**Theory of Automata – Homework 6**

**Name – Akshay Kumar Singh**

**R11603620**

1. Consider the pushdown automata , where

Text, letter

Description automatically generated

a). Trace all possible sequence of transitions of on input

b). Show that , but

c). Describe in English

Sol : **a )** There are three possible computations of M on aba:

(s, aba, e) |- (s, ba, a) |- (s, a, aa) |- (s, e, aaa)

(s, aba, e) |- (s, ba, a) |- (s, a, aa) |- (f, e, aa)

(s, aba, e) |- (f, ba, e)

None of these is an accepting configuration.

**(b)** This is done by tracing the computation of M on each of the strings, as shown in (a).

**(c)** L(M) is the set of strings whose middle symbol is a. In other words, L(M) = {xay ∈ {a, b}\* : |x| = |y|}.

1. Construct a Pushdown automata that accept each of the followings:

a). The language

b). The language

Sol : **a)**

Z is the ‘start stack symbol’

**A picture containing text, whiteboard, document

Description automatically generated**

**b)**

**Text, letter

Description automatically generated**