$$I - (\varphi_{\lambda t} + \mu_N)D + \tau D_g = 0 \text{.....(1)}$$
$$\varphi_{\lambda t} D + \lambda_2 D_a + \lambda_3 D_H - \left(\lambda_4 + \frac{\lambda_1 D_a}{S + D_g} + \mu_N\right) D_g = 0 \text{.....(2)}$$
$$\frac{\lambda_1 D_g D_a}{S + D_g} - (\lambda_2 + \beta + \mu_N) D_a = 0 \text{.....(3)}$$
$$\beta D_a - (\lambda_3 + \mu_N + \gamma_t) D_H + \lambda_4 D_g = 0 \text{.....(4)}$$
$$\gamma_t D_H - (\delta + \mu_N) D_c = 0 \text{.....(5)}$$

$$\begin{aligned} D &= \frac{I}{(\varphi_{\lambda t} + \mu_N)} + \frac{B\tau}{(\varphi_{\lambda t} + \mu_N)} \\ D_g &= B \\ D_a &= \frac{(\lambda_3 + \mu_N + \gamma_t)}{\beta} \frac{E}{P} - \frac{\lambda_4}{\beta} B \\ D_H &= \frac{E}{P} \\ D_c &= \frac{\gamma_t E}{(\delta + \mu_N) P} \end{aligned}$$

$$\begin{aligned} B &= \frac{S(\lambda_2 + \beta + \mu_N)}{\lambda_1 - (\lambda_2 + \beta + \mu_N)} \\ C &= \frac{1}{\beta(S + B)} \end{aligned}$$

$$\begin{aligned} E &= \left(\frac{\tau B \varphi_{\lambda t}}{(\varphi_{\lambda t} + \mu_N)} + \frac{\varphi_{\lambda t} I}{(\varphi_{\lambda t} + \mu_N)} + C\lambda_4 B^2 - \mu_N B - \frac{B\lambda_4\lambda_2}{\beta}\right) \\ P &= \left(BC(\lambda_1(\lambda_3 + \mu_N + \gamma_t)) - \lambda_3 - \frac{\lambda_2}{\beta}(\lambda_3 + \mu_N + \gamma_t)\right) \end{aligned}$$