不少于 120 个。请给出子网划分结果，说明理由或给出必要的计算过程。

2）请给出 R1 的路由表，使其明确包括到局域网 1 的路由、局域网 2 的路由、域名服务器的主机路由和互联网的路由。

3）请采用路由聚合技术，给出 R2 到局域网 1 和局域网 2 的路由。

3. [2013,考研统考]假设 Internet 的两个自治系统构成的网络如下图所示，自治系统 ASI 由路由器 R1 连接两个子网构成；自治系统 AS2 由路由器 R2、R3 互联并连接 3 个子网构成。各子网地址、R2 的接口名、R1 与 R3 的部分接口 IP 地址如下图所示。



请回答下列问题。

（1）假设路由表结构如下表所示。请利用路由聚合技术，给出 R2 的路由表，要求包括到达题 47 图中所有子网的路由，且路由表中的路由项尽可能少。

目的网络	下一跳	接口

（2）若 R2 收到一个目的 IP 地址为 194.17.20.200 的 IP 分组，R2 会通过哪个接口转发该 IP 分组？

（3）R1 与 R2 之间利用哪个路由协议交换路由信息？该路由协议的报文被封装到哪个协议的分组中进行传输