CBCS SCHEME

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BCS613C

Sixth Semester B.E./B.Tech. Degree Examination, June/July 2025
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 the various phases of compiler with a neat diagram. Show the translation for assignment statement. Position = initial + rate * 60	10	L2	CO1
	b.	Write a short note on evolution of compilers.	10	L2	CO1
		OR			
Q.2	a.	Explain the various applications of compiler technology.	10	L2	CO1
	b.	Explain the following with help of examples. i) Static scope and Block scope ii) Parameter passing mechanism.	10	L2	CO1
		Module – 2			
Q.3	a.	Explain input buffering strategy used in lexical analysis. Explain how sentinels are handled using buffer.	10	L2	CO2
	b.	Define the following terminologies with example for each i) Prefix ii) Suffix iii) Substring iv) Proper prefix v) Proper suffix	10	L1	CO2
		OR			
Q.4	a.	List the different notations along with their meaning used to form regular expression. Enlist the algebraic law for regular expression.	10	L2	CO2
	b.	Build a regular expression and construct transition diagram for the following tokens. i) Unsigned number ii) Identifiers	10	L2	CO2
		Module – 3			
Q.5	a.	Given a grammer E → E + T/T T → T * F/F F → (E) /id i) Compute FIRST and FOLLOW set ii) Construct the predictive parsing table iii) Show the moves made by predictive parse on input id + id * id	10	L3	CO3
	b.	Construct shift reduce parser for the following grammer s → ss + |ss * |a for input string → aaa * a++	10	L3	CO3

		OR			
Q.6	**a.**	Explain the different types of conflicts in shift – reduce parser using the grammer $E \rightarrow E + E \mid E - E \mid num \mid id$ for input string $2 + 3 * 4$	**10**	**L2**	**CO3**
	b.	Write a recursive descent for the following grammer $E \rightarrow TE_1$ $E_1 \rightarrow + TE_1 \mid \in$ $T \rightarrow FT_1^*$ $T_1 \rightarrow * FT_1 \mid \in$ $F \rightarrow (E) \mid id$	**10**	**L2**	**CO3**
		Module – 4			
Q.7	**a.**	Consider the following grammer $S \rightarrow L = R \mid R$ $L \rightarrow * R \mid id$ $R \rightarrow L$ i) Construct set of LR(1) items ii) Construct LR(1) canonical parsing table.	**10**	**L3**	**CO4**
	b.	Write an SDD for simple desk calculator and show annatated parse tree for the expression $3 * 5 + 4$ n	**10**	**L2**	**CO4**
		OR			
Q.8	**a.**	Consider the grammer $S \rightarrow c\ Ad$ $A \rightarrow ab \mid a$ i) Construct canonical sets of LR(0) item ii) Construct SLR parsing table.	**10**	**L2**	**CO4**
	b.	Explain synthesized attributes and inherited attributes. Write a semantic rule for the following grammer $T \rightarrow FT^1$ $T^1 \rightarrow * FT^1{}_1$ $T^1 \rightarrow \in$ $F \rightarrow digit$ Also construct a dependence graph using above grammer for the expression $3 * 5$	**10**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	Discuss the various issues in code generation phase.	**10**	**L2**	**CO5**
	b.	Explain the following with examples for each i) Quadraples ii) Triples iii)Indirect triples iv) 3 – address code v) Static single Assignment form.	**10**	**L2**	**CO5**
		OR			
Q.10	**a.**	What are the functions of Intermediate code generation? Obtain the directed a cyclic graph (DAG) for the expression . $a + a * (b - c) + (b - c) * d$	**10**	**L2**	**CO5**
	b.	Briefly describe the simple target language Model.	**10**	**L2**	**CO5**

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