Reg. No.												

Question Paper Code	11594

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022
Fifth Semester
Computer Science and Business Systems
20CBPC501 - COMPILER DESIGN
(Regulations 2020)

Duration: 3 Hours   Max. Marks: 100

PART - A (10 × 2 = 20 Marks)
Answer ALL Questions

		Marks, K-Level, CO
1.	List few automata tools for generating phases of compiler.	2,K1,CO1
2.	Write the regular definition for keywords.	2,K2,CO1
3.	List the steps involved in constructing an LL(1) Parser.	2,K1,CO2
4.	Write atleast two LMD, for the word, id+id*id using the grammar, S->S+S|S*S|S-S|id	2,K2,CO2
5.	Compare S – attributed SDT and L – attributed SDT.	2,K2,CO3
6.	Show syntax tree for the expression a = b * - 10 + b * - 10 +e.	2,K2,CO3
7.	Draw the structure of a symbol table.	2,K1,CO4
8.	Tabulate the three address code for the statement a=b*-c+b*c+e*f-10.	2,K2,CO4
9.	What is loop optimization? Give few techniques.	2,K1,CO5
10.	What is type checking?	2,K1,CO5

PART - B (5 × 13 = 65 Marks)
Answer ALL Questions

11. a) (i) Write the steps used in converting NFA with ε to DFA. How to prove their equivalence?   5,K2,CO1

   (ii) Draw the ε-NFA to recognize floating point constants and convert it to DFA.   8,K3,CO1

OR

b) Elaborate about the various phases of a compiler in detail with example. Give the output of each phase for the statement c=(a+b)*e/f.   13,K2,CO1

12. a) Indicate the steps for constructing the LR(0) parsing table using the given context free grammar.   13,K3,CO2
   S -> (L)|a
   L -> L,S |S

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **11594**

OR

    b)   Explain LALR (1) parser generation using yacc and bison.   *13,K2,CO2*

13.   a)   (i) How to evaluate an SDD at the nodes of a parse tree. Explain.   *6,K2,CO3*
          (ii) How scope of a variable is maintained? Explain.   *7,K2,CO3*

OR

    b)   (i) Elaborate about the Symbol table creation and management during compilation.   *7,K2,CO3*

         (ii) Explain the Process of maintaining Run time environments.   *6,K2,CO3*

14.   a)   Explain about the local code optimization techniques with examples.   *13,K2,CO4*

OR

    b)   Explain about the Loop optimization techniques with examples.   *13,K2,CO4*

15.   a)   Explain various issues in the design of code generator.   *13,K2, 5*

OR

    b)   Write an algorithm to generate the target code and explain.   *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16.   a)   Check whether the following grammar   *15,K2,CO2*
         S->Aa|bAc|Bc|bBa
         A->d
         B->d
         is LR(1) or not.

OR

    b)   Construct FIRST and FOLLOW for the following grammar, and construct LL(1) parsing table.   *15,K3,CO2*
               E -> E+T | T
               T -> T*F | F
               F -> (E) | id