

$t_1$ ,  $t_2$  and  $t_3$  in Fig. 3.2 are  $L_0$ -live (dead),  $L_1$ -live,  $L_2$ -live, and  $L_3$ -live, respectively, all strictly.

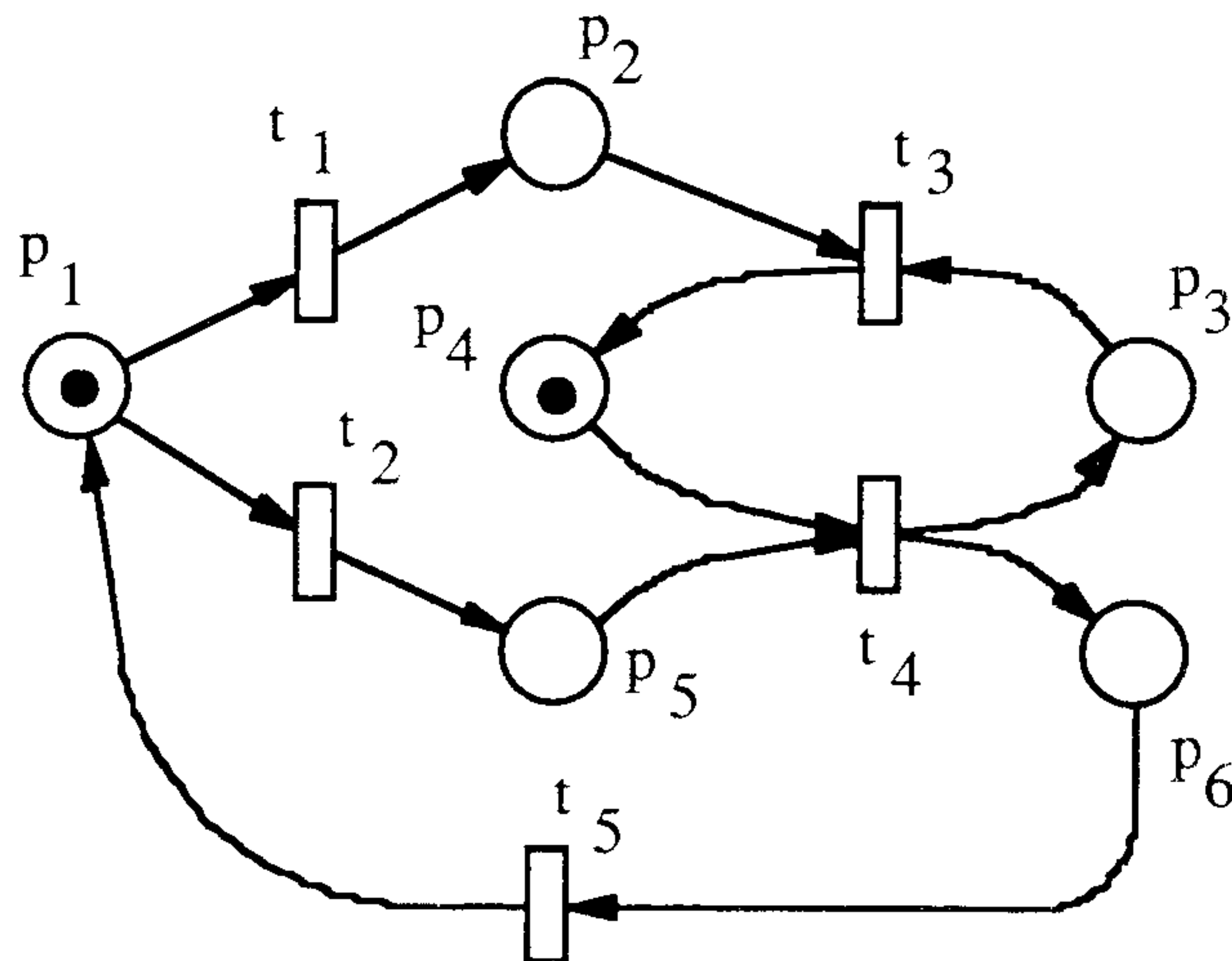


Fig.3.1. A safe, nonlive Petri net. But it is strictly  $L_1$ -live.

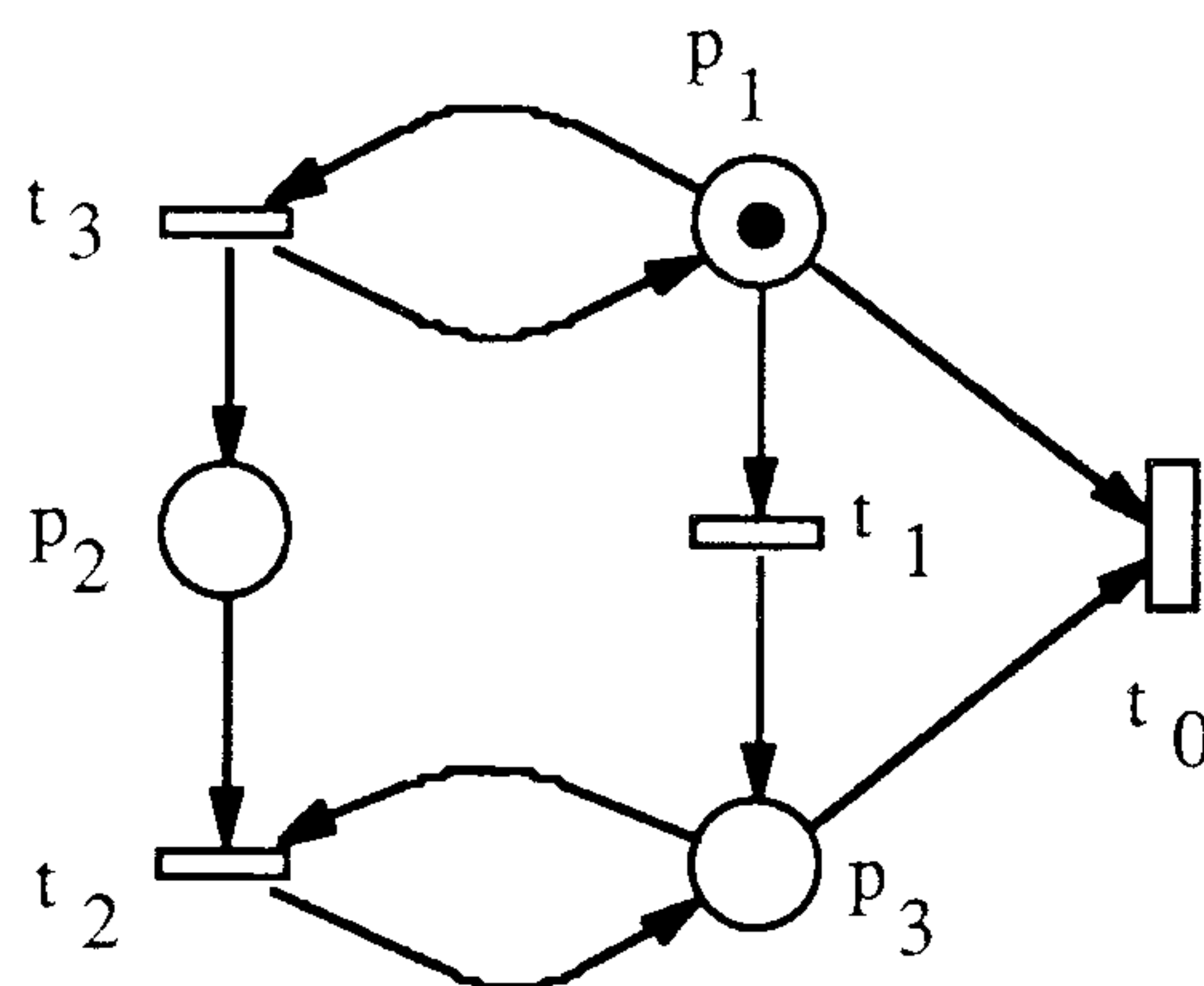


Fig.3.2. Transitions  $t_0$ ,  $t_1$ ,  $t_2$ , and  $t_3$  are dead ( $L_0$ -live),  $L_1$ -live,  $L_2$ -live, and  $L_3$ -live, respectively.

**Exercise 3.2.** Find five Petri nets which is dead, strictly  $L_1$ -live, strictly  $L_2$ -live, strictly  $L_3$ -live, and strictly  $L_4$ -live, respectively, if any.

**Answer:** See the nets shown below in Fig.3.3. Note that all the three transitions a, b, and c in the net  $N_3$  are  $L_3$ -live (not  $L_2$ -live) since they appear infinitely often in the following firing sequence  $\sigma = bacbacbac... = (bac)^\infty$ . A strictly  $L_2$ -live net does not exist, since a  $L_3$ -live transition is necessary in order to construct a  $L_2$ -live transition, as is shown in Fig. 3.2.