EXERCISES ABOUT NON-DETERMINISTIC FINITE AUTOMATA WITH ε-TRANSITIONS (ε-NFAS)

1 Draw a ε-NFA for each language below:

a) The set of strings consisting of 01 occurring one or more times or of 010 occurring one or more times. **[SELECTED]**

b) The set of binary strings such that at least one of the last 10 positions is a 1.

2 Consider the following ε-NFA: **[SELECTED]**

	ε	A	b	c
→p	{q,r}	∅	{q}	{r}
Q	∅	{p}	{r}	{p,q}
*r	∅	∅	∅	{p}

a) Show the closure-ε set for each state.

b) Show all the strings with length less or equal 3 accepted by the automaton.

c) Convert the automaton to an equivalent DFA.

3 Propose ε-NFAs for the sets of strings represented by each of the following informal descriptions:

a) The strings over {**a**,**b**} without more than 3 contiguous **a**'s.

b) The strings over {**a**,**b**,**c**} with even length and containing an even number of **c**'s.

4 Convert the following ε-NFA to a DFA. **[SELECTED]**

	ε	a	B	c	d
→p	{r}	{p}	{q,s}	{p}	∅
*q	∅	{r}	{r}	{r}	{p,s}
r	{q}	{q,s}	∅	{p}	{p}
s	∅	{r}	{p}	∅	{q,r}