R20 Regulation *Subject code:* **3P5FC**

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech V Semester Regular/Supplementary Examinations, February 2024

COMPILER DESIGN

(IT)

Maximum Marks: 70 22.02.2024 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

	Part-A	CO	Bloom Tx
All the following questions carry equal marks (10x2M=20 Marks)			
1	Define compiler and Interpreter.	CO1	L1
2	Extend the role of the Lexical Analyzer.	CO2	L2
3	Construct all possible parse trees corresponding to the string i+j*k.	CO2	L3
4	What is significance of lookahead operator in LR parsing?	CO2	L1
5	What is back patching,	CO3	L1
6	Construct parse tree and syntax tree for 4-6/3*5+7.	CO3	L3
7	List the issues in the design of a code generator.	CO4	L1
8	Explain Basic Blocks and flow graphs	CO4	L2
9	Copy propagation leads to dead-code elimination, Explain this with example.	CO5	L2
10	List the loops in Flow Graphs.	CO5	L1
	Part-B		
Answer All the following questions. (5X10M=50Marks)			Bloom Tx level
11	Explain input buffering and recognition of tokens in lexical analysis [10M]	CO1	L2
	OR		
12	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]	CO1	L2
13	a) Distinguish between Top down and bottom up parsing techniques. [4M] b) Construct LALR Parsing table with a suitable example. [6M]	CO2	L4 L3
	OR		
14	a) List in brief about types of LR parser. [5M] b) Remove the left recursion for the following grammar and also find FIRSTS and FOLLOWs. [5M] E→E + T | T T→T * F | F F → (E)/id	CO2	L4 L3
15	a) What are the three forms of intermediate code representations? Explain.	CO3	L2

	b) Define syntax directed transactions and perform the evaluation order of SDTS. [4M] [6M]		L1
	OR		
16	a) Explain type checking and type conversions with examples. [5M] b) Generate the three address code for $a = b * -c + b * -c$ [5M]	CO3	L2 L4
17	a) Explain in brief about Heap Storage allocation strategy. [5M] b) Develop the code generation for the d:=(a-b)+(a-c)+(a-c). [5M]	CO4	L2 L3
	OR		
18	a) Illustrate various method to handle peephole optimization. [6M] b) Summarize Dynamic Programming Code-Generation with suitable example. [4M]	CO4	L4 L2
19	What is Data-Flow Analysis and construct foundations of Data-Flow Analysis. [10M]	CO5	L3
	OR		
20	Explain constant propagation and Partial Redundancy Elimination with suitable example. [10M]	CO5	L2