Code No.: AI601PC | R20 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
III–B.TECH–II–Semester End Examinations (Supply) - January- 2024
PRINCIPLES OF COMPILER DESIGN
(CSM)

[Time: 3 Hours] **[Max. Marks: 70]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(20 Marks)**

1. a) What is the role of lexical analyser in the compiler? [2M]
   b) write various compiler construction tools? [2M]
   c) Differentiate Parse tree and abstract syntax tree with an example. [2M]
   d) Describe recursive-descent parsing? [2M]
   e) Give the procedure to implement control flow statements. [2M]
   f) Examine the usage of symbol table in compiler. [2M]
   g) Discuss the usage of garbage collector in compiler. [2M]
   h) Define basic block and leader in basic block. [2M]
   i) Explain about constant propagation in optimization. [2M]
   j) Define loops in flow graph? [2M]

PART-B **(50 Marks)**

2. Show the sequence output of each phase of a compiler for the following statement: [10M]
   int z = x+ y*5;

OR

3. Write about Lexical Analyser Generator Tool in detail. [10M]

4. Construct LL(1) parsing table for the Grammar: [10M]
   E→E+T/T, T→T*F/F, F→ (E)/id

OR

5. Construct LALR Parsing table for the grammar S→L=R|R, L→*R|id, R→L and check the string w=id=id/id is accepted by the grammar. [10M]

6. Write and explain the Syntax Directed definition for the grammar [10M]
   E→ E+T|E-T|T
   T→ (E)/id/num.

OR

7. What is intermediate code? Translate the expression (a+b)/(c+d)*(a+b/c)-d into quadruples, triples and indirect triples. [10M]

8. Explain in brief about stack and heap storage allocation strategy. [10M]

OR

9. Explain about peephole optimization and Register allocation and Assignment in detail. [10M]

10. Explain foundation of data flow analysis in detail. [10M]

OR

11. Write about Principles source of optimization [10M]

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