CBCS SCHEME

USN | | | | | | | | | | BCS613C/BIS613C

Sixth Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
Compiler Design

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Explain different phases of compiler with example position = initial + rate * 60	10	L2	CO1
	b.	Describe an overview of different software productivity tools.	6	L2	CO1
	c.	How program translations used in compiler. Justify with types.	4	L3	CO1
		OR			
Q.2	a.	What is Complier? Explain a language processing system.	10	L1	CO1
	b.	Describe applications of compiler technology with respect to i) Implementation of high level programming languages ii) Optimization for computer architecture	6	L2	CO1
	c.	Write intermediate code for "do i = i + 1 ; while (a [i] < v) ;"	4	L3	CO1
		Module – 2			
Q.3	a.	Explain input buffering strategy used in Lexical analysis.	8	L1	CO2
	b.	Construct the transition diagram to recognize the tokens given below i) Relational operation ii) Unsigned number	8	L2	CO2
	c.	Eliminate left recursion of the following grammars. i) L → L, id / id ii) rfactor → rfactor * | rprimary	4	L3	CO2
		OR			
Q.4	a.	Explain two ways to handle Reserved words and identifiers.	8	L1	CO2
	b.	Discuss different error recovery strategies.	8	L2	CO2
	c.	Write four operations on language with example.	4	L3	CO2
		Module – 3			
Q.5	a.	Construct predictive parsing table for following grammar based on LL(1) of top down approach. Also verify id * id is valid or not. E → E + T | T T → T * F | F F → (E) | id	10	L3	CO3
	b.	With predictive parsing table prove that following is not LL(1) grammar. S → iEtSS' | a S' → eS | E E → b	10	L3	CO3

		OR			
Q.6	a.	Explain the strategy of shift reduce parser and construct configurations of shift reduce parser on input id_1 * id_2 by applying suitable grammar, E → T, T → T * F | F, F → id.	10	L3	CO3
	b.	Write First and Follow for the following grammars : i) S → Aa Ab | Bb Ba A → ∈ B → ∈ ii) S → a Bh B → cC C → bC | ∈ E → g | ∈ F → f | ∈	10	L3	CO3
		Module – 4			
Q.7	a.	Show that the following grammar in SLR (1) S → S A | A A → a	10	L3	CO3
	b.	What is inherited and synthesized attributes? Write SDD for simple desk calculator based on bottom up approach.	10	L2	CO4
		OR			
Q.8	a.	Construct set of LR (0) items and SLR parsing table for E → E + n | n	10	L3	CO3
	b.	Discuss S attributes and L attributes. Write annotated parse tree for 3 * 5 using grammar suitable for top down parsing.	10	L2	CO4
		Module – 5			
Q.9	a.	What is a three address code? Explain the different ways of representing three address codes with examples.	10	L1	CO5
	b.	Build Directed Acyclic Graph (DAG) and steps for constructing the DAG along with SDD for the given expression a + a * (b – c) + (b – c) * d	10	L2	CO5
		OR			
Q.10	a.	Explain the issues in the design of code generation.	10	L1	CO5
	b.	Discuss a simple target machine model along with different kinds of instructions and addressing modes.	10	L2	CO5

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