

Exam. Code: 0918
Sub. Code: 33446

2055

B.E. (Computer Science and Engineering)
Sixth Semester
CS-604: Compiler Design

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section.

X-X-X

I. Give short answers of the following:

- What is cross compiler?
- What is difference between synthesized attributes and inherited attributes?
- What is operator grammar?
- What do you mean by loop jamming and loop unrolling?
- List various issues in the design of a code generator.

(2 marks each)

Section-A

- II.
- Describe the structure of a compiler. Why the process of compilation is divided into various phases?
 - Differentiate between tokens, lexemes, and patterns with examples. How are they specified in the design of a lexical analyzer?

(5, 5)

- III.
- What is left recursion? What are the problems that arise due to left recursion in the design of top-down parsers? Write an algorithm to remove left recursion from a given grammar.
 - Construct a predictive parsing table for the following grammar, where S is the start symbol:

$S \rightarrow iEtST \mid a$

$T \rightarrow eS \mid \epsilon$

$E \rightarrow b$

(5, 5)

- IV. Construct the LALR parsing table for the following grammar:

$E \rightarrow E+T \mid T$

$T \rightarrow TF \mid F$

$F \rightarrow F^* \mid a \mid b$

(10)

Section-B

- V.
- Describe in detail the common forms of intermediate code representation. Using each representation, represent the expression $a^*-(b+c)$.
 - Describe in detail how synthesized and inherited attributes in the semantic rules are evaluated.

(5, 5)

- VI.
- What are basic blocks? What are the steps to partition a sequence of three-address statements into list of basic blocks?
 - Describe in detail various principal sources of optimization.

(5,5)

- VII.
- Describe in detail stack allocation strategy along with its merits and demerits.
 - What is a symbol table? Describe in detail various data structure used for its storage. Compare the merits and demerits of each of them.

(5, 5)

X-X-X