

2) Convert Following Grammar into CNF form.

$$S \rightarrow ASA \mid aB \mid CaB$$

$$A \rightarrow B \mid CB$$

$$B \rightarrow b \mid \varepsilon$$

→ if This Language is CNF it must obey some rules

- 1) Grammar Right Hand side (RHS) at most 2 variable or terminal.
- 2) RHS can not contain variable and terminal same time.
- 3) all unit products and null products must eliminated.
- 4) No redundant Variable (In this grammar it is C)

(I skip the steps and write only result)

$$S \rightarrow AX \mid Yb \mid a \mid AS \mid SA$$

$$A \rightarrow b$$

$$B \rightarrow b$$

$$X \rightarrow SA$$

$$Y \rightarrow a$$

3) Use CYK Algorithm to determine the String “aabab” is in $L(G)$ or not?

$$S \rightarrow AB \mid BC$$

$$A \rightarrow BA \mid a$$

$$B \rightarrow CC \mid b$$

$$C \rightarrow AB \mid a$$

(I write only Stairs)

→

$\{S, C\}$	-----→	since this is not empty language
$\{S, A\} \{B\}$		his string is in $L(G)$
$\{B\} \{B\} \{S, C\}$		
$\{B\} \{S, C\} \{S, A\} \{S, C\}$		
$\{A, C\} \{A, C\} \{B\} \{A, C\} \{B\}$		
$\begin{matrix} a & a & b & a & b \end{matrix}$		