

**PRAGATI ENGINEERING COLLEGE: SURAMPALEM
(AUTONOMOUS)**

III B.Tech II Semester Regular/Supplementary Examinations, April - 2024

**COMPILER DESIGN
(CSE)**

Time: 3 hours

Max. Marks: 70M

**Answer ONE Question from each Unit
All Questions Carry Equal Marks**

Q. No.	Questions		BTL	CO	Marks
UNIT – I					
1.	a)	Draw a block diagram of phases of a compiler and indicate the main functions of each phase.	K2	CO1	7M
	b)	Describe the role of Lexical Analyzer	K2	CO1	7M
OR					
2.	a)	Regular expressions are important for lexical analysis? Explain the reason with examples	K4	CO1	7M
	b)	Discuss in detail about Flex	K2	CO1	7M
UNIT – II					
3.	a)	Construct Predictive Parser for the following grammar $E \rightarrow TE^1$ $E^1 \rightarrow + TE^1 \mid \epsilon$ $T \rightarrow FT^1$ $T^1 \rightarrow *FT^1 \mid \epsilon$ $F \rightarrow (E) \mid id.$	K3	CO2	7M
	b)	Consider the grammar given below: $E \rightarrow E + E \mid E - E \mid E * E \mid E / E \mid a \mid b$ Construct Leftmost and Right derivations and parse tree for the string $a+b*a+b$	K3	CO2	7M
OR					
4.	a)	What is an ambiguous grammar? Show that the following grammar is ambiguous for the string “abab”. $S \rightarrow aSbS$ $S \rightarrow bSaS$ $S \rightarrow \epsilon$	K3	CO2	7M
	b)	Discuss the following: i) Left Recursion; ii) Left factoring.	K2	CO2	7 M
UNIT – III					
5.	a)	Write a short note on error recovery with LR parsers. How it is different from LL parsers?	K2	CO3	7M
	b)	Construct SLR parsing table for the following grammar $E \rightarrow E+T \mid T$ $T \rightarrow T * F \mid F$ $F \rightarrow (E) \mid id$	K3	CO3	7M

OR					
6.	a)	Construct shift reduce parsing for the following grammar $S \rightarrow S + S$ $S \rightarrow S * S$ $S \rightarrow id$ input string "id + id + id".	K3	CO3	7M
	b)	Differentiate between LR(1), Canonical-LR and LALR parsing methods.	K4	CO3	7M
UNIT – IV					
7.	a)	Explain Three Representations for the following three address code $-(a*b)+(c+d)-(a+b+c+d)$	K2	CO4	7M
	b)	With an example explain the applications of Syntax Directed Translation.	K2	CO4	7M
OR					
8.	a)	Explain the translation scheme for Boolean expression using the back patching technique	K3	CO4	7M
	b)	Write the quadruple, triple and indirect triple for the following statement. $X=(c*d)+(a*-b)$	K2	CO4	7M
UNIT – V					
9.	a)	Explain about the peephole optimization technique	K2	CO5	7M
	b)	Summarize the following concepts: (i) Flow graphs (ii) Data flow Analysis	K2	CO5	7M
OR					
10.	a)	Discuss in detail about Loop Optimization Techniques.	K2	CO5	7M
	b)	Discuss the design issues of Code Generator	K2	CO5	7M