2.) The grammar of ABA has one both side of it A. A is a right recursive and associative tree which is just a string of ‘a’ s with a as the terminal character. B as the terminal charters epsilon if there is less then one be in the recursive sequence and if there is one b in the recursive sequence then there is b a c.

a.) one and four are in the languages

baab:

s::== AaBb

because A->b which is baBb and B->a which is baab

bbaab:

s::==AaBb

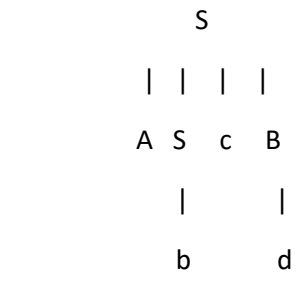
because A->Ab which is AbaBb and

A-> b which is bbaBb and

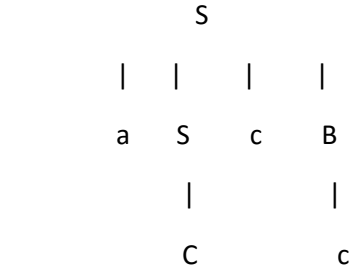
B->a which is bbaab

C.) 1 and 5

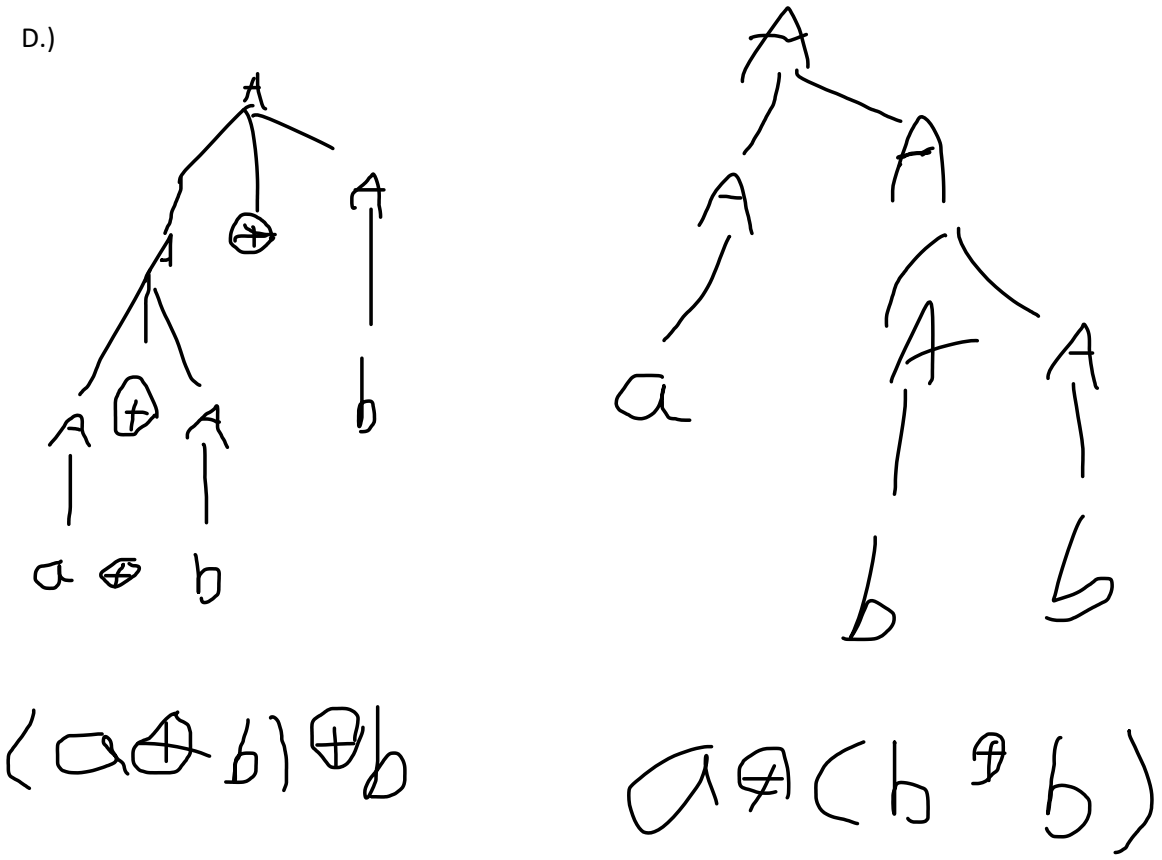
Abcd



accc



D.)



The grammar is ambiguous the graph can reach the end in two different sequences.

3

A.)

a. The first grammar is left recursive with a terminal branch on the right side of the tree.

The second grammar is right size recursive because the terminal branch is on the left side of the tree.

b. These grammars do the same thing

B.) 1-3 =-2
1<<2=4
10-9<<2=4
(1<<3)-8=0
2-(1<<2)=-2

The – takes precedence over the <<

C
N= any number between 0 and infinity
z=zero
Exponent::=z.nEn | -z.nen | n.nEn | n.zEn | -n.zEn