



VIT

Vellore Institute of Technology
(Deemed to be University under section 3 of U.K.A. Act, 1956)

REG.NO.:

SLOT: A2+TA2

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING CONTINUOUS ASSESSMENT TEST - I FALL SEMESTER 2025-2026

Programme Name & Branch : B.Tech & CSE
Course Code and Course Name : BCSE307L and Compiler Design
Faculty Name(s) : Prof. SUGANTHINI C, Prof. NIVITHA K, Prof. VISWANATHAN A, Prof. KRISHNARAJ N, Prof. MUTHUNAGAI S U, Prof. ARUMUGA ARUN R, Prof. BHAWANA TYAGI, Prof. ISLABUDEEN M, Prof. NAGA PRIYADARSINI R, Prof. BASKARAN P, Prof. RAGHUL J, Prof. VISHNU PRIYA A, Prof. MUKHTAR AHMAD SOFI, Prof. NITHYA K, Prof. BHUVANESWARI M
Class Number(s) : VL2025260101628, 1616, 1580, 1591, 1613, 1611, 1639, 1621, 1633, 1600, 1577, 1585, 6947, 1609, 1588
Date of Examination : 17-08-2025
Exam Duration : 90 minutes **Maximum Marks: 50**

General instruction(s):

- Answer All Questions
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyze, 5 - Evaluate, 6 - Create)

Course Outcomes:

- CO1. Apply the skills on devising, selecting, and using tools and techniques towards compiler design
- CO2. Develop language specifications using context free grammars (CFG).

No	Question	M	CO	BL
1.	You are given the following statement in a C-like language: $total = (price * quantity) + discount > threshold? bonus: 0;$ Explain how a modern compiler would process this statement through all the phases of compilation, from source code to machine code	10	1	2
2.	a) Construct a regular expression for the Language $L = \{w \in \{a, b\} \mid w \text{ starts with optional single occurrence of 'a', followed by zero or more occurrences of "ab", and ends with optional single occurrence of 'b'}\}$	3	1	2
	b) Identify first_pos, last_pos and follow_pos for the above regular expression using direct method.	7		
3.	Give a leftmost derivation, a rightmost derivation and parse tree for the following grammars and strings. Argue if the grammar is ambiguous or unambiguous, without resorting to building the parse table. (5 + 5 marks) (i) $S \rightarrow S + S \mid SS \mid (S) \mid S * \mid a$ with string $(a + a) * a$ (ii) $S \rightarrow S(S)S \mid \epsilon$ with the string $\{(())\}$	10	2	3
4.	a) Apply suitable transformation for the following grammar, so that it becomes suitable for predictive parsing. $S \rightarrow Sa \mid Sb \mid cAd \mid cAe$ $A \rightarrow f \mid g$	5	2	3
	b) Illustrate whether shift reduce parsing is possible for the string: aaa^*a^{++} on the grammar: $S \rightarrow SS^+ \mid SS^* \mid a$	5		
5.	Construct the SLR sets of Items for the grammar $S \rightarrow SS^+ \mid SS^* \mid a$ with the parsing table. Is the grammar being suitable for SLR?	10	2	3
