

Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025

Fifth Semester

Computer Science and Engineering

CS3501 – Compiler Design

Regulations - 2021

Duration : 3 Hrs

Maximum : 100 Marks

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	Questions	BLT	CO	Marks
1.	List the various compiler construction tools.	L1	1	2
2.	Illustrate how a compiler differs from an interpreter.	L2	1	2
3.	What are grammar symbols?	L1	2	2
4.	Why are context-free grammars preferred for syntax analysis?	L2	2	2
5.	List the three kinds of three address code representation.	L1	3	2
6.	Why is type checking essential in intermediate code generation?	L2	3	2
7.	What is an activation record? Give the structure of an activation record.	L1	4	2
8.	Compare stack and heap allocation.	L2	4	2
9.	Give any four applications of DAG.	L1	5	2
10.	How will you determine the leader of basic blocks?	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11.	a Define Compiler. What are the various phases of compiler? Explain each phase in detail. Write down the output for each phase for expression. $a = b + c * 50$.	L2	1	16
	Or			
	b Illustrate how regular expressions are converted into finite automata (NFA and DFA) with suitable example.	L2	1	16
12.	a Explain the construction of predictive parse table and describe the moves of the parser on an input string Design LL(1) parser for the grammar. Show the moves of the parser on an input $E \rightarrow E+T \mid T \quad T \rightarrow T * F \mid F \quad F \rightarrow (E) \mid id$	L3	2	16
	Or			
	b Show that the grammar: $S \rightarrow SA \mid A$ $A \rightarrow a$ Is S is SLR(1) but not LL(1).	L3	2	16

13.	a	Construct the Syntax tree for the expression $3*4+5*2$ and draw the annotated parse tree. Write the corresponding SDT and generate the three-address code for the same.	L3	3	16
		Or			
	b	Transalate the following assignment statement into a three-address code: $d = (a-b)*(a-c)+(a-c)$. Write the necessary SDD.	L3	3	16
14.	a	What are the different storage allocation strategies? Explain with an example.	L2	4	16
		Or			
	b	Explain in detail about various issues in the design of code generator.	L2	4	16
15.	a	Illustrate the concept of principle sources of optimization with an example.	L3	5	16
		Or			
	b	Consider the following program fragment: fact(x) { int f = 1; for (i = 2; i <= x; i++) f = f * i; return f; } (i) Convert the following c program into three address statement (ii) Find the basic block in the code generated in (i) (iii) Construct a flow graph for the blocks in (ii)	L3	5	16