R20 Regulation *Subject code: 3P5ED*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech V Semester Supplementary Examinations, July 2024

COMPILER DESIGN

(CSE)

Maximum Marks: 70 Date:26.07.2024 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 tokens and patterns in compiler.	CO 1	L1
2	Differentiate the features of DFA and NFA.	CO 1	L1
3	Describe the four possible actions of LR Parsing.	CO 2	L1
4	Compute FIRST and FOLLOW for the following grammar S → AS S →b A →SA A → a	CO 2	L1
5	Define Type checker.	CO 3	L1
6	Examine the usage of syntax directed definition	CO 3	L1
7	Explain the storage allocation strategies	CO 4	L1
8	Discuss the any three uses of registers in code generation.	CO 4	L1
9	List out the properties of optimizing compilers.	CO 5	L1
10	Define the term data flow analysis	CO 5	L1
	Part-B		
Answer All the following questions. **(5X10M=50Marks)**			
11	A. Describe the Input buffering techniques in detail. [5] B. Construct your own example for recognition of tokens and explain in detail. [5]	CO 1	L2
	OR		
12	Construct Deterministic Finite Automata to accept the regular expression for: (0+1) * (00+11) (0+1) * [10]	CO 1	L2
13	A. Construct and explain what is Leftmost derivation and Rightmost derivation . Draw leftmost derivation and Rightmost derivation for the E->E+E|E*E| id [5]	CO 2	L2

	B. What is an ambiguous and unambiguous grammar? Identify the following grammar is ambiguous or not. E→E+E | E*E | (E) |-E |id for the sentence id + id * id [5]		
	OR		
14	A. Develop the actions of the parser for the input string "abab". [5] B. Describe on detail about the various types of parser with simple example. [5]	CO 2	L2

15	Develop the intermediate code for the following code segment along with the required syntax directed translation scheme. [10]
	while (i < 10)
	if (i % 2 == 0)
	evensum = evensum + i
	else
	oddsum = oddsum + i
		CO 3	L2

	OR		
16	A. Construct variants of Syntax tree. Explain in detail about it with suitable examples. [5] B. Describe in detail about types and declaration with suitable examples. [5]	CO 3	L2
17	Describe the usage of stack in the memory allocation and discuss in detail about stack allocation space of memory. [10]	CO 4	L2
	OR		
18	i) Explain in detail about instruction selection and register allocation of code generation. ii) Describe Addresses in the Target Code with simple example. [5+5]	CO 4	L2
19	Explain in detail about the data-flow schemas on basic block and the transfer equations for reaching definitions with example. [10]	CO 5	L2
	OR		
20	A. Demonstrate optimization of Basic Blocks with an example. [5] B. Explain Partial Redundancy Elimination with suitable example. [5]	CO 5	L2