$b_{21}=\frac{1}{2},\ b_{22}=2,\ b_{23}=\frac{1}{4},\ b_{24}=\frac{3}{4},$
$b_{31}=1,\ b_{32}=\frac{1}{2},\ b_{33}=4,\ b_{34}=\frac{3}{2},$
$b_{41}=\frac{1}{4},\ b_{42}=\frac{1}{8},\ b_{43}=\frac{3}{8},\ b_{44}=1,$
$c_{11}=1,\ c_{12}=1,\ c_{13}=\frac{3}{2},\ c_{14}=\frac{1}{2},$
$c_{21}=\frac{1}{2},\ c_{22}=2,\ c_{23}=\frac{3}{4},\ c_{24}=\frac{1}{4},$
$c_{31}=1,\ c_{32}=\frac{3}{2},\ c_{33}=3,\ c_{34}=\frac{1}{2},$
$c_{41}=\frac{1}{4},\ c_{42}=\frac{3}{8},\ c_{43}=\frac{1}{8},\ c_{44}=1,$
$B_1=1,\ B_2=2,\ B_3=3,\ B_4=1,$
$I_1=1,\ I_2=2,\ I_3=3,\ I_4=\frac{1}{2},$
$\tau_{1j}=0.3,\ \tau_{2j}=0.2,\ \tau_{3j}=0.4,\ \tau_{4j}=0.1,$
$j=1,2,3,4.$

We have

$$P=\begin{bmatrix} 5 & 2 & 2 & 2 \\ \frac{1}{2} & 4 & \frac{1}{2} & \frac{1}{2} \\ \frac{2}{3} & \frac{2}{3} & \frac{13}{3} & \frac{2}{3} \\ \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & 4 \end{bmatrix},\quad I=\begin{bmatrix} 1 \\ 1 \\ 1 \\ \frac{1}{2} \end{bmatrix}.$$

Then the equilibrium point of systems (31) satisfies the following equation

$$\begin{cases} -x_1+5f_1(x_1)+2f_2(x_2) \\ \quad +2f_3(x_3)+2f_4(x_4)+1=0, \\ -2x_2+f_1(x_1)+8f_2(x_2) \\ \quad +f_3(x_3)+f_4(x_4)+2=0, \\ -3x_3+2f_1(x_1)+2f_2(x_2) \\ \quad +13f_3(x_3)+2f_4(x_4)+3=0, \\ -x_4+\frac{1}{2}f_1(x_1)+\frac{1}{2}f_2(x_2) \\ \quad +\frac{1}{2}f_3(x_3)+4f_4(x_4)+\frac{1}{2}=0, \\ -s_1+2f_1(x_1)=0, \\ -s_2+2f_2(x_2)=0, \\ -s_3+2f_3(x_3)=0, \\ -s_4+2f_4(x_4)=0. \end{cases} \quad (35)$$

Let $q=1, k,l\in\{2,3,4\}, k\neq l$, we have the following results by simple calculation

$$\begin{aligned} &P(-2,-3;-2,-3)e_4-I>e_4, \\ &P(-2,-4;-2,-4)e_4-I>e_4, \\ &P(-3,-4;-3,-4)e_4-I>e_4, \\ &\sum_{j=1,j\neq g,h,m}^{4}(a_{1j}+b_{1j})-\sum_{j=g,h,m}(a_{1j}+b_{1j}) \\ &+\alpha B_1+I_1<a_1, \end{aligned}$$

$\forall g,h,m\in\{2,3,4\}$ and g,h,m are not equal one another.

Then, the conditions of Theorem 11 hold. And we can obtain only fourteen equilibrium points of systems (35), i.e.,

$$\begin{aligned} &(12,\tfrac{13}{2},\tfrac{22}{3},6,2,2,2,2), \\ &(-10,-\tfrac{9}{2},-\tfrac{16}{3},-5,-2,-2,-2,-2), \\ &(8,-\tfrac{3}{2},6,5,2,-2,2,2), \\ &(-6,\tfrac{7}{2},-4,-4,-2,2,-2,-2), \\ &(8,\tfrac{11}{2},-\tfrac{4}{3},5,2,2,-2,2), \\ &(-6,-\tfrac{7}{2},\tfrac{10}{3},-4,-2,-2,2,-2), \\ &(8,\tfrac{11}{2},6,-2,2,2,2,-2), \\ &(-6,-\tfrac{7}{2},-4,3,-2,-2,-2,2) \\ &(8,-\tfrac{5}{2},-\tfrac{8}{3},5,2,-2,-2,2), \\ &(-2,\tfrac{9}{2},\tfrac{14}{3},-3,-2,2,2,-2), \\ &(4,-\tfrac{5}{2},\tfrac{14}{3},-3,2,-2,2,-2), \\ &(-2,\tfrac{9}{2},-\tfrac{8}{3},4,-2,2,-2,2), \\ &(4,\tfrac{9}{2},-\tfrac{8}{3},-3,2,2,-2,-2), \\ &(-2,-\tfrac{5}{2},\tfrac{14}{3},4,-2,-2,2,2). \end{aligned}$$

Evidently, this consequence is coincident with the results of Theorem 11. Figs. 7-8 depict the time responses of state variables of $x_1(t),x_2(t),x_3(t),x_4(t),s_1(t),s_2(t),s_3(t),s_4(t)$ of system in example 4, respectively.

5 Conclusions

In this paper, based on the stability theory, we investigate the Multistability of a class of competitive neural networks with time delays, and obtain some sufficient conditions to ensure the existence and locally exponential stability of the equilibrium points of the systems in the saturation region. And according to the peculiarity of the saturation regions, these sufficient conditions, which only depend on the synaptic weights matrices P and the external input vector I, are very easy to be verified. Moreover, four examples show our results are effective.

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