theorem about cyclic subspaces

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Let k be field, V a vector space over k, $\dim V = n$, and $T : V \to V$ a linear operator. Let W be a subspace of V. And let $v_1, \ldots, v_r \in V$ such that $W = Z(v_1, T) \bigoplus \cdots \bigoplus Z(v_r, T)$ (see the cyclic subspace definition), and $(m_{v_i}, m_{v_j}) = 1$ if $i \neq j$, where m_v denotes the minimal polynomial of v (or in other words, its annihilator polynomial). Then, $Z(v_1 + \cdots + v_r, T) = Z(v_1, T) \bigoplus \cdots \bigoplus Z(v_r, T)$, and $m_{v_1 + \cdots + v_r} = m_{v_1} \cdots m_{v_r}$.