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Let $f(x)$ be a $\{0,1\}$–polynomial, let $k \geq 1$ be an integer and let p be a prime. Define a sequence of $\{0,1\}$–polynomials by: $f_1 := f(x)$ and, for $i \geq 2$, $f_i := f_{i-1} + x^{kn}$, if kn is the smallest multiple of k larger than d_{i-1}, the degree of f_{i-1}, such that $f_{i-1} + x^{kn}$ is reducible modulo p. Let $D = \{d_i \mid i = 1, 2, 3, \ldots\}$ and let $M = \{d_1 + 1, d_1 + 2, \ldots\} - D$. We investigate conditions on (f, k, p) which determine whether M is empty, finite or infinite. In addition, we investigate conditions on (f, k, p) which guarantee, in the situation when M is finite, that f_i has a zero mod p for all i with $d_i > m$, where m is the largest element of M. (Received September 30, 2004)