



Assignment-III

SUBJECT: ATC

SEMESTER: V

1. Eliminate Left Recursion from the following grammar.
 $S \rightarrow Ab|a$
 $A \rightarrow Ab|Sa$
2. Eliminate Unit Production from the grammar
 $S \rightarrow A0|B$
 $B \rightarrow A|11$
 $A \rightarrow 0|12|B$
3. Obtain the Grammar in CNF
 $S \rightarrow 0A|1B$
 $A \rightarrow 0AA|1S|1$
 $B \rightarrow 1BB|0S|0$
4. Define CNF and GNF with an example for each?
5. With neat diagram explain working of Turing Machine
6. State and prove pumping lemma Theorem for context free languages.
7. Write the applications Pumping Lemma for CFLs.
8. Define Deterministic PDA and Non Deterministic PDA.
9. Obtain a PDA to accept $L = \{a^n b^n | n \geq 0\}$
10. Obtain a PDA to accept $L = \{wcw^R | w \in \{a,b\}^*\}$
11. Convert the following grammar into equivalent PDA using top down parsing
 $E \rightarrow E+T$
 $E \rightarrow T$
 $T \rightarrow T * F$
 $T \rightarrow F$
 $F \rightarrow (E)$
 $F \rightarrow id$
12. Show that CFLs are closed under Intersection.
13. Define Language Acceptability by TM?
14. Prove that $L = \{a^n b^n c^n | n > 0\}$ is not context free

15. Show that $L = \{ww \mid w \in \{a,b\}^*\}$ is not context free
16. Explain Multi tape Turing Machine?
17. Define Non Deterministic Turing Machine and Linear bounded automata
18. Explain Growth Rate Functions.
19. Define Instantaneous Description for Turing Machine
20. Write short notes on
 - i. Halting problem in TM
 - ii. Post Correspondence Problem
 - iii. Church Turing Hypothesis