R22 Regulation *Subject code:4E6EB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Regular/Supplementary Examinations, April 2026

COMPILER DESIGN

(CSE)

Maximum Marks: 60 Date:16.04.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 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 (10X1M=10 Marks)

		Marks	CO	BTL
1.a)	Define Lexical Analysis.	1M	CO1	L1
b)	What are the different types of Language Processors?	1M	CO1	L1
c)	What is meant by Ambiguous Grammar?	1M	CO2	L2
d)	Define Context-Free Grammar (CFG).	1M	CO2	L1
e)	Define Syntax Directed Definition (SDD).	1M	CO3	L1
f)	What is an L-Attributed Definition?	1M	CO3	L1
g)	Define Heap Management.	1M	CO4	L2
h)	What is Peephole Optimization?	1M	CO4	L1
i)	Define Machine-Independent Optimization.	1M	CO5	L1
j)	What is meant by Loop Optimization?	1M	CO5	L2

Part-B

Answer All the following questions. (5X10M=50Marks)

		Marks	CO	BTL
2	a) Consider the following Conditional statement: if (x > 3) then y = 5 else y = 10; How does lexical analyzer help the above statement in process of compilation?	5M	CO1	L2
	b) Construct a Finite Automaton for the Regular Expression (00+11)*?	5M	CO1	L3
	OR			
3	a) Explain about phases of compiler with an example.	6M	CO1	L4
	b) Explain the Lex tool and its working in generating lexical analyzers.	4M	CO1	L2
4	a) Find the LR (0) set of items for the following grammar. Describe state diagram and construct parse table of that S → CC C → cC |d	6M	CO2	L4
	b) Check whether the following grammar is SLR(1) or not. S ->1S0|0S1|10.	4M	CO2	L3
	OR			

5	a) Discuss briefly about the classification of parsing techniques. b) Eliminate left recursion in the following grammar. A → ABd | Aa | a B → Be | b	 5M 5M	 CO2 CO2	 L4 L2
6	a) Explain Three-Address Code (TAC) and its representations with examples. b) Explain the intermediate code generation for procedures.	5M 5M	CO3 CO3	L3 L4
	OR			
7	a) Explain the different variants of syntax trees used in intermediate code generation. b) Draw syntax tree for the arithmetic expression $a * (b + c) - d/2$.Write the given expression in postfix notation.	5M 5M	CO3 CO3	L2 L2
8	a) Explain the storage organization of runtime environment with a diagram. b) Generate the code for the following expression: x = (a + b) – ((c + d) – e). Also Compute its cost.	3M 7M	CO4 CO4	L2 L3
	OR			
9	a) Explain the heap management techniques. b) Write the code generation for the d:=(a-b)+(a-c)+(a-c).	3M 7M	CO4 CO4	L2 L3
10	a) Explain the principle sources of optimization in compiler design. b) Explain Data Flow Analysis with suitable examples.	5M 5M	CO5 CO5	L2 L4
	OR			
11	a) Explain the role of control flow graphs in machine-independent optimization. b) Explain the concept of loops in flow graphs.	5M 5M	CO5 CO5	L4 L2