EE 450 HW 4 Yuhang Xiao

P8.

a.

Prefix Match	Link Interface
11100000 00	0
11100000 01000000	1
1110000	2
11100001 1	3
otherwise	3

b.

1. prefix match 5th entry ⇒ link interface 3
2. prefix match 3rd entry ⇒ link interface 2
3. prefix match 4th entry ⇒ link interface 3

P9.

Dest. address range	Interface
00000000 through 00111111	0
01000000 through 01011111	1
01100000 through 01111111	2
10000000 through 10111111	2
11000000 through 11111111	3

number of addresses:

interface 0 : $2^6 = 64$

interface 1 : $2^5 = 32$

interface 2 : $2^5 + 2^6 = 96$

interface 3 : $2^6 = 64$

P10.

Dest. address range	Interface
11000000 through 11011111	0
10000000 through 10111111	1
11100000 through 11111111	2
00000000 through 01111111	3

number of addresses

interface 0: $2^5 = 32$

interface 1: $2^6 = 64$

interface 2: $2^5 = 32$

interface 3: $2^7 = 128$

P11.

subnet 1 : 223.1.17.0/26 (64 addresses)

subnet 2 : 223.1.17.128/25 (112 addresses)

subnet 3 : 223.1.17.192/28 (16 addresses)

P12.

Dest.	Link Interface
200.23.16/21	0
200.23.24/24	1
200.23.24/21	2
otherwise	3

P13.

Dest.	Link Interface
224.0/10	0
224.64/16	1
224/7	2
225.128/9	3
otherwise	3

P14.

Any address from 128.119.40.128 to 128.119.40.191 can be assigned to this network.

The ISP owns $2^6 = 64$ addresses. So each block will have $64/4 = 16$ addresses. The prefixes will be 128.119.40.64/28, 128.119.40.80/28, 128.119.40.96/28 and 128.119.40.112/28

P15.

a.

subnet A: 214.97.254.0/24 (256 addresses)

subnet B: 214.97.255.0/25 – 214.97.255.0/29
(128 − 8 = 120 addresses)

subnet C: 214.97.255.128/25 (128 addresses)

subnet D: 214.97.255.0/31 (2 addresses)

subnet E: 214.97.255.2/31 (2 addresses)

subnet F: 214.97.255.4/30 (4 addresses)

b. Router 1:

Prefix	Interface
11010110 01100001 11111110	subnet A
11010110 01100001 11111111 0000000	subnet D
11010110 01100001 11111111 000001	subnet F

Router 2:

Prefix	Interface
11010110 01100001 11111111 0000000	subnet D
1101 0110 0110 0001 1111111 0	subnet B
1101 0110 0110 0001 1111111 0000001	subnet E

Router 3:

Prefix	Interface
11010110 01100001 11111111 000001	subnet F
1101 0110 0110 0001 1111111 0000001	subnet E
1101 0110 0110 0001 11111111 1	subnet C.

P3.

step	N'	D(t), P(t)	D(u), P(u)	D(v), P(v)	D(w), P(w)	D(y), P(y)	D(z), P(z)
0	x	∞	∞	3, x	6, x	6, x	8, x
1	xv	7, v	6, v	3, x	6, x	6, x	8, x
2	xvu	7, v	6, v	3, x	6, x	6, x	8, x
3	xvuw	7, v	6, v	3, x	6, x	6, x	8, x
4	xvuwy	7, v	6, v	3, x	6, x	6, x	8, x
5	xvuwyt	7, v	6, v	3, x	6, x	6, x	8, x
6	xvuwytz	7, v	6, v	3, x	6, x	6, x	8, x

PS.

		Cost to				
		u	v	x	y	z
From	v	∞	∞	∞	∞	∞
	x	∞	∞	∞	∞	∞
	z	∞	6	2	∞	0

		Cost to				
		u	v	x	y	z
From	v	1	0	3	∞	6
	x	∞	3	0	3	2
	z	7	5	2	5	0

		Cost to				
		u	v	x	y	z
From	v	1	0	3	3	5
	x	4	3	0	3	2
	z	6	5	2	5	0

⇒ Final DV of z :

To	Cost	Next
x	2	-
y	5	x
z	0	-
u	6	x
v	5	x