

Arslan
20L-2090

20L-0951

Theory of Automata

Quiz

(5A)

Arslan Ifkhan

Date: 25-10-2022

Name:

Roll Number:

Q: Write CFG for the given language. Also write first 10 string for the given language in canonical order?
 $L = \text{Number of 'a' occurs twice as number of 'b'}$

$$L = \{(a^n b^{\frac{n}{2}})^+; n \geq 2\}$$

$$L = \{aab, aba, baa, aacabb, bbacaa, abbaaa, aabbaa, baaab, \underline{baaaba}, \underline{babaaa}, \dots\}$$

$$\begin{aligned} S_0 &\rightarrow S_0 a b / a S_0 b / a a S_0 b / a a b S_0 / \\ &S_0 a b a / a S_0 b a / a b S_0 a / a b a S_0 / \\ &S_0 b a a / b S_0 a a / b a S_0 a / b a a S_0 / \\ &a a b / b a a / a b a \end{aligned}$$

$a S_0 a b$
 $a a a b a b$

15

R.W

$$S_0 \Rightarrow b a S_0 a \xrightarrow{14} b a b a a a$$

Name: Tanzeel Faisal

Roll Number: 20L-1117

Q: Write CFG for the given language. Also write first 10 string for the given language in canonical order?
 $L = \{a^i (b^j c^k)^n d^i; i \geq 0; j < k; n = 2i\}$

$A \rightarrow a^i$
 $B \rightarrow (b^j c^k)$
 $C \rightarrow d^i$

~~$S \rightarrow ABB$~~

$A \rightarrow a^i$
 $B \rightarrow b^j$
 $C \rightarrow c^k$
 $D \rightarrow d^i$

~~_____~~
 $X \rightarrow bXc \mid c \mid XX$

$S_1 \rightarrow AS_1XS_2 \mid \text{_____} \wedge$

$S_2 \rightarrow \text{_____} \text{_____} XS_2D \mid \wedge$

Strings?

01

AS_1XS_2
 $AC \rightarrow ac$

AS_1XS_2
 $A \wedge bXc \wedge$

$AbXc$
 $abcc$

Name:

Roll Number:

201-2070

Q: Write CFG for the given language. Also write first 10 string for the given language in canonical order?
 $L = \{ \text{Number of 'a' occurs twice as number of 'b'} \}$

$L = \{ \epsilon, \text{baab}, \text{aba}, \text{baa}, \text{aaaabb}, \text{aaabab}, \text{aaabba}, \text{aabaab}, \text{abaaab}, \text{baaaab}, \text{baaa}, \text{aabaab}, \text{abaaab}, \text{baaaab}, \}$

$S_v = \{ S \}$

$S \rightarrow aA \mid bB \mid \epsilon$

$A \rightarrow abS \mid baS \mid aAA$

$B \rightarrow aaS \mid bBB \mid aX$

$X \rightarrow aS \mid bXX$

07

bB

baX

baXX

baabaS

baaa

baaa

baaa

baaa

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