All problems are in the "3rd" edition Hungerfold textbook.

(1) If $f \in \mathbb{Z}_2[x]$, prove that $f(x^2) = (f(x))^2$.

(2) You may use (1) to prove that if α is a root of $f(x)$, then α^2 will also be a root of $f(x)$. (this problem may be useful to do Exercise 5.3 #9 (b))

(3) Exercise 5.3 #7, 8, 11, 12. Exercise 6.1 #1-7, 11,14, 16, 20, 40.