

**R18**

Code No: 156AH

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, July - 2023

COMPILER DESIGN

(Common to CSE, ECM, CSE(DS))

Time: 3 Hours

Max. Marks: 75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

**PART - A**

**(25 Marks)**

- 1.a) Define Compiler. [2]
- b) What do you mean by Lexeme? [3]
- c) Differentiate top-down parsing and bottom up parsing. [2]
- d) List the rules for computing the FIRST Set for a giving CFG. [3]
- e) Define L – attributed definition. [2]
- f) List the forms of three address code. [3]
- g) Define basic block. [2]
- h) Define peephole optimization. [3]
- i) What is reduction in strength optimization? [2]
- j) What is the purpose of data flow analysis? [3]

**PART - B**

**(50 Marks)**

- 2.a) Illustrate different Phases of a Compiler.
- b) Design Finite Automata for the following Regular Expression. [5+5]  
(0\*+1\*) 10101 (0\*1\*)

**OR**

- 3.a) Explain the role of Lexical Analyzer by using Input Buffering Concept.
- b) Design finite automata for the language all strings over the alphabet {a,b} ending with ab. [5+5]

4. What is the use of look ahead symbol in LALR parsing? Construct set of LR(1) items for LALR parser.

$S \rightarrow CC$

$C \rightarrow aC \mid d$

[10]

**OR**

5. Distinguish between SLR, CLR, and LALR. CLR is more powerful than other, justify with an example. [10]

QA QA QA QA QA QA QA G

- 6.a) Construct the syntax directed definition for “*while loop*” and “*case statement*”.  
b) What is Type system? Distinguish static and dynamic checking of types. [5+5]

QA QA QA QA QA QA QA QA QA G

- 7.a) Differentiate synthesis and inherited attributes with examples.  
b) Explain in brief about equivalence of type expressions. [5+5]

- 8.a) Describe the different data structures that are used in symbol table organization.  
b) Explain about optimization of basic block. [5+5]

QA QA QA QA QA QA QA QA QA G

- 9.a) Discuss the design issues in code generation.  
b) Explain about dynamic programming code generation. [5+5]

- 10.a) Discuss about partial redundancy elimination.  
b) Explain about loop optimization. [5+5]

QA QA QA QA QA QA QA QA QA G

- 11.a) Explain about optimization local and global sub expression elimination.  
b) What is dead code? How to identify and eliminate dead code? [5+5]

---ooOoo---

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G