4. Derive: $\Psi(x) = \Phi + R_o(2V_c - E(2))\Psi(2)$

Start by operating on Ha) I(a) = E(a) I(a) with Ro:

 $R_o H(\lambda) \Psi(\lambda) = R_o E(\lambda) \Psi(\lambda)$

 $R_o(H_o + \lambda V_c)\Psi(\lambda) = R_o E(\lambda)\Psi(\lambda)$

 $R_0H_0\Psi(a) + R_02V_c\Psi(a) = R_0E(a)\Psi(a)$

 $-Q \underline{\Upsilon}(\lambda) + R_0 \lambda V_c \underline{\Upsilon}(\lambda) = R_0 E(\lambda) \underline{\Upsilon}(\lambda)$

 $-(\underline{\Psi}(\lambda)-\underline{\Phi}) + R_0 \lambda \vee \underline{\Psi}(\lambda) = R_0 E(\lambda)\underline{\Psi}(\lambda)$

 $\Phi - \Psi(\lambda) + R_o \lambda V_c \Psi(\lambda) = R_o E(\lambda) \Psi(\lambda)$

 $\Phi + R_0 2 V_c \Psi (a) - R_0 E(a) \Psi (a) = \Psi (a)$

 $\Rightarrow \underline{Y}(\lambda) = \underline{\Phi} + R_{o}(\lambda V_{c})\underline{Y}(\lambda) - R_{o}(\underline{E}(\lambda))\underline{Y}(\lambda)$ $\underline{Y}(\lambda) = \underline{\Phi} + R_{o}(\lambda V_{c} - \underline{E}(\lambda))\underline{Y}(\lambda)$ OEN

QED

B.S. = Orthogonal Space

Q = 7-0