Problem 1:

y-x-u; y-x-v-u; y-x-w-u; y-x-w-v-u;

y-w-u; y-w-v-u; y-w-x-v-u; y-w-v-x-u.

y-z-w-u; y-z-w-v-u; y-z-w-x-u; y-z-w-x-v-u; y-z-w-v-x-u.

Problem 2:

x to z: x-y-z, x-y-w-z, x-w-z, x-w-y-z, x-v-w-z, x-v-w-y-z, x-u-w-z, x-u-w-y-z, x-u-v-w-z, x-u-v-w-y-z

z to u: z-w-u, z-w-v-u, z-w-x-u, z-w-v-x-u, z-w-x-v-u, z-w-y-x-u, z-w-y-x-v-u, z-y-x-u, z-y-x-v-u, z-y-x-w-u, z-y-x-w-y-u, z-y-x-v-w-u, z-y-w-v-u, z-y-w-x-u, z-y-w-v-x-u, z-y-w-x-v-u, z-y-w-y-x-u, z-y-w-y-x-v-u

z to w: z-w, z-y-w, z-y-x-w, z-y-x-v-w, z-y-x-u-w, z-y-x-u-v-w, z-y-x-v-u-w

Problem 3:

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

Problem 9:

No. the decreasing link cost won’t cause a loop. So, connecting two nodes with a link is equivalent.

Problem 12:

Full As path information is available from an AS to a destination in BGP. If a BGP peer receives a route that contains its own AS numbers, then it will result in a loop.