

Quiz 7**Time: 20 Min****Credit: 20 Points****Date: 04/05/2018**

- 1 A function is called "Turing-computable" if there exist a TM that implements it.
A True
B False
- 2 All infinite languages are non-regular.
A True
B False
- 3 Pick all regular languages:
A $\{w w^R : w \in \Sigma^*\}$
B $\{abwab : w \in \Sigma^*\}$
C $\{w w : w \in \Sigma^*\}$
D None
- 4 If L1 and L2 are regular languages, pick all regular language:
A $(L1 \cup L2) - (L1 \cap L2)$
B $L1^* \cap L2^*$
C $\phi L1$
D None
- 5 Pick all true statements:
A Standard TMs simulate multi-tape TMs.
B TMs with stay-option simulate Standard TMs.
C Standard TMs simulate TMs with stay-option.
D None
- 6 Pick all true statements:
A Standard TMs simulate nondeterministic TMs.
B Nondeterministic TMs simulate Standard TMs.
C Standard TMs simulate TMs with stay-option.
D None
- 7 (7 Ps) Design a standard TM over $\{a, b, c\}$ for accepting $L = \{a^n b^n c^n : n \geq 1\}$
- 8 (7 Ps) Design a double-tape TM that counts the number of 1's of a binary number and writes it as an unary number.
Requirements:
Input is written on tape #1.
You might use stay-option.
Output should be written on tape #2.

Example

	Before	After
Tape 1:	<input type="checkbox"/> 01101 <input type="checkbox"/>	<input type="checkbox"/> ddddd <input type="checkbox"/>
Tape 2:	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> 111 <input type="checkbox"/>

The head #2 should be on the first 1
d = we don't care what it