

III B. Tech I Semester Supplementary Examinations, March- 2021
COMPILER DESIGN

(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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**PART -A****(22 Marks)**

1. a) Write the merits and demerits of single pass compiler. [3M]
- b) How to left factor the grammar? Give Example. [4M]
- c) Differentiate between LR and LL Parsers. [4M]
- d) What is the role of type system in type checker? [4M]
- e) Give the structure of symbol table. [4M]
- f) What is code optimization? How is it achieved? [3M]

**PART -B****(48 Marks)**

2. a) Explain the chief tasks of a lexical analyzer with an example. [8M]
- b) What is a regular expression? Write the regular expressions for the patterns of identifiers and float constants. [8M]
3. a) Construct a Context-Free Grammar (CFG) for roman numerals. [8M]
- b) Explain the error recovery actions in a lexical analyzer. [8M]
4. a) What is Dangling ELSE ambiguity? How it can be solved with LR parsers? Explain with an example. [8M]
- b) Check whether the following grammar is SLR(1) or not.  $S \rightarrow 1S0|0S1|10$ . [8M]
5. a) Compare the various forms of three address code. [8M]
- b) What is an Abstract syntax tree? How to construct it? Explain by writing syntax directed definition. [8M]
6. a) Identify the basic blocks and draw the flow graph for finding the sum of 'n' natural numbers program. [8M]
- b) Discuss the generic issues in the design of a code generator. [8M]
7. a) Explain how loop optimizations are different from local optimizations? [8M]
- b) Write the algorithm for simple code generator. And show with an example how instruction scheduling can affect the efficiency of generated code? [8M]

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