

## SCS 2212 – Automata Theory

### Tutorial 5

1.  $L = \{ww \mid w \in \{0, 1\}^*\}$ . Prove that  $L$  is non-regular.
2.  $L = \{a^n \mid n \text{ is a prime number}\}$ . Prove that  $L$  is non-regular.
3.  $L = \{w \mid w \in \{a, b\}^*, w = w^R\}$ . Prove that  $L$  is non-regular.
4.  $L = \{a^n b^l \mid n \leq l\}$ . Prove that  $L$  is non-regular.
5.  $L = \{a^n b^e a^k \mid k = n + e\}$ . Prove that  $L$  is non-regular.
6.  $L = \{w \in \{a, b\}^* \mid \text{length}(w) \text{ is a perfect square}\}$ . Prove that  $L$  is non-regular.