



VIT

Vellore Institute of Technology
(Approved by the University Grants Commission, India)

REGISTRATION NO. 240502430

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - II
WINTER SEMESTER 2024-2025

SLATE: VL + TPZ

Programme Name & Branch : MTech (5 Years Integrated)
Course Code and Course Name : CSI2005 - Principles of Compiler Design
Faculty Name(s) : M Nisanth Kartheek, Jenicka S, Sabyasachi Kamila, Nivitha K
Class Number(s) : VL2024250502977, VL2024250502430, VL2024250502436, VL2024250502439
Date of Examination: 21-03-2025
Exam Duration : 90 minutes
Maximum Marks: 50

General instruction(s):

- Answer All Questions
- M - Max mark; CO - Course Outcome; BL - Bloom's Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes
CO2: Develop language specifications using context free grammars (CFG).
CO3: Apply the ideas, the techniques, and the knowledge acquired for the purpose of developing software systems
CO4: Construct symbol tables and generate intermediate code.

Q. No	Question	M	CO	BL
1.	Consider the following CFG A → aBd A → aCb B → eB{d} B → e{d} C → eC{b} C → e{b} Construct the canonical collection of sets of LR(0) items for this grammar. Derive the Action and Goto tables. Is the grammar LR(0)? Justify. Check whether the Grammar can parse the string ae{b}b.	10	2	3
2.	Consider the following CFG A → BĈ B → x̂ B → Bx̂ C → B - C → D - D → y - D → Ey E → z Construct the canonical collection of sets of LR(1) items for this grammar. Construct the Parse table. Check whether the grammar is LALR(1). Justify your claim.	10	2	3
3.	Construct a Syntax Directed Translation (SDT) scheme that translates arithmetic expressions from Postfix to Prefix notation. Give annotated parse trees for the expressions: 68+5* and 685*+	10	3	2



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4.	Implement an L-Attributed SDD using Bottom-up Parsing for the following production. You may need to generate a three-address statement to jump to a particular label L, in which case you should generate <i>goto L</i> . $S \rightarrow \text{if } (C) \text{ S1 else S2}$	10	3	4
5.	Generate 3-Address Code for the following Code Snippet <pre>for (i=1; i<100; i++) { z = 3*i + 6; for (j=1; j<100; j++) { a[i][j] = b[i][j] * c[j][i] + z; } }</pre>	10	4	3