HOME ASSIGNMENT
22CS2002R - ATFL - CO-2

1. Consider the grammar G = (V, Σ, R, S), where
V = {a, b, S, A},
Σ = {a, b},
R = { S → AA, A → AAA, A → a, A → bA, A → Ab }.
(a) List the set of strings that can be produced by derivations of four or fewer steps using G?
(b) Give any four distinct derivations for the string babbab using G.

2. Design CFG for a language which accepts palindrome over an alphabet Σ = {a,b}.

3. Check whether the given grammar is ambiguous or not: S → SS, S → a, S → b

4. Check whether the given grammar is ambiguous or not-

$$S \rightarrow AB \,/\, C$$

$$A \rightarrow aAb \,/\, ab$$

$$B \rightarrow cBd \,/\, cd$$

$$C \rightarrow aCd \,/\, aDd$$

$$D \rightarrow bDc \,/\, bc$$

5. Simplify the following CFG

```
S -> abS | abA | abB
A -> cd
B -> aB
C -> dc
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6. Convert the given grammar to CNF-

$$S \rightarrow aAD$$

$$A \rightarrow aB \,/\, bAB$$

$$B \rightarrow b$$

$$D \rightarrow d$$

7. Convert the following grammar into Greibach Normal Form.

E-> E + T | T
T-> T*F | F
F->(E) | a