

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
III-B.TECH-II-Semester End Examinations (Supply) -December- 2025
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)	Define linker and loader.	[2M]
b)	Write a short note on regular expression.	[2M]
c)	Differentiate between SLR, LALR and CLR parsers.	[2M]
d)	Explain YACC parser in Syntax Analysis.	[2M]
e)	What is the s – attributes and l – attributes?	[2M]
f)	List the function of intermediate code generation.	[2M]
g)	What is activation record?	[2M]
h)	Define Basic block.	[2M]
i)	Explain Dead code elimination.	[2M]
j)	Write short notes on Flow graph.	[2M]

PART-B**(50 Marks)**

2. Explain the various phases of a compiler in detail. Also write down the output for the following expression after each phase a: =b+c*d. [10M]

OR

3.a) Write down the steps in constructing DFA for the regular expression $(a/b)^*aab(a/b)^*$. [5M]
 b) Write the role of lexical analyzer. [5M]

4.a) Distinguish between Top down and bottom up parsing techniques. [5M]
 b) Define Ambiguous Grammar? Analyze whether the grammar

 $S \rightarrow aAB$ $A \rightarrow bC/cd$, $C \rightarrow cd$, $B \rightarrow c/d$

Is Ambiguous or not.

OR

5. Examine whether the following grammar is SLR (1) or not. Explain your answer with Reasons. [10M]

 $S \rightarrow L=R$ $S \rightarrow R$ $L \rightarrow *R$ $L \rightarrow id$ $R \rightarrow L$.

6. Illustrate in detail the syntax directed translation of case statements [10M]

OR

7.a) Construct a Quadruple, Triple and Indirect Triple for the statement [5M]

 $a+a^*(b-c) +(b-c)^*d$

b) Explain in brief about equivalence of type expressions with examples. [5M]

8. What is an activation record? Describe various components in an activation record [10M] considering a sample c program.

OR

9. Evaluate the code generation for the $d:=(a-b)+(a-c)+(a-c)$. [10M]

10. Discuss about the following: [10M]

- i) Copy Propagation.
- ii) Dead code Elimination.
- iii) Code motion.

OR

11. Explain in detail about machine dependent code optimization techniques with their drawbacks. [10M]
