

III B. Tech I Semester Supplementary Examinations, Dec/Jan – 2022-23

COMPILER DESIGN

(Computer Science & Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answer **ALL** the question in **Part-A**
 3. Answer any **FOUR** Questions from **Part-B**
- ~~~~~

PART –A

(14 Marks)

1. a) Define regular expression. Give example. [2M]
- b) Write the rule to find the first and follow function. [2M]
- c) List the properties of LR parser. [2M]
- d) List various intermediate code representations. [3M]
- e) Write the fields and uses of symbol table. [3M]
- f) Compare local optimization with global optimization. [2M]

PART –B

(56 Marks)

2. a) What do you mean by front end in the compiler design? Show the output produced by it in different stages for $a:=b*c/36$; where a, b and c are real numbers. [9M]
- b) Write a regular expression for identifiers and reserved words. Design the transition diagrams for them. [5M]
3. a) Eliminate left recursion in the following grammar [5M]
 $A \rightarrow ABd \mid Aa \mid a, B \rightarrow Be \mid b$
- b) Construct the collection of LR(0) item sets and draw the goto graph for the grammar $S \rightarrow S S \mid a \mid \epsilon$. Indicate the conflicts (if any) in the various states of the SLR parser. [9M]
4. a) Write and explain the Syntax Directed definition for the grammar $E \rightarrow E1+T/E1-T/T, T \rightarrow (E)/id/num$. [7M]
- b) Explain the process of handling “Dangling-ELSE” ambiguity. [7M]
5. a) Define Type Checker. Write down the specification of a simple Type Checker [7M]
- b) Write the quadruple, triple, indirect triple for the expression $X=(a*b) + (c+d)-(a+b+c+d)$ [7M]
6. a) What is an activation record? Explain how it is related with run time storage organization? [7M]
- b) Write the algorithm to generate basic blocks and flow graph for quick sort algorithm. [7M]
7. a) What is machine independent optimization? What are the different techniques used for it. [7M]
- b) What is Peephole optimization? Explain its characteristics. [7M]