

**CCS 4401: COMPILER CONSTRUCTION**  
**CAT 1 DURATION 1 HOUR**

- 1) What advantages are there to a language processing system in which the compiler produces assembly language rather than machine language [3 marks]
- 2) Define the following terms [3 marks]
  - a) Language
  - b) Sentence
  - c) Grammar
- 3) Identify three types of errors that cannot be detected at syntax analysis phase [4 marks]
- 4) What is the lexical analyzer output on the expression **position = initial + rate \* 60** [3 marks]
- 5) Derive and construct parse trees for the two distinct leftmost derivations given the arithmetic grammar  $E \rightarrow E + E \mid E * E \mid (E) \mid -E \mid id$  and sentence **id + id \* id** [6 marks]
- 6) Given the grammar
$$S \rightarrow aABe$$
$$A \rightarrow Abe \mid b$$
$$B \rightarrow d$$
Show that the sentence abbede can be reduced to S [4 marks]
- 7) Given the grammar
$$S \rightarrow cAd$$
$$A \rightarrow ab \mid a$$
Construct a parse tree for the string  $w = cad$  [3 marks]
- 8) Explain the difference between S-attributed and L-attributed SDTs [4 marks]

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