

Roll No. ....

Total Pages : 03

BT-6/J-25

46165

COMPILER DESIGN

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. Explain all the phases of a compiler in detail. Draw the compiler structure and explain, how data flows between the phases ? 15
2. What is the role of the lexical analyzer ? Design a DFA for the regular expression :  $(a|b)^*abb$  and explain how tokens are generated. Also explain the concepts of tokens, lexemes and patterns in lexical analysis. 15

Unit II

3. Define Context-Free Grammar (CFG). Explain ambiguity in grammar with an example and how it can be resolved. 15

4. What is left recursion ? Explain the process of eliminating left recursion and apply it to a sample grammar. 15

### Unit III

5. What is the role of a symbol table in a compiler ? Discuss different symbol table implementations and operations with examples. 15
6. Describe the various intermediate code representations. Explain quadruples, triples and indirect triples with suitable examples. 15

### Unit IV

7. What is code optimization ? 15

Explain the following techniques with examples :

- (a) Peep Hole Optimization
- (b) Common subexpression elimination
- (c) Loop invariant code motion
- (d) Dead code elimination.

8. Explain error detection and recovery strategies in compiler design. Differentiate between panic mode, phrase-level, error productions and global correction techniques.

15

