Exam.Code:0925
Sub. Code: 6542

2123
B.E. (Information Technology)
Seventh Semester
PCIT-702: Compiler Design

Time allowed: 3 Hours **Max. Marks: 50**

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

x-x-x

I. Give short answers of the following:

a. What do you mean by intermediate code? What are the advantages of generating it?
b. Write the rules for determining FIRST of grammar symbols in a given grammar?
c. What is loop unrolling and loop jamming?
d. Differentiate between parse tree and syntax tree.
e. What is symbol table? List various data structures used for storing symbol table.

(2 marks each)

Section-A

II.

a. Describe in brief the structure of a compiler. Why the process of compilation is divided into various phases?
b. What is lexical analyzer? What is its role? Describe how tokens are specified. (5, 5)

III.

a. 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. Eliminate the left recursion from the grammar:
$S -> (L)|a$
$L -> L, S|S$
b. Define handle. What are the issues involved in handle pruning? How is handle pruning implemented by operator precedence parser? (5, 5)

IV.

a. Construct LALR parsing table for the following grammar:
S→Aa|aAc|bBa
A→d
B→d
b. Describe in detail the error recovery techniques used for different parsers. (5, 5)

Section-B

V.

a. What are basic blocks? What are the steps to partition a sequence of three-address statements into list of basic blocks?
b. Describe in detail various storage allocation strategies. (5, 5)

VI.

a. What are synthesized and inherited attributes? Describe in detail the bottom-up evaluation of S-attributed definitions.
b. What are the issues that must be taken care off while designing a code generator? (5, 5)

VII. Write short notes on:

a. Peephole optimization
b. Principle sources of code optimization (5, 5)

x-x-x