

## QBank - Automata

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1) Explain chomsky hierarchy with detailed example.

2) Find chomsky normal form equivalent to the following grammar:-

$$S \rightarrow bA / aB$$

$$A \rightarrow bAA / aS / a$$

$$B \rightarrow aBB / bS / b$$

3) ~~Construct GR for~~  
 ~~$S \rightarrow abA$~~

3) Remove  $\epsilon$  production from the grammar

1)  $S \rightarrow Xa$

$$X \rightarrow aX / bX / \epsilon$$

2)  $S \rightarrow a / xb / ya$

$$X \rightarrow y / \epsilon$$

$$Y \rightarrow b / X$$

4) Explain what you mean by Ambiguous context free grammar and remedy applied for same.

- 5) Write a CFG to generate a language of all strings that have more  $a$ 's than  $b$ 's
- 6) Find a context free grammar for each languages from the following regular expressions
- 1)  $ab^*$
  - 2)  $a^*b^*$
  - 3)  $(baa + abb)^*$