K180268
Section: A

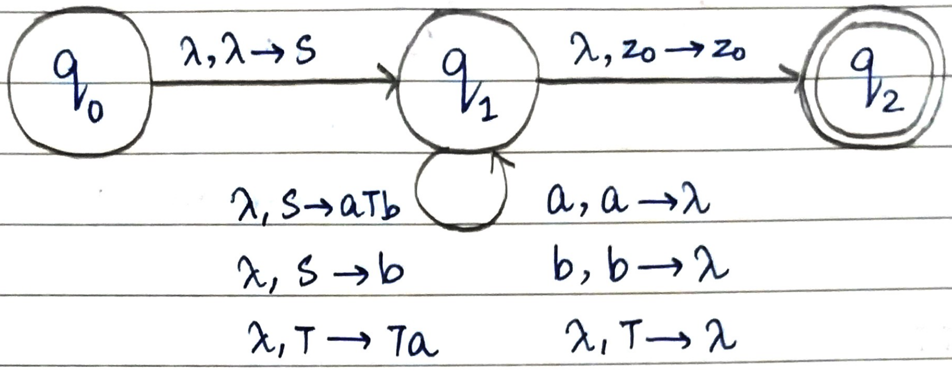
"Assignment #04"

Q1: ⓐ Convert the following CFG to PDA.

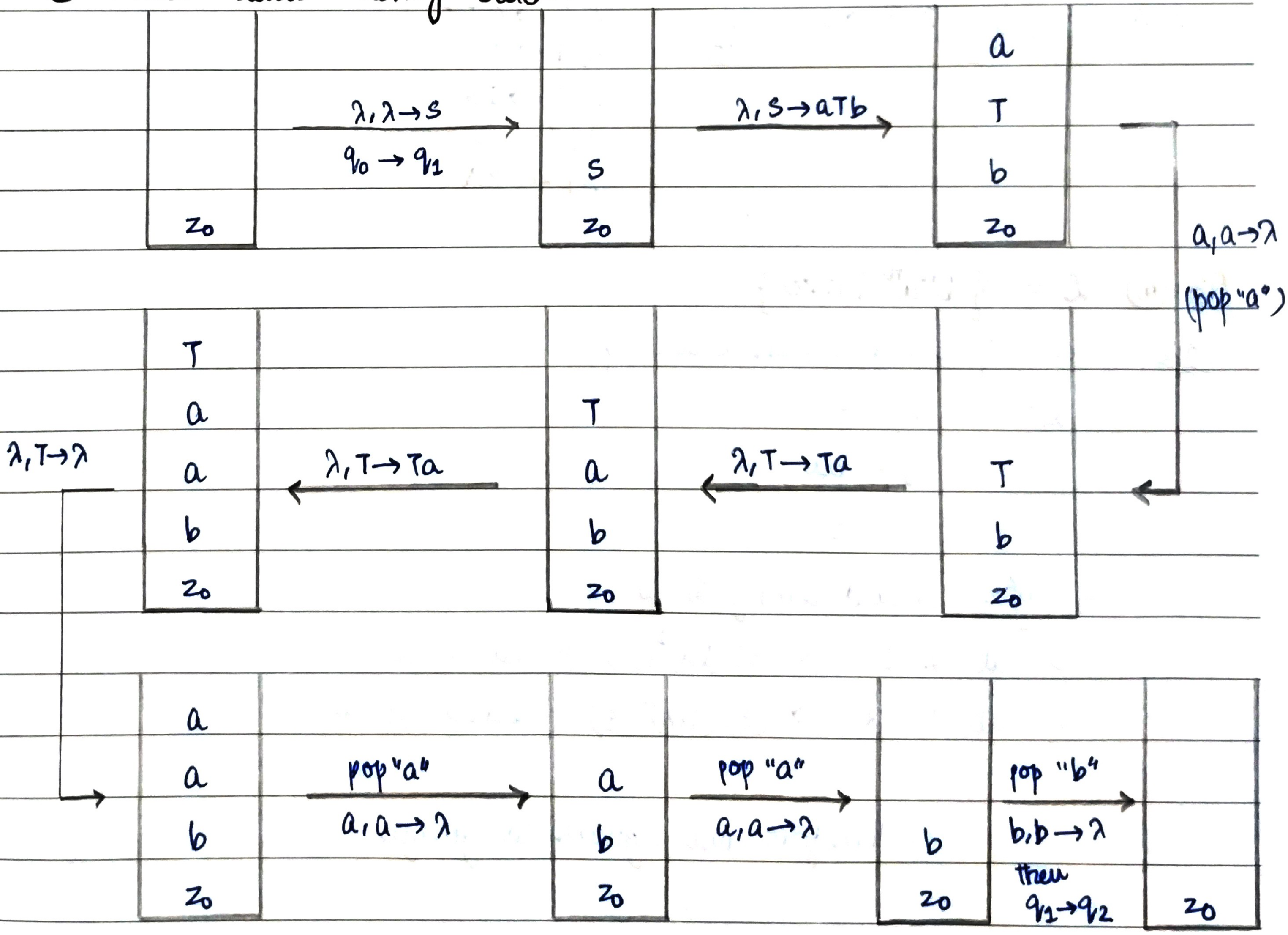
$S \rightarrow aTb \mid b$

$T \rightarrow Ta \mid \lambda$

Ans:



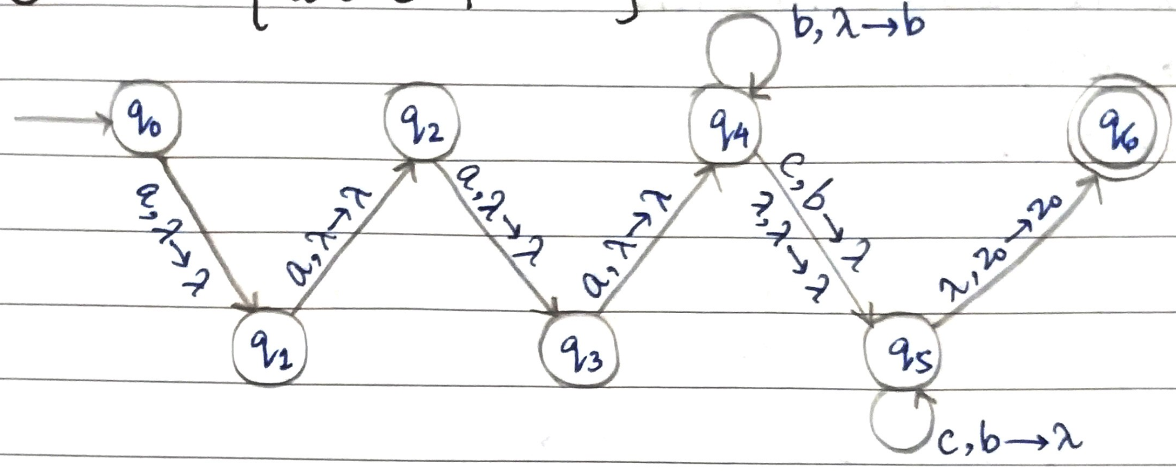
ⓑ Trace "aaab" using stack.



accepted.

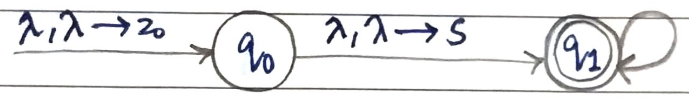
RE: 3/12.

(c) $L = \{ a^4 b^n c^n \mid n \geq 0 \}$



Q2: $S \to 0TT$

$T \to 0S \mid 1S \mid 0$



$1, 1 \to \lambda$
$0, 0 \to \lambda$
$\lambda, S \to 0TT$
$\lambda, T \to 0S$
$\lambda, T \to 1S$
$\lambda, T \to 0$
$\lambda, z_0 \to \lambda$

Q3: (a) $L = \{ b^n a^n \mid n > 0 \}$

Ans: $w = \{ ba, bbaa, bbbaaa \ldots \}$

let $x = \varepsilon$

$y = ba$

$z = \varepsilon$

$\therefore$ xy^kz should belong to w.

✓ at $K = 1 \to (\varepsilon)(ba)^1(\varepsilon) = ba \in w$

✓ at $K = 2 \to (\varepsilon)(ba)^2(\varepsilon) = baba \notin w$

$\therefore$ therefore not regular language.

REB3/2.

(b) $L = \{ (ba)^n \mid n \geq 0 \}$

Ans: $w = \{ ba, baba, bababa \ldots \}$

let $x = \varepsilon$

$y = ba$

$z = \varepsilon$

$\therefore$ xy^kz should belong to w

✓ at $k=1 \rightarrow (\varepsilon)(ba)^1(\varepsilon) = ba \in w$

✓ at $k=2 \rightarrow (\varepsilon)(ba)^2(\varepsilon) = baba \in w$

✓ at $k=3 \rightarrow (\varepsilon)(ba)^3(\varepsilon) = bababa \in w$

✓ at $k=4 \rightarrow (\varepsilon)(ba)^4(\varepsilon) = babababa \in w$

$\therefore$ Therefore regular language.