

7

	0	1
$\rightarrow \{a, c\}$	$\{b, d\}$	$\{a, d\}$
$\{b, c\}$	$\{a, d\}$	$\{b, d\}$
$\{b, d\}$	$\{a, c\}$	$\{b, c\}$
$* \{a, d\}$	$\{b, c\}$	$\{a, c\}$

$\delta(q_0, 10101) = \{a, d\}$   
 $\delta(\{a, c\}, 10101) = \{a, d\}$

5-tuple:-

- ① start state =  $\{a, c\}$
- ② Final state =  $\{a, d\}$
- ③ Transition functions,
  - $(\{a, c\}, 0) = \{b, d\}; (\{a, c\}, 1) = \{a, d\}$
  - $(\{b, c\}, 0) = \{a, d\}; (\{b, c\}, 1) = \{b, d\}$
  - $(\{b, d\}, 0) = \{a, c\}; (\{b, d\}, 1) = \{b, c\}$
  - $(\{a, d\}, 0) = \{b, c\}; (\{a, d\}, 1) = \{a, c\}$

④ Stuck

- ② 1  $\in$  closure =  $\{1\}$
- 2  $\in$  closure =  $\{2\}$
- 3  $\in$  closure =  $\{1, 3, 4\}$
- 4  $\in$  closure =  $\{1, 4\}$
- 5  $\in$  closure =  $\{5\}$

2.5

	a	b
$\rightarrow \{1\}$	$\{1, 3, 4\}$	$\{2\}$
$\{2\}$	$\emptyset$	$\{6, 7, 9, 5\}$
$\{3\}$	<del><math>\{1, 3, 4\}</math></del>	$\{1, 3, 4\}$
$\{4\}$	$\{5\}$	$\{7, 1, 4\}$
$* \{5\}$	$\{1\}$	$\{1\}$

	a	b
$\{1, 3, 4\}$	$\{1, 3, 4, 5\}$	$\{2\}$
$* \{1, 3, 4, 5\}$	$\{1, 3, 4, 5\}$	$\{2\}$
$\{2, 4, 5\}$	$\{5\}$	$\{1\}$

# CSE331 Section 1

## SET- B

### Quiz-1

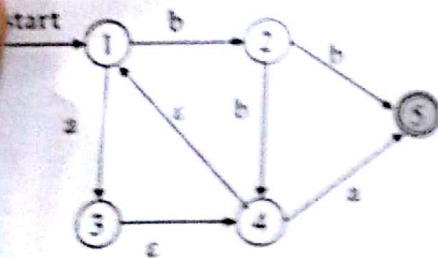
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Time: 30 minutes || Total marks: 13

1. Design a DFA that accepts the strings in which the number of 0's is even and the length of the string is odd. Note that  $\Sigma = \{0,1\}$ . Give the DFA in transition diagram, transition table and 5-tuple form.

Find out the extended transition function,  $\delta^*(q_0, 10101)$ , where  $q_0$  is the start state. [6+2]

2. Convert the following NFA to an equivalent DFA. [5]



① The number of 0's is even → length of the string is odd →



the number of 0's is even and length of the string is odd

