R20 Regulation *Subject code: 3P5ED*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech V Semester Supplementary Examinations, April 2026

COMPILER DESIGN

(CSE)

Maximum Marks: 70 Date: 22.04.2026 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

All the following questions carry equal marks (10X2M=20 Marks)		Marks	CO	BTL
1	Differentiate token and pattern.	2M	1	L1
2	Define the Assembler and Linker.	2M	1	L1
3	Eliminate the left recursion for the following grammar E-->E+T/T T-->T*F/F F-->(E)/id	2M	2	L1
4	How can we collect Canonical collection of Items?	2M	2	L1
5	Define L-attributed definition.	2M	3	L1
6	Draw the DAG for the following expression: a+a*(b-c)+(b-c)*d.	2M	3	L1
7	Define Loop Optimization.	2M	4	L1
8	Define Code Motion.	2M	4	L1
9	What do you know about Live Variable Analysis?	2M	5	L1
10	Write about machine independent optimization.	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Explain the various the functionalities of a Lexical Analyzer.	10M	1	L2
	OR			
12	Describe the optimization of DFA-Based Pattern Matchers.	10M	1	L2
13	Explain about operator precedence parsing algorithm.	10M	2	L2
	OR			
14	Construct LALR Parsing table for the following grammar S → Aa | bAc | Bc | bBa A→ id B → d	10M	2	L2
15	Explain in detail about the various storage allocation schemes.	10M	3	L2
	Or			
16	Explain the construction of Syntax tree using SDT.	10M	3	L2
17	Consider the following matrix multiplication Program.	10M	4	L2

	begin
	for i := 1 to n do
	for j:=1 to n do
	c[i, j] :=0;
	for i := 1 to n do
	for j:=1 to n do
	for k :=1 to n do
	c[i, j] :=c[i , j] +a[i ,k] *b [k ,j]
	end
	(a) Construct a flow graph and find the loops in the flow graph
	(b) Move the loop-invariant computations out of the loops			

	Or			
18	Explain reducible and non-reducible flow graphs with an example.	10M	4	L2
19	Generate code for the following C statements: i. x= f(a) + f(a) + f(a) ii. x= f(a) /g(b,c) iii. x= f(f(a)) iv. x= ++f(a)	10M	5	L2
	Or			

20	Generate optimal machine code for the following C program.
	main()
	{
	int i, a[10];
	while (i<=10) a[i] =0
	}
		10M	5	L2