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Roll No

MCADD-704 (2)

M.C.A. (Integrated) VII Semester

Examination, November 2023

Compiler Design

(Elective - I)

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) Explain the process of compilation in detail. Illustrate the output of each phase of compilation of the input $a=b+c*6.0$.
b) How bootstrapping is done on more than one machine?
2. a) Construct the CLR(1) table for the following grammar:
 $S \rightarrow AS/b$
 $A \rightarrow SA/a$
b) List the properties of LR parser. Also mention the types of LR parser.
3. a) Define Syntax Directed Translation. Construct annotated parse tree for the expression $(4 * 7 + 1) * 2$, using the simple desk calculator grammar.
b) Compute first() and follow() functions for the following grammar.
 $S \rightarrow aB/\epsilon$, $B \rightarrow bC/\epsilon$, $C \rightarrow cS/\epsilon$

4. a) What are the various methods of implementing three address statements?
b) Write the three address code for the expression:
if a=1 then c=c+1
else while(a<=d) do
a=a+2
5. a) Discuss various loop optimization techniques. Differentiate between loop unrolling and loop jamming.
b) What is DAG? What are its advantages in context of optimization?
6. a) Write short notes on lexical analyzer generator.
b) Differentiate between recursive decent parsing and predictive parsing.
7. a) Define symbol table. What are the different data structures used for symbol table?
b) Differentiate single pass compiler with multipass compiler
8. a) Explain what constitute a loop in flow graph and how will you do loop optimizations in code optimization of a compiler?
b) Describe the types of errors occurring in different phases of compiler.
