

## 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 [5M]

S-&gt;aAB

A-&gt;bC/cd,

C-&gt;cd,

B-&gt;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 → L=R

S → R

L → \*R

L → id

R → 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 considering a sample c program. [10M]

**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]

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