Prob.3.2. Find five Petri nets which are LSRP, LSRP', LSR'P', LS'R'P', and L'S'R'P', respectively, if any, where for example LSR'P', stands for "live (L4-live), safe, non-reversible, and non-persistent". If it does not exist, write "none exist".

Prob.3.3. Find Petri nets which are:

1) B-fair and unconditionally-fair,

2) unconditionally-fair but not B-fair,

3) not B-fair nor unconditionally-fair, and

4) B-fair but not unconditionally-fair, if any. If not, write "none.exist".

Prob.3.4. Find the synchronic distances d_{12}, d_{13}, d_{23}, d_{01}, d_{02}, and d_{03} for the Petri net shown in Fig.3.2.

Prob.3.5. Find a Petri net containing transitions that are dead, strictly L1-live, strictly L2-live, strictly L3-live, and L4-live similar to the one shown in Fig.3.2 but a different one. Hint: you may use arc weights greater than one. [Wang]

Prob.3.6. Determine if each statement is true or false. If false, give a counter example. If true, give an example that makes you think true. [Meng]

(a) A firing sequence σ is unconditionally fair if and only if any two transitions in σ are in a B-fair relation.

(b) If a Petri net has one strictly L1-live transition, then the net is non-reversible.

(c) If a Petri net is live and persistent , then the net is not B-fair.

Prob.3.7. Modify all the unbounded nets shown in Fig. 3.4 so as to make them bounded with minimal addition of tokens, arcs, places, and/or transitions, while keeping liveness properties same. [Yamamoto]