

Code No.: AD504PC

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H.T.No.

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**CMR ENGINEERING COLLEGE: : HYDERABAD**  
**UGC AUTONOMOUS**

**III–B.TECH–I–Semester End Examinations (Supply)–June - 2025**

**AUTOMATA AND COMPILER DESIGN**

**(AI&DS)**

**[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.

**PART-A**

**(20 Marks)**

1. a) Give the formal definition of NFA with epsilon. [2M]
- b) What are finite automata with output? Give examples. [2M]
- c) List out the algebraic laws of regular expression. [2M]
- d) Differentiate tokens, patterns, and lexeme with examples. [2M]
- e) What is a parse tree? [2M]
- f) Write a short note on S-attributed grammar. [2M]
- g) What is the purpose of flow graph. [2M]
- h) Define scope and life time of variable. [2M]
- i) Write about the importance of last phase of the compiler. [2M]
- j) What is the Role of peephole optimization in compilation process? [2M]

**PART-B**

**(50 Marks)**

2. Explain the procedure of converting NFA with epsilon to NFA without epsilon. [10M]
- OR**
3. Illustrate conversion of Moore machine to Mealy machine with an example. [10M]
4. Explain about Specification of Tokens and Recognition of Tokens. [10M]
- OR**
5. Describe briefly different phases of compiler. [10M]
6. Illustrate Left factoring and Left Recursion with examples. [10M]
- OR**
7. Construct Predictive Parse Table for the grammar  $E \rightarrow E+T/T, T \rightarrow T^*F/F, F \rightarrow (E)|id$  and parse the string  $id+id*id$ . [10M]
8. Describe the representation of 3-address code with examples. [10M]
- OR**
9. Write down the translation procedure for control statement. [10M]
10. Explain optimization techniques on Basic Blocks with simple examples. [10M]
- OR**
11. Construct the DAG for following statement  $a+b*c+d+b*c$ . [10M]

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