

Review 14

Automata & Theory of Computation

Student ID:

Name:

- 1 Produce a context-free language using the grammar G , with productions

$$S \rightarrow abB,$$

$$A \rightarrow aaBb,$$

$$B \rightarrow bbAa,$$

$$A \rightarrow \lambda,$$

2. Produce a context-free grammar to show the following language is context-free.

$$L = \{a^n b^m : n \neq m\}$$

3. The grammar G , with productions

$$\begin{aligned} S &\rightarrow aAB, \\ A &\rightarrow bBb, \\ B &\rightarrow A|\lambda. \end{aligned}$$

is context-free.

(1) Show a leftmost derivation of the string $abbbb$.

(2) Show a rightmost derivation of the string $abbbb$.

(3) Draw a derivation tree of the string $abbbb$.