

Ph.D. Comprehensive Examination

Computer Science Department
University of Miami

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Student Number:

Problem number	Points (10 max)
1	
Total:	

Automata and language theory

Consider the following grammar:

$$G \longrightarrow S \$ \$$$

$$S \longrightarrow A M$$

$$M \longrightarrow S \mid \epsilon$$

$$A \longrightarrow a E \mid b A A$$

$$E \longrightarrow a B \mid b A \mid \epsilon$$

$$B \longrightarrow b E \mid a B B$$

1. Describe the language that the grammar generates in English.
2. Show a parse tree for the string **a b a a**.
3. Is the grammar LL(1)? If so, show the parse table; if not, identify a prediction conflict.