

[4 x 2 marks = 8 marks]

1. Answer any four.

- (i) Differentiate between tokens, patterns and lexemes.
- (ii) What is a viable prefix? Give an example.
- (iii) Write a CFG to represent palindromes.
- (iv) What do you mean by "Pass" of a compiler? How can you reduce the number of passes?
- (v) Write a grammar which generates strings of 0s and 1s with an unequal number of 0s and 1s.

$S \rightarrow 0A1 \mid 1A0 \mid A$
 $A \rightarrow 011S$

[3 x 4 marks = 12 marks]

2. Answer any three.

- (i) Eliminate left recursion (direct and indirect) from the following grammar :

$S \rightarrow (L) \mid a$
 $S \rightarrow L, S \mid S$

- (ii) Consider the following grammar :

$rexp \rightarrow rexp \mid rexp$
 $rexp \rightarrow rexp rexp$
 $\quad \mid rexp *$
 $\quad \mid (rexp)$
 $\quad \mid letter$

where, \mid , $*$, $($, $)$ and letter are terminals.

- (c) What type of language will be derived by the grammar?

- (d) Show whether the grammar is ambiguous or not. If it is ambiguous, convert it into an unambiguous one.

$(0+11)^* + (1+00)^*$

- (iii) There are some CFG for which shift-reduce parsing cannot be used. Comment.

- (iv) Consider the following grammar :

$A \rightarrow Ba$
 $B \rightarrow dab \mid CB$
 $C \rightarrow d \mid b$

where, A , B , C are non-terminals and the other symbols are terminals. Find the FIRST and FOLLOW sets for all the non-terminals in the grammar.