

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer/Winter 2023 - 24 Examination

Semester: 6**Subject Code: 203105351****Subject Name: Compiler Design****Date: (dd/mm/yyyy)****Time: (2hr: 30min)****Total Marks: 60****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1	Objective Type Questions - (Fill in the blanks, one word answer, MCQ-not more than Five in case of MCQ) (All are compulsory) (Each of one mark)	(15)	CO	PO	Bloom's Taxonomy
	1. What is the primary purpose of lexical analysis in a compiler? a) To generate intermediate code b) To identify tokens from the input source code c) To perform syntax checking d) To optimize the generated code		Co-1	1	U
	2. Which of the following is NOT a phase in a compiler? a) Lexical Analysis b) Semantic Analysis c) Code Optimization d) Program Execution		Co-1	1	U
	3. Which data structure is commonly used to implement a symbol table in a compiler? a) Stack b) Queue c) Hash Table d) Linked List		Co-3	1	U
	4. What is the purpose of semantic analysis in a compiler? a) To convert the source code into tokens b) To check for syntax errors c) To assign meaning to the syntactically valid constructs d) To generate machine code from intermediate code		Co-2	1	U
	5. Which of the following is NOT a technique used in code optimization? a) Dead code elimination b) Constant folding c) Loop unrolling d) Lexical analysis		Co-5	1	U
	6. In lexical analysis, the task of grouping characters into meaningful sequences is called _____.		Co-1	1	U
	7. A _____ is a data structure used to store information about identifiers, such as variable names, in a compiler.		Co-2	1	U
	8. _____ is the process of checking whether the syntax of the source code conforms to the grammar rules of the programming language.		Co-3	1	U
	9. Code _____ techniques aim to improve the efficiency of the generated machine code by reducing its size or execution time.		Co-4	1	U

	10. The process of determining the meaning associated with the syntactically valid constructs of a programming language is called _____ analysis.		Co-3	1	U
	11. Which phase of compiler detect logical errors?		Co-1	1	U
	12. Define Interpreter.		Co-1	1	U
	13. Name one type of error that syntax analysis phase of a compiler detects.		Co-2	1	U
	14. which parser (Top Down/ Bottom up) cannot handle ambiguous grammar?		Co-3	1	U
	15. Which phase of a compiler is responsible for checking whether variables are used before they are defined? a) Lexical Analysis b) Semantic Analysis c) Syntax Analysis d) Code Generation		Co-3	1	U
Q.2	Answer the following questions. (Attempt any three)	(15)			
	A) What are the types of conflicts that can happen in bottom-up parsers? Choose one and explain it in detail.		Co-3	2	A
	B) What is the role of Lexical Analysis? Explain primary and secondary duties of it.		CO-2	2	A
	C) Discuss Activation Record.		Co-4	2	U
	D) Provide a syntax-directed definition for a basic desk calculator. Draw an annotated parse tree for the expression "3*5+4n".		Co-4	3	U
Q.3	A) What is Operator Grammar? Explain Operator precedence parser for the operators +,-,*,/,id,\$.	(07)	Co-3	2	U
	B) Check given grammar is LL(1) but not SLR(1). $S \rightarrow AaAb \mid BbBa$ $A \rightarrow \epsilon$ $B \rightarrow \epsilon$	(08)	Co-3	3	An
	OR				
	B) Construct CLR parsing table for the following grammar. $S \rightarrow CC$ $C \rightarrow cC \mid d$	(08)	Co-3	2	U
Q.4	A) Discuss peephole optimization techniques with examples.	(07)	Co-5	1	U
	OR				
	A) Write the generic issues in the design of code generators.	(07)	Co-5	1	U
	B) List the intermediate code generation techniques. For the equation $x = -a*b + -a*b,$ Generate Quadruple, Triple and Indirect Triple for the given equation.	(08)	Co-4	2	An