

$$\begin{aligned} x'_1(t) = & -((0.06 * x_1(t) * (1 - \exp(d * x_5(t)))) - (0.05 * x_3(t) * (\exp(d * x_5(t))))) - \\ & - ((0.5 * x_1(t) * (\exp(d * x_5(t))) * (0.3 + x_6(t))) * AE - (0.1 * x_2(t) * (1 - \exp(d * x_5(t))))) ; \end{aligned} \quad (1)$$

$$\begin{aligned} x'_2(t) = & (((0.5 * x_1(t) * (\exp(d * x_5(t))) * (0.3 + x_6(t))) * AE - \\ & -(0.1 * x_2(t) * (1 - \exp(d * x_5(t))))) + (0.8 * x_3(t) * (\exp(d * x_5(t))) * (0.3 + x_6(t)) - \\ & -(0.4 * x_2(t) * ((1 - \exp(d * x_5(t))^2)))) - (x_2(t) * (x_6(t) - x_4(t)))) ; \end{aligned} \quad (2)$$

$$\begin{aligned} x'_3(t) = & ((0.06 * x_1(t) * (1 - \exp(d * x_5(t)))) - (0.05 * x_3(t) * (\exp(d * x_5(t))))) - \\ & -(0.8 * x_3(t) * (\exp(d * x_5(t))) * (0.3 + x_6(t)) - (0.4 * x_2(t) * ((1 - \exp(d * x_5(t))^2)))) ; \end{aligned} \quad (3)$$

$$x'_4(t) = (x_2(t) * (x_6(t) - x_4(t))); \quad (4)$$

$$\begin{aligned} \textbf{if}((x_5(t)/LCC) < 1) & -- x'_5(t) = x_5(t) * (GU - (x_5(t)/LCC)); \\ \textbf{else} & -- x'_5(t) = x_5(t) * (1 - (x_5(t)/LCC)); \end{aligned} \quad (5)$$

$$\begin{aligned} x'_6(t) = & 0.2 * ((x_2(t-5*delta t) + 0.5 * x_4(t-5*delta t)) * (\exp(d * x_5(t-5*delta t))) * (1 - x_6(t)) * (1 - x_7(t)) * AE - \\ & - ((0.1 + 1 - \exp(d * x_5(t))) * (0.1 + x_7(t)) * x_6(t) * 0.2) \end{aligned} \quad (6)$$

$$x'_7(t) = ((x_6(t-10*delta t) * (\exp(d * x_5(t-10*delta t)))) * (1 - x_7(t)) * 0.1 * AE - (x_7(t) * 0.005) \quad (7)$$