B.E. CSE (AI & ML) V - Semester (AICTE) (Main) (New) Examination, February/ March 2023

Subject: Compiler Design

Time: 3 Hours   Max. Marks: 70

Note: (i) First question is compulsory and answer any four questions from the remaining six questions. Each questions carries 14 Marks.
(ii) Answer to each question must be written at one place only and in the same order as they occur in the question paper.
(iii) Missing data, if any, may be suitably assumed.

1. a) Why should we study Compilers?
   b) Write short notes on Role of Lexical Analyzer.
   c) Give the syntax-directed definition for if-else statement.
   d) What are the various types of intermediate code representation?
   e) Define the term copy propagation.
   f) Explain the role of code generator in a compiler.
   g) Show DAG a:=b*-c+b*-c.

2. a) Explain the different phases of compiler & showing the output of each phase using the example for the statement a=b+c*60.
   b) Explain input buffering in detail.

3. a) What are the difficulties in top-down parsing? Explain in detail?
   b) Explain shift-reduce parsing technique? Consider the following grammar
      E-->E+E/E*E/(E)/id the input string id+id*id explain stack implementation shift-reducing parsing .

4. a) What is an ordered and unordered symbol table? What is the function of symbol table in the compilation process? Explain.
   b) Explain the run-time storage organization of a program.

5. a) Construct parse tree, syntax tree and annotated parse tree for the input string is 5*6+7;
   b) Draw the syntax tree and DAG for the expression (a*b)+(c-d)*(a*b)+b.

6. a) Explain flow-of-control optimization technique.
   b) State and explain different machine dependent code optimization techniques.

7. a) Explain various Global optimization techniques with an example.
   b) Explain characteristics of Peephole Optimization.

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