

1. CT-1,2,3 questions must complete them.

2. ambiguity grammar

3. Design a **PDA** that recognizes the language:

i.  $L_1 = \{a^n b^{n+2} \mid n \geq 0\}$

ii.  $L_1 = \{a^n b^{n+2} \mid n \geq 1\}$

iii.  $L_1 = \{a^n b^{2n+3} \mid n \geq 0\}$

4. Convert the following context free grammar (**CFG**) to Chomsky Normal Form (**CNF**):

$$S \rightarrow ASB \mid BSA \mid AB$$

$$A \rightarrow aaA \mid B$$

$$B \rightarrow Bb \mid \epsilon$$

5. Briefly explain the following- (Provide appropriate examples when necessary)

i. CNF

ii. CFG

iii. NFA

iv. DFA

v. *Church-Turing Thesis.*

vi. *Turing machine working procedure.*

6. Present the formal definition of NFA.

7. Justify the statement with proper example- "All DFAs are NFAs but all NFAs are not DFAs."