$$-e(t) + V_c + R_1 i_1 = 0$$

$$-i_2 R_2 - V_c + L \frac{di}{dt} = 0 \longrightarrow \frac{di}{dt} = \frac{V_c}{L} + \frac{i_2 R_2}{L}$$

KCL at Node 1

$$\alpha i_1 = i_2 + i_L$$

Node 2

$$i_1 + i_2 = C \frac{dV_c}{dt}$$

$$\downarrow \qquad \searrow \frac{V_2 - V_1}{R_2}$$

$$\frac{V_2}{R_1}$$

$$\frac{dV_c}{dt} = \frac{V_2}{CR_1} + \frac{V_2 - V_1}{CR_2}$$