

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- 2024
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

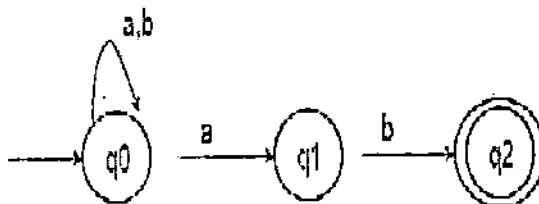
(20 Marks)

1. a) Define Alphabet, String and a Language in finite automata. [2M]
- b) Differentiate Moore Machine with Melay Machine. [2M]
- c) What is the role of Lexical Analyzer in Compiler? [2M]
- d) Define lexeme, token and pattern. [2M]
- e) List out the rules for FOLLOW set. [2M]
- f) Differentiate S-attributed and L-attributed grammars. [2M]
- g) What are the rules to determine the leaders of basic blocks? [2M]
- h) What is the use of algebraic transformation? [2M]
- i) Discuss relocatable machine code? [2M]
- j) Define address descriptor and discuss its importance. [2M]

PART-B

(50 Marks)

2. Convert the following NFA to DFA. [10M]



OR

3. Construct Mealy machine corresponding to Moore machine? [10M]

States (Q)	Next States		Output
	I/P=0	I/P=1	
→q1	q1	q2	0
q2	q1	q3	0
q3	q1	q3	1

4. Construct an equivalent FA for the given regular expression $(0+1)^*(00+11)(0+1)^*$ [10M]

OR

5. Construct Finite Automata for the regular Expression $1(01+10)^*00$. [10M]

6. Construct a LALR Parser for the Grammar: [10M]
S \rightarrow CC,
C \rightarrow CC,
C \rightarrow c/d

OR

- 7.a) Explain in brief about Type checking and Type Conversion. [5M]
b) Explain about the procedure for checking polymorphic functions. [5M]

8. Define Basic block? Explain in brief about optimization of basic blocks. [10M]

OR

- 9.a) Differentiate the machine dependent and machine independent code optimization? [5M]
What are their advantages? [5M]
b) How to represent the dummy blocks with no statements indicated in global dataflow analysis?

10. Define a Directed Acyclic Graph. Construct a DAG and write the sequence of instructions for the expression $a + a * (b - c) + (b - c) * d$. [10M]

OR

11. Explain the code generation process involving the environment of the code generator. [10M]
Explain the steps in code generation of the expression $(A + B) / C + D$. Assuming two machine registers are available.
