$$(b) = \begin{bmatrix} \begin{bmatrix} B \end{bmatrix} \\ B \end{bmatrix} = \begin{bmatrix} \begin{bmatrix} B \end{bmatrix} \\ B \end{bmatrix} = \begin{bmatrix} B \end{bmatrix}$$

(a)

(c)
$$\langle \psi | \hat{O}^{[m]} | \psi \rangle = \begin{bmatrix} \mathbf{E}^{[m]} & \mathbf{B}^{[m]} \\ \mathbf{B}^{[m]} & \mathbf{B}^{[m]} \end{bmatrix}$$