

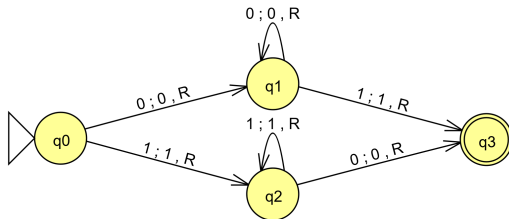
Quiz 10

1. For any language L , there is a TM that *accepts* it.

(a) True

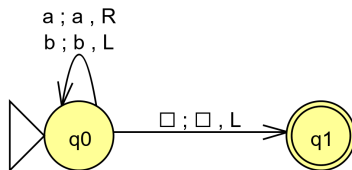
(b) False

2. Which regular expression denotes the language accepted by the following Turing machine?



- (a) $00^*1 + 11^*0$
- (b) $(0 + 1)(0^* + 1^*)(0 + 1)$
- (c) $(0 + 1)^*(01 + 10)$
- (d) $(00^*1 + 11^*0)(0 + 1)^*$

3. This TM *halts* on how many of the following 5 strings?
aaab, baba, ab, bbba, bb



- (a) 1
- (b) 2
- (c) 3
- (d) 4

4. How many of the following languages can be accepted by a TM but NOT by a PDA?

$$L_1 = \{a^n b^k c^k d^k : n, k \geq 0\}$$

$$L_2 = \{a^k b^m c^m d^k : m, k \geq 0\}$$

$$L_3 = \{a^n b^k c^n d^k : n, k \geq 335\}$$

(a) 0

(b) 1

(c) 2

(d) 3

5. Let $M = (Q, \Sigma, \Gamma, \delta, q_0, \square, F)$ be a Turing machine. We say M *accepts* $w \in \Sigma^*$, if starting from the initial configuration q_0w , we reach which configuration? That is, $q_0w \vdash^* \dots$?

(a) x_1qx_2 , for some $q \in F$, $x_1, x_2 \in \Gamma^*$

(b) qw , for some $q \in F$

(c) wq , for some $q \in F$

(d) All of the above