Q. Code:761423

Reg. No. | | | | | | | | | | | | | |

B.E./ B. TECH.DEGREE EXAMINATIONS, MAY 2024

Sixth-Semester

CS18602 – COMPILER DESIGN

(Computer Science and Engineering)

(Regulation 2018/2018A)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	The student will be able to understand the major phases of compilation.	**2**
CO 2	The Students will gain the skill to design and implement a prototype of compiler.	**3**
CO 3	The Students can identify the parsers and practice the experiments.	**3**
CO 4	The Students can apply the various optimization techniques.	**3**
CO 5	The Students can acquire knowledge about different compiler construction tools.	**2**

PART- A (10x2=20Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Justify how cross compiler differ from conventional compiler.	**1**	**2**
2.	State any two reasons why phases of compiler should be grouped.	**1**	**2**
3.	Write a regular expression for identifier and number.	**2**	**3**
4.	List the various parts in LEX program.	**2**	**3**
5.	Write about kernel and non-kernel items.	**3**	**3**
6.	Eliminate left Factoring from the following grammar **A → aAB / aBc / aAc**	**3**	**3**
7.	How synthesized attribute could differ from inherited attribute?	**4**	**3**
8.	Construct the Abstract Syntax Tree for the expression **a=b*-c +b*-c**	**4**	**3**
9.	List the properties of optimizing Compiler.	**5**	**3**
10.	Outline the importance of reduction in strength. Give example.	**5**	**2**

PART- B (5x 14=70Marks)

			Marks	CO	RBT LEVEL
11. (a)		Explain the various phases of compiler and trace the output for each phase of compilation for the following statement. **a = b + c * 50**	**(14)**	**1**	**2**
		(OR)			
(b)	**(i)**	Illustrate in detail about the role of lexical analyzer.	**(8)**	**1**	**2**
	(ii)	How would you elaborate the reason for grouping the various phases in to passes?	**(6)**	**1**	**2**

12. (a)		Illustrate the need and the primary role of lexical analyzer with error recovery strategies.	**(14)**	**2**	**3**
		(OR)			
(b)	**(i)**	Discuss the importance of LEX tool with needed libraries.	**(6)**	**2**	**3**
	(ii)	Write a simple LEX code to count the number of vowels and consonants for the given input file.	**(8)**	**2**	**3**
13. (a)	**(i)**	Construct a parse tree for the given grammar and also parse the input string **w = cad** using top-down parser. **S →cAd** **A → ab | a**	**(4)**	**3**	**3**
	(ii)	Construct Predictive parsing table using FIRST and FOLLOW for the given grammar. **S→ a | ^ | (T)** **T→T, S | S**	**(10)**	**3**	**3**
		(OR)			
(b)		Consider the grammar given below **S → CC** **C → cC | d** Construct a SLR parsing table for the above grammar and also parse the string **w = cdcd**	**(14)**	**3**	**3**
14. (a)		Elaborate in detail about the implementation of simple type checker.	**(14)**	**4**	**3**
		(OR)			
(b)		Explain in detail about the various storage allocation strategies for run time environment.	**(14)**	**4**	**3**
15. (a)		Discuss in detail about the Principal Sources of Code Optimization with example.	**(14)**	**5**	**3**
		(OR)			
(b)	**(i)**	Construct a DAG and write the three address-code for the given expression. Also explain about how DAG will help for intermediate code generation. **a + a*(b-c)+(b-c)*d**	**(8)**	**5**	**3**
	(ii)	Write about the simple Code Generation Algorithm.	**(6)**	**5**	**3**

PART- C (1x 10=10Marks)

(Q.No.16 is compulsory)

			Marks	CO	RBT LEVEL
16.		Demonstrate in detail about Syntax Directed Translation for expression grammar. Also construct the annotated parse tree for the expression **3*5+2**	**(10)**	**4**	**5**

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