1035-16-758 **Colleen Duffy*** (duffyc@math.rutgers.edu), Department of Mathematics - Hill Center, Rutgers, The State University Of New Jersey, 110 Frelinghuysen Rd., Piscataway, NJ 08854.
Action of the symmetric group on the universal algebra related to factorization of noncommutative polynomials.

The algebra Q_n, which arises in the study of factorization of noncommtative polynomials with n independent roots, may be defined in terms of the directed graph $\Gamma_n = (V_n, E_n)$ with $V_n = \{A : \emptyset \subseteq A \subseteq \{1, ..., n\}\}$ and edges from A to $A \backslash \{j\}$ for each $\emptyset \neq A \in V_n, j \in A$. To any directed path $\pi = \{e_1, ..., e_m\}$ in Γ_n there is a corresponding polynomial $P_\pi(t) = (1 - te_1) \cdots (1 - te_m)$. Then Q_n is the quotient of the free algebra $T(E_n)$ by the relations given by $P_{\pi_1}(t) = P_{\pi_2}(t)$ where π_1 and π_2 have the same tail and head. The symmetric group on n elements, S_n, acts naturally on Γ_n, and so on each of the homogeneous subspaces $(Q_n)_{[i]}$ of Q_n. For $\sigma \in S_n$, we compute the graded trace function gr tr$\sigma = \sum_{i \geq 0} tr\sigma|_{(Q_n)_{[i]}} t^i$ and then use these to obtain the multiplicities of the irreducible S_n-modules in $(Q_n)_{[i]}$. (Received September 14, 2007)