FOR A TWO-LEVEL SYSTEM:

Hamiltonian: $\hat{H} = \begin{bmatrix} H_1 & V_{12} \\ V_{21} & H_2 \end{bmatrix}$

Eigenvalues:

$$E_- = \frac{H_1 + H_2}{2} - \frac{1}{2}\sqrt{(H_2 - H_1)^2 + 4\,|V_{12}|^2}$$
$$E_+ = \frac{H_1 + H_2}{2} + \frac{1}{2}\sqrt{(H_2 - H_1)^2 + 4\,|V_{12}|^2}$$

Eigenfunctions:

$$\psi_-(x,t) = [\cos\theta\ \phi_1(x) + \sin\theta\ \phi_2(x)]\, e^{-iE_- t/\hbar}$$
$$\psi_+(x,t) = [-\sin\theta\ \phi_1(x) + \cos\theta\ \phi_2(x)]\, e^{-iE_+ t/\hbar}$$

where $\phi_1(x)$, $\phi_2(x)$ are the wavefunctions of the unperturbed system and

$$\cos(\theta) = \frac{1}{\sqrt{1 + |V_{12}/(E_- - H_2)|^2}}, \quad \sin(\theta) = \frac{V_{12}/(E_- - H_2)}{\sqrt{1 + |V_{12}/(E_- - H_2)|^2}}$$

If you start your perturbed system in $\phi_1(x)$ the probability as a function of time of being in $\phi_2(x)$ is given by Rabi's Formula:

$$p_2(t) = \sin^2(2\theta)\,\sin^2\frac{(E_+ - E_-)t}{2\hbar} = \frac{4|V_{12}|^2}{(H_2 - H_1)^2 + 4\,|V_{12}|^2}\,\sin^2\frac{(E_+ - E_-)t}{2\hbar}$$