

Roll No.

Total Pages : 03

MCA/D-18
COMPILER DESIGN
MCA-14-51

10136

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. (a) What do you mean by high level language ?
- (b) Write a regular expression for a language over (0, 1) which starts or end with either 00 or 11.
- (c) What are syntax and semantic errors ?
- (d) Why left recursion is not good for parsers ?
- (e) What do you mean by loop invariant in code ?

Unit I

2. What do you mean by a compiler ? Explain the phases a program undergoes during compilation using suitable example.
3. (a) What do you mean by Finite automation ? How are they used in lexical analysis phase ?

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- (b) Draw a FA for the language $L = \{w : w \in (a, b)^* \&\& n_a(w) \% 3 = 0 \&\& n_b(w) \% 2 = 0\}$.

Unit II

4. (a) What do you mean by 3-address code representation of a code ? Explain.
(b) What is a symbol table ? Why is it used in a program ? Explain which kind of information is stored in it.
5. What is a storage allocation scheme for programs ? Explain the types of allocation mechanism using suitable examples.

Unit III

6. (a) What is a Top-Down parser ? When a grammar is ready to be parsed by it ? Explain using suitable example.
(b) What is ambiguity in grammars ? Which parser is able to handle ambiguity and how ?
7. What is Shift-Reduce parser ? Explain the LR parsing algorithm on the below grammar as input :

$E \rightarrow E + T, E \rightarrow T, T \rightarrow T * F, T \rightarrow F, F \rightarrow (E), F \rightarrow id$

Unit IV

8. Explain the following :
 - (a) Register allocation
 - (b) Intermediate languages.

9. (a) What do you mean by code optimization ? Explain machine-dependent and independent optimization techniques.
(b) What do you mean by DAG blocks ? Why are they used in code optimization ?

