

1. (a) Describe the functions performed by a lexer and describe the differences between a Finite State Machine and a lexer. [5]
- (b) Write grammars for the following languages:
- i. the set of non-negative odd integers; [4]
 - ii. the set of non-negative even integers with no leading zeros permitted. [4]
- (c) Consider the following grammar:
- $$E \rightarrow E + T \mid T \quad T \rightarrow T * id \mid id \mid (E)$$
- Is this an ambiguous grammar? Justify your answer. [5]
- (d) Explain the difference between context sensitive, context-free and D-context-free languages, and discuss the relevance of this distinction to compiler construction. [7]