The Open University of Sri Lanka
B.Sc. Degree Programme : Level 05
Closed Book Test- 2008/2009
CSU 3275/PMU 3293 - Automata Theory.
Duration: **One and Half Hours.**

Date: 31/03/2009   4.00pm – 5.30pm

Answer ALL Questions.

1. Give DFA's accepting following languages over the alphabet {0,1}.

   i.   A set of all string such that each block of five consecutive symbols contain at least two 0's.

   ii.   The set of strings that either begin or end (or both) with 01.

2.

   i.   What do you mean by the statement that *two Mealy machines are behaviorally equivalent?*

   ii.   Let M1, M2, M3 be mealy machines. Show that $M1 \approx M2$ and $M2 \approx M3$ implies $M1 \approx M3$.

   iii. Show that $(M1 \| M2) \leq (M2 \| M1)$.

3.

   i.   Define a SP- Partition.

   ii.   State the parallel Decomposition theorem.

   iii. Identify 3 SP-Partitions from the table given below with proper justification.

State transition
(σ)

S\I	0	1
1	2	3
2	1	3
3	4	5
4	3	2
5	1	6
6	1	5