Roll No. ..... **Total Pages : 03**

BT-7/M-21: 47023

COMPILER DESIGN

IT-455

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all. Q. No. **1** is compulsory. In addition to that attempt *four* more questions selecting exactly *one* question from each Unit.

Unit I

1. What are the various compiler construction tools ? Explain in detail. **15**

2. Draw a flow diagram for showing the phases of a compiler and discuss each phase in detail. **15**

Unit II

3. (a) Describe the role of a parser in a compiler. How different types of errors can be handled by a parser ? **8**

(b) Differentiate between regular expression and CFG. **7**

4. (a) Write down an algorithm for detecting unreachable entries in a LR parsing table.

(b) Construct error-correcting LR parser for the following grammar : **7.5**

stmt → *if e then* stmt
| *if e then* stmt *else* stmt
| *while e do* stmt
| *begin* list *end*
| s

list → list; stmt
| stmt **7.5**

Unit III

5. (a) Give a syntax-directed definition to translate infix expression into infix expression without redundant parentheses. For example, since + and * associative to the left, ((a*(b+c)*(d)) can be rewritten as a*(b+c)*d. **5**

(b) What do you understand by three-address code ? Explain common three-address statement in use. **7**

(c) What do you understand by symbol table ? **3**

6. What do you mean by lexical, syntactic and semantic errors ? How can these errors be detected and recovered ? Explain the various schemes for error detection and recovery. **15**

Unit IV

7. What is loop optimization ? Explain various kinds of loop optimization with the help of suitable examples. **15**

8. (a) What is peephole optimization ? Explain in brief. **7.5**

(b) What do you mean by data-flow analysis ? Explain using suitable examples. **7.5**