Solve the following Exercises.

**Exercise 1:** Exercise 6, page 638

**Exercise 2:** Exercise 20, page 830

**Exercise 3:** Exercise 21, page 830

**Exercise 4:** Exercise 3, page 443

**Exercise 5:** Exercise 2, page 661

**Exercise 6:** Exercise 6, page 661

**Exercise 7:** Let $E$ and $F$ be a finitely generated $A$-modules ($A$ is local) such that $E \otimes_A F = 0$. Prove that either $E = 0$ or $F = 0$.

**Exercise 8:** Let $I$ be a decomposable ideal in a commutative ring $R$ and let $P$ be a maximal element of the set of ideals $(I : x) = \{ a \in R | xa \in I \}$, where $x \in R$ and $x \notin I$. Prove that $P$ is a prime ideal belonging to $I$. 