LNCT University Bhopal

[Total No. of Questions: 4] [Total No. of Printed pages: 1]

Enroll No................... Class Roll No....................

Second Mid Semester Examination, 2024

Subject Name: THEORY OF COMPUTATION [CS303]

Branch: CS Semester: 3rd

Time 1:30 Hrs Max. Marks 20

Note: All questions are compulsory and have internal choice

Q.1 What is grammar. Explain types of grammar with example
(CO 3 MARKS 7)

Or

Q.1 Derive the string "aabbabba" for leftmost derivation and rightmost derivation using a CFG given by,

$S \rightarrow aB|bA$
$A \rightarrow a|aS|bAA$
$B \rightarrow b|bS|aBB$

Q.2 Convert following Left linear Grammar to FA. (CO 4 MARKS 7)

S->Ca/Aa/Bb

A->Ab/Ca/Bb/a

B->Bb/b

C->Aa

Or

Q.2 Convert the given CFG to CNF. Consider the given grammar G:

$S \rightarrow ABA$

$A \rightarrow aA \mid \varepsilon$

$B \rightarrow bB \mid \varepsilon$ (CO 4 MARKS 7)

Q3. *Construct a PDA for language* $L=\{a^n,b^n \mid n>=1\}$
(CO 5 MARKS 6)

OR

Q3. Explain Turing Machine and Universal Turing machine.