Student ID :
Name   :

Automata Theory course final exam (2015-2016 Fall)
(Please use free space for draft and fit your answer to boxes.)

1. (25P) $L = \{1^m 0^n 1^{m-n} \mid m \geq n > 0\}$ Prove whether language L is regular or not by pumping lemma.

2. (25P) In view of decidability, make your comments about NxN pieces puzzle problem in which its all pieces are identical to each other.

3. (25P) Design such a grammar in Chomsky form that it has total 5 rules and it can accept *"abababab"* string.

4. (25*P*) Describe a transform in polynomial time for HC $<_p$ SOS. (SOS: Sum of Subsets problem, HC: Hamilton Cycle problem-returns the start node by passing every node at once) Don't confuse HC and TSP (traveler salesperson) problems. Here, HC is wanted.