International Institute of Information Technology Bangalore

CS 704: Topics in Computability and Learning

Practice Questions: Learning Regular Languages

1. For each of the following sets, mark them as being prefix-closed or suffix-closed appropriately.
   (a) $\{aab, a, b, \epsilon, aa\}$.
   (b) $\{aaa, aa, a, b, \epsilon\}$.
   (c) $\{aaab, aa, ab, a, b\}$.
   (d) Σ^* where Σ is a finite alphabet.
   (e) The class of regular languages over a finite alphabet Σ^*.

2. Consider the alphabet $\Sigma = \{a, b\}$ and the following observation table with the learner while running L^* algorithm.

	ϵ	a
ϵ	0	0
b	0	1
ba	1	0
a	0	0
bb	1	1
baa	0	0
bab	0	1

   Check if the table is closed and consistent. Justify your answer.

3. Assume that the teacher's regular language is $L = \{w \in \{0,1\}^* \mid \#0s$ is a multiple of $3\}$. Describe the working of Angluin's algorithm for this language.