CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
III–B.TECH–II–Semester End Examinations (Regular) - June- 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)	Outline the differences between a compiler and an interpreter?	[2M]
b)	List the various error recovery strategies for a lexical analysis.	[2M]
c)	Define Context free grammar?	[2M]
d)	List the types of LR parser.	[2M]
e)	What are the evaluation orders for syntax directed definitions?	[2M]
f)	Define type expression.	[2M]
g)	Discuss the advantages of stack storage allocation strategy?	[2M]
h)	Define garbage collection.	[2M]
i)	What is common sub expression elimination?	[2M]
j)	How do you calculate the cost of an instruction?	[2M]

PART-B   (50 Marks)

2.   Draw the structure of a compiler and describe various phases in the compilation process mention the output of the following statement: id1=id2+id3*50 at each phase. [10M]

OR

3.a)   Define Regular Expression? Explain about the Properties of Regular Expressions. [5M]

b)   Construct a Finite automata and scanning algorithm for recognizing identifiers, numerical constants in 'C' language. [5M]

4.a)   Construct a Predictive parsing table for the Grammar. [5M]
    E->E+T/T
    T->T*F/F
    F->(E)/id.

b)   What is left recursion? Describe the algorithm used for eliminating left recursion [5M]

OR

5.   Construct CLR parsing table for the following Grammar. [10M]
    S -> L=R
    S->R
    L->*R
    L->id
    R->L (Write all necessary procedures)

6.   Build a syntax directed translation scheme for simple desk calculator. [10M]

OR

7.   What is a three address code? Mention its types. Analyze how would you implement the three address statements? Explain with examples. [10M]

8.   Explain various storage allocation strategies with its merits and demerits. [10M]

OR

9.   Construct the basic block and compute flow graph for the three address code? Explain with any sample three address code. [10M]

10.   Illustrate the basic notations used in data-flow analysis for optimizations with   [10M] examples.

<div align="center">OR</div>

11. a)   Explain in brief about different Principal sources of optimization techniques with   [5M] suitable examples.

    b)   Discuss how constant propagation can be done using data flow equation.   [5M]

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