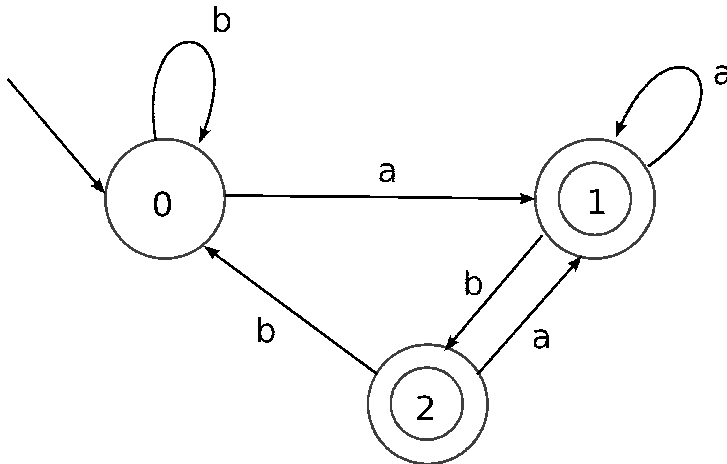# Series 8 (10.11.2011)

Submission: **15:00, November, 16, 2011**, into the boxes next to the room I-21. Write every solution on the separate paper (format A4)! Don't forget to sign your solutions.

It is not sufficient to answer a single number or yes/not. Answers always have to be justified.

Exercise 1. For given automaton A

design equivalent regular expression E (containing only operations $\cdot$, * and $+$), i.e. $L(A) = L(E)$. (Hint: use instructions given in slides and fill the complete table R).

Exercise 2.
a) Write regular expression V for which $L(V) = \{w \in \{0,1\}^* \mid |w|_0 \text{ is even}\}$.
b) Design NFA B for which $L(B) = L(V)$, for the regular expression V from the part a).

Exercise 3. Design (one tape) Turing machine M, which recognizes $L(M) = \{a^n b^n \mid n \in N\}$.