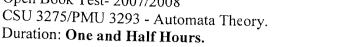


Open Book Test- 2007/2008





Date:13/03/2008

4.00 pm - 5.30 pm

## Answer ALL Questions.

1.

i) Describe the following languages over an alphabet  $A = \{a,b\}$  in normal words.

a) 
$$L_1 = \{a, ab, ab^2 \dots \}$$

c) 
$$L_3 = \{ a^m b^m : m > 0 \}$$

b) 
$$L_2 = \{ a^m b^n : m > 0, n > 0 \}$$

d) 
$$L_4 = \{ b^m a b^n : m > 0, n > 0 \}$$

ii) Consider the DFA given by the following transition table, M( S0, I,  $\delta$ , S4 )

State Transition	
a	b
S4	S1
S2	S1
S4	S3
S4	\$3
<u>S4</u>	\$3
	<b>a</b> S4 S2

- a) Draw the directed graph for the above table.
- b) Show that  $\delta^*$  (S0, aaa(bab)\* b) = S3.
- c) Check whether aaaba\*baaa is a word accepted by M.
- 2. Construct a DFA that accepts words which contains the substring 'end' over the English alphabet(26 letters). (hint: 'send' is accepted).

Draw the transition table for the above DFA and define the machine as M.

- i) What do you mean by implementation of a machine? 3.
  - ii) Implement the machine you constructed in Question no. 2 using a suitable . technique and define the new machine as M1.
  - iii) Obtain the complete truth table for the circuitry of the machine M1.

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