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Primitive idempotents in a semisimple ring

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Let $p_1, p_2, \ldots, p_r, q$ be distinct primes, q odd. Let $m = \prod_{i=1}^{r} p_i$, where $r \geq 2$ be an integer. In this paper, it is observed that the explicit expressions of primitive idempotents from R_{p_i} are sufficient to compute the explicit expressions of primitive idempotent in semisimple ring $R_m = F_q[x]/(x^m - 1)$. It is also shown that the results obtained in [A. Sahni and P. T. Sehgal, Minimal cyclic codes of length $p^n q$, *Finite Fields Appl.* **18**(5) (2012) 1017–1036; P. Kumar and S. K. Arora, λ-mapping and primitive idempotents in semisimple ring $\Re_m$, *Comm. Algebra* **41**(10) (2013) 3679–3694] are simple corollaries to the results obtained in the paper.

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1. Introduction

Let F_q be a finite field of order q, q odd prime. Let m be a positive integer co-prime to q. Therefore, the ring $R_m = F_q[x]/(x^m - 1)$ is semisimple. A code of length m

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