Homework4 Solutions

1.

Step	*N'*	*D(x), p(x)*	*D(u),p(u)*	*D(v),p(v)*	*D(w),p(w)*	*D(y),p(y)*	*D(z),p(z)*
0	t	∞	2,t	4,t	∞	7,t	∞
1	tu	∞	2,t	4,t	5,u	7,t	∞
2	tuv	7,v	2,t	4,t	5,u	7,t	∞
3	tuvw	7,v	2,t	4,t	5,u	7,t	∞
4	tuvwx	7,v	2,t	4,t	5,u	7,t	15,x
5	tuvwxy	7,v	2,t	4,t	5,u	7,t	15,x
6	tuvwxyz	7,v	2,t	4,t	5,u	7,t	15,x

50 points

2.

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

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

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

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

30 points

3.

a. The address 10.245.76.0/24 is private.
Maximum number of hosts = 2^x - 2 = 2^8 - 2 = 254. 5 points

b. There are different ways to solve b, c and d.

Subnet A's Requirement: 55 hosts

128	64	32	16	8	4	2	1

Network address: 10.245.76.128/26

Host Range: 10.245.76.129… … 10.245.76.190

Broad cast address: 10.245.76.191 10 points

c. **Subnet B's Requirement: 68 hosts**

Network address: 10.245.76.0/25

Host Range: 10.245.76.1… … 10.245.76.126

Broad cast address: 10.245.76.127 10 points

d. **Subnet C's Requirement: 33 hosts**

Network address: 10.245.76.192/26

Host Range: 10.245.76.193… … 10.245.76.254

Broad cast address: 10.245.76.255 10 points

4. NO, this is because that decreasing link cost won't cause a loop (caused by the next-hop relation of between two nodes of that link). Connecting two nodes with a link is equivalent to decreasing the link weight from infinite to the finite weight. 10 points