Code No.: R22IT601PC

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CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
III–B.TECH–II–Semester End Examinations (Regular) - June- 2025
AUTOMATA THEORY AND COMPILER DESIGN
(Common for IT, CSD)

[Time: 3 Hours] **[Max. Marks: 60]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 10 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 **(10 Marks)**

1.	a)	What is the need of finite automata?	[1M]
	b)	Define Deterministic Finite Automata.	[1M]
	c)	List the applications of regular expressions.	[1M]
	d)	Identify the major elements in Context free grammar.	[1M]
	e)	Explain the instantaneous description of a Turing Machine.	[1M]
	f)	Interpret key components of push down automata.	[1M]
	g)	List the phases of a compiler.	[1M]
	h)	If I is the set of items of LR parser, then model the CLOSURE (I).	[1M]]
	i)	Tell me about synthesized attributes.	[1M]
	j)	Examine the Three address code.	[1M]

PART-B **(50 Marks)**

2.	Construct a NFA to accept strings of a's and b's having substring aba.	[10M]
	OR	
3.	Explain the algebraic laws for regular expression.	[10M]
4.	Label the pumping lemma theorem for the Context free languages.	[10M]
	OR	
5.	What is ambiguous grammar? Show that the grammar E→E+E | E*E | (E) | id is ambiguous.	[10M]
6.	Build a PDA to accept the language L= {WCWR | W in (0+1)*} by empty stack.	[10M]
	OR	
7.	Design a Turing machine that accepts the language of all strings over the alphabet ∑={a,b}, whose second letter is b.	[10M]
8.	Explain about the classification of Top-Down Parsing with example?	[10M]
	OR	
9.	Simplify a LR(0) items for the grammar S→AB/aaB, A→a/Aa, B→b.	[10M]
10.	Write syntax directed definitions for constructing syntax tree of an expression derived from the grammar E→E1+T|E1-T|T, T→ (E)|id|num.	[10M]
	OR	
11.	Demonstrate the concept of evaluation order for syntax directed translation.	[10M]

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