

CAMQ /D-20: 24057
MCA-14-51: Compiler Design

Time: 3 hrs]

[Max. Marks: 80

Note: Attempt five questions in all selecting one from each Unit. Question No. 1 is compulsory.

COMPULSORY QUESTION

- Q1 (a) What is bootstrapping? Discuss. (4)
 (b) Discuss the lexical-phase errors. (4)
 (c) Explain various conflicts that occur during shift reduce parsing. (4)
 (d) What is an intermediate code? Discuss advantages of writing intermediate code. (4)

UNIT -I

- Q2 (a) Discuss the structure and phases of compiler. (10)
 (b) What do you mean by pass? How many passes a compiler should have? Discuss. (6)
- Q3 (a) How is a finite automata useful for lexical analysis? (8)
 (b) What is a regular expression? What does the regular expression $(0^*/1^*)^*$ denote? (8)

UNIT -II

- Q4 (a) Give a translation scheme for checking that the same identifier does not appear twice in a list of identifiers. (8)
 (b) What is the role of Symbol Table in compiler construction? How Symbol Table is implemented? (8)
- Q5 Discuss the types of storage allocation schemes? Also explain the run time storage management for stack allocation of the storage. (16)

UNIT -III

- Q6 (a) What do you understand by operator-precedence parsing? Also describe the error recovery procedure in operator-precedence parsing. (8)
 (b) Construct an SLR parser table for the grammar (8)
 $E \rightarrow E \text{ sub } R \mid E \text{ sup } E \mid \{ E \} \mid c$
 $R \rightarrow E \text{ sup } E \mid E$
 Resolve the parsing action conflict so that expression will be parsed in the same way as by the LR parser.
- Q7 (a) Explain canonical LR parsing tables with the help of an example. How can these tables be constructed? (8)
 (b) Show that the following grammar (8)
 $S \rightarrow AaAb \mid BbBa$
 $A \rightarrow \epsilon$
 $B \rightarrow \epsilon$
 is LL(1) but not SLR(1).

UNIT -IV

- Q8 (a) What is peephole optimization? Explain. (8)
 (b) Suppose P(X, Y) is a C procedure & is called by P(A + B, C). Write its intermediate code. (8)
- Q9 How do you formulate the data flow equations? Discuss the methods used for solving the data flow equations. (16)