UNIT - 2

1. Explain Error recovery techniques.
2. Differentiate between CFG & Regular Expression
3. for the following CFG
   a. Give the LMD for the string
   b. Give the RMD for the string
   c. Give the parse Tree for the string
   d. Is the grammar ambiguous / unambiguous? Justify

$S \to SS+ \mid SS* \mid a$	aa+a*
$S \to 0S1 \mid 01$	000111
$S \to +SS \mid *SS \mid a$	+*aaa
$S \to S(S)S \mid \epsilon$	(()())
$S \to S+S \mid SS \mid (S) \mid S* \mid a$	(a+a)*a
$S \to (L) \mid a \quad L \to L,S \mid S$	(a,a)
$S \to aSbS \mid bSaS \mid \epsilon$	aabbab
$E \to E+E \mid E*E \mid -E \mid (E) \mid id$	id+id*id
$S \to iEtS \mid iEtSeS \mid a \quad E \to b$	
$R \to R'\|'R \mid RR \mid R* \mid (R) \mid a \mid b \mid c$	a|b*c

4. Define ambiguity! ST the following grammar is ambiguous

5. Define left recursion. Write an algorithm for left recursion elimination & hence eliminate left recursion
   a) $E \to E+T \mid T$ b) $T \to T*F \mid F$ c) $S \to S(S)S \mid \epsilon$

4. $S \to SS+ \mid SS* \mid a$ 6.

5. $E \to E+T \mid T$
   $T \to T*F \mid F$
   $F \to (E) \mid id$

6. write any alg for eliminating left factoring & hence eliminate

1. $S \to SS+ \mid SS* \mid a$ 2. $S \to 0S1 \mid 01$ 3. $S \to iEtS \mid iEtSeS \mid a$
   $E \to b$

7. Why do we need a first & follow set. Find for the following grammars

1. $E \to TE'$
   $E' \to +TE' \mid \epsilon$
   $T \to FT'$
   $T' \to *FT' \mid \epsilon$
   $F \to (E) \mid id$

2. $S \to iEtS \mid iEtSeS \mid a$
   $E \to b$

3. $S \to Q, H;$
   $Q \to aF$
   $F \to bF \mid \epsilon$
   $H \to KL$
   $K \to m \mid \epsilon$
   $L \to n \mid \epsilon$

4. $S \to aB \mid aC \mid Sd \mid Se$
   $B \to bBC \mid f$
   $C \to g$

5. $S \to aBDb$
   $B \to eC$
   $C \to bc \mid \epsilon$
   $D \to Ef$
   $E \to g \mid \epsilon$
   $F \to f \mid \epsilon$

6. $S \to (L) \mid a$
   $L \to L,S \mid S$

7. $S \to L=R \mid R$
   $L \to *R \mid id$
   $R \to L$

8. $S \to AaAS \mid BbBa$
   $A \to \epsilon$
   $B \to \epsilon$

9. $S \to aABb$
   $A \to c \mid \epsilon$
   $B \to d \mid \epsilon$

10. $S \to aSbS \mid bSaS \mid \epsilon$

11. $S \to a \mid \uparrow \mid (T)$
    $T \to T,S \mid S$

13. $S \to As \mid s$
    $A \to SA \mid a$

8. Write predictive parsing table, LL(1) grammar

1. $E \to E+T \mid T$
   $T \to T*F \mid F$
   $F \to (E) \mid id$

2. $S \to aSbS \mid bSaS \mid \epsilon$

3. $S \to S+S \mid SS \mid (S) \mid S* \mid a$

4. $S \to (L) \mid a$ $L \to L,S \mid S$

5. $S \to SS+ \mid SS* \mid a$