

**BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE
(AUTONOMOUS)**

III - B.Tech II-Semester Regular Examinations (BR23), MAY - 2026

COMPILER DESIGN (CSE)

Time: 3 hours

Max. Marks: 70

*Question Paper consists of Part-A and Part-B
Answer ALL the question in Part-A and Part-B*

PART-A (10X2 = 20M)

	Marks	CO	BL
1. a) Define lexeme and pattern	(2M)	CO1	1
b) Difference between DFA and NFA.	(2M)	CO1	1
c) Illustrate the ambiguity in grammar?	(2M)	CO2	2
d) What is parse tree?	(2M)	CO2	3
e) Define syntax-directed translation.	(2M)	CO3	1
f) Define attribute grammar.	(2M)	CO3	2
g) What is basic block?	(2M)	CO4	1
h) Define flow graph	(2M)	CO4	1
i) Interpret code generator?	(2M)	CO5	2
j) Outline the spilling?	(2M)	CO5	1

PART-B (5X10 = 50M)

2a. Explain the transition diagrams with example.	5(M)	CO1	2
b. Identify all phases of a compiler with diagram.	5(M)		3
(OR)			
3a. Compare DFA and NFA with suitable examples.	5(M)	CO1	4
b. Construct a DFA for the regular expression $a(a b)^*b$ and explain the steps.	5(M)		6
4a. Differentiate between LR Parser and SLR Parser	5(M)	CO2	4
b. Apply Eliminate left recursion with an example.	5(M)		3
(OR)			
5a. Construct LL(1) parsing table and verify the grammar with an example	5(M)	CO2	3
b. Evaluate shift-reduce parsing for $id + id * id$.	5(M)		5

6a.	Construct syntax-directed definition for arithmetic expressions.	5(M)	CO3	2
b.	Explain type conversion and coercion with an example.	5(M)		2
(OR)				
7a.	Explain syntax-directed definitions with examples.	5(M)	CO3	3
b.	Generate three-address code for expressions.	5(M)		
(OR)				
8a.	Explain data flow analysis in detail.	5(M)	CO4	2
b.	Apply common sub expression elimination on given code.	5(M)		3
(OR)				
9a.	Apply loop optimization techniques on given loop.	5(M)	CO4	2
b.	Determine the peephole optimization techniques with an example.	5(M)		5
(OR)				
10a	Explain runtime memory organization with diagram.	5(M)	CO5	2
b.	Compare and implement stack allocation vs heap allocation with example.	5(M)		4
(OR)				
11a	Discuss storage allocation strategies.	5(M)	CO5	3
b.	Apply Generate target code for a given expression $a = b + c * d$.	5(M)		3
