$$\phi(r) = \frac{A}{r^n} - \frac{B}{r^m} \tag{1}$$

$$\begin{aligned} H \quad = \quad & -\frac{\hbar^2 \nabla_1^2}{2m_e} - \frac{\hbar^2 \nabla_2^2}{2m_e} + \frac{e^2}{4\pi\epsilon_0} \Big\{ \frac{1}{R} + \frac{1}{|\mathbf{r}_1 - \mathbf{r}_2|} \\ & - \frac{1}{|\mathbf{R}_A - \mathbf{r}_1|} - \frac{1}{|\mathbf{R}_B - \mathbf{r}_2|} - \frac{1}{|\mathbf{R}_A - \mathbf{r}_2|} - \frac{1}{|\mathbf{R}_B - \mathbf{r}_1|} \Big\}, \end{aligned} \tag{2}$$

$$\Psi_{\uparrow\downarrow}(\mathbf{r}_1, \mathbf{r}_2) \propto \Psi_A(\mathbf{r}_1)\Psi_B(\mathbf{r}_2) + \Psi_A(\mathbf{r}_2)\Psi_B(\mathbf{r}_1) \tag{3}$$

$$\Psi_{\uparrow\uparrow}(\mathbf{r}_1, \mathbf{r}_2) \propto \Psi_A(\mathbf{r}_1)\Psi_B(\mathbf{r}_2) - \Psi_A(\mathbf{r}_2)\Psi_B(\mathbf{r}_1), \tag{4}$$

$$E = \frac{\int \Psi(\mathbf{r}_1, \mathbf{r}_2) H \Psi(\mathbf{r}_1, \mathbf{r}_2) d\mathbf{r}_1 d\mathbf{r}_2}{\int \Psi(\mathbf{r}_1, \mathbf{r}_2) \Psi(\mathbf{r}_1, \mathbf{r}_2) d\mathbf{r}_1 d\mathbf{r}_2} \tag{5}$$

$$E = 2E_0 + \Delta E_{\uparrow\downarrow} \tag{6}$$

$$E = 2E_0 + \Delta E_{\uparrow\uparrow}. \tag{7}$$

$$E = 2E_0 + C \pm X, \tag{8}$$