R22 Regulation *Subject code: 4E6EB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B. Tech VI Semester Supplementary Examinations, November 2025

COMPILER DESIGN

(CSE)

Maximum Marks: 60 Date: 21.11.2025 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	Bloom Tx
1.a)	Define semantic analyzer.	1M	CO1	2
b)	What is the role of the lexical analyzer in a compiler?	1M	CO1	1
c)	Write a note on the term context free grammar.	1M	CO2	2
d)	What do you mean by error recovery in predictive parsing.	1M	CO2	1
e)	Define backpatching.	1M	CO3	1
f)	What is the purpose of syntax-directed translation in compiler design?	1M	CO3	1
g)	Name any one technique used for garbage collection.	1M	CO4	1
h)	What is stack allocation of space in storage organization?	1M	CO4	1
i)	Define code generation.	1M	CO5	1
j)	What is the role of basic blocks in code generation?	1M	CO5	1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	What are the different phases of compiler? Explain the phases in detail.	10M	CO1	2
	OR			
3	a) Explain the concept of basic blocks and flow graphs in the context of code generation. How does optimization of basic blocks contribute to the efficiency of the generated code? b) Summarize about the input buffering scheme in lexical analyzer.	5M 5M	CO1	2
4	Construct a canonical parsing table for the grammer given below. E-->E+T F-->(E) E-->T F-->id T-->T*F T-->F and parse any string derived from the grammer.	10M	CO2	3
	OR			
5	Consider the following grammar. S-> AS|b, A->SA|a Construct the SLR parse table for the grammar. Show the actions of the parser for the input string abab.	10M	CO2	3
6	a) Explain three address codes and its types. How would you implement the three Address statement. Give example.	5M	CO3	2

	b) Explain How will you convert the following into intermediate code. (i) Assignments statements. (ii) Case statements.	5M		
	OR			
7	Explain the concept of Syntax-Directed Definitions (SDDs). How are evaluation orders determined for SDDs.	10M	CO3	2
8	Define a Directed Acyclic graph. Construct a DAG and write the sequence of Instructions for the expression a+a*(b-c)+(b-c)*d.	10M	CO4	2
	OR			
9	a) Explain the various issues in the design of code generation. b) What is an activation record? Explain how it is related with run time storage organization.	5M 5M	CO4	2
10	What is the purpose of code optimization? Explain in detail about loop Optimization with example.	10M	CO5	2
	OR			
11	a) What is an activation record? Explain how it is related with run time storage organization. b) Elaborate the various peephole optimization techniques in detail.	5M 5M	CO5	2