CS390 Test

March 2009

1. For the language represented by the regular expression (a*b)* answer the following questions: [12 Points]

(a) What is the shortest string belonging to the language ?

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(b) What is the second shortest string belonging to the language ?

b

(c) What is the shortest string NOT belonging to the language ?

a

(d) What is the second shortest stringS NOT belonging to the language ?

aa , ba

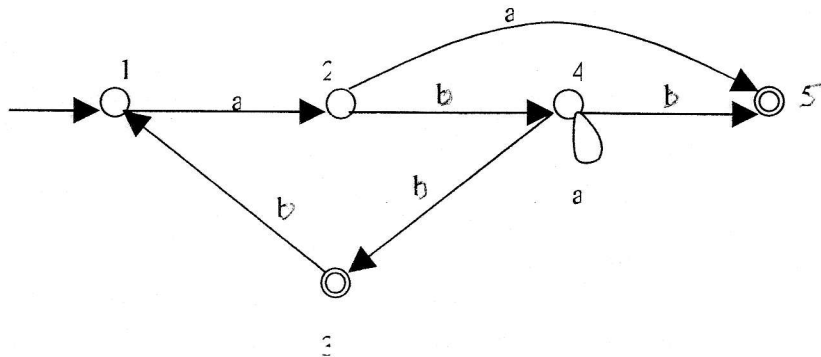2. Simplify the following regular expressions: [16 Points]

(a) a(a + b)* + b(a + b)*

$(a+b)^+$

(b) (a*b)* + (b*a)*

$(a+b)^*$

3. Find a regular expression for the language accepted by the following NFA: [15 Points]

The labels on the arcs below are a's and b's.

$(a+a^*bb)^*(aba^*b + aa)$