## MATHEMATICAL TOOLS IN COMPUTER SCIENCE - QUIZ 3

Name:
ID number:

**Problem 1.** Let $G = (V, E)$ be a graph on $n$ vertices. Our goal is to remove a small number of edges from $G$ so that the resulting graph is triangle-free.
Let $\alpha$ be the size of a minimal-size $S \subseteq E$ s.t. $(V, E \setminus S)$ is triangle free.

(1) Write an integer linear program whose solution is $\alpha$.
(2) Describe an efficient (i.e., runtime polynomial in $n$) algorithm that finds $U \subseteq E$ s.t. $(V, E \setminus U)$ is triangle-free and $|U| \leq 3\alpha$.