

III B. Tech I Semester Supplementary Examinations, October/November - 2020
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. Answer **ALL** the question in **Part-A**
 3. Answer any **FOUR** Questions from **Part-B**
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PART -A**(14 Marks)**

1. a) Analysis pass is machine independent? Justify your answer. [2M]
- b) How semantic analyzer processes imperative statements? [2M]
- c) Differentiate kernel and non- kernel items. [2M]
- d) Write the three-address code for a while-do statement. [3M]
- e) Explain the rules to construct a flow graph. [3M]
- f) Write short notes on flow-of-control optimization. [2M]

PART -B**(56 Marks)**

2. a) Describe the functionality of Scanner? Design a simple scanner for the postfix notation algorithm. [7M]
- b) Explain various building blocks used to design a language translator. [7M]
3. a) Write the limitations of recursive descent parser with an example of grammar. [5M]
- b) Discuss the following: [9M]
 - i) Structure of LR(0) parser
 - ii) Action and Goto operations
 - iii) Error handling in syntax analysis.
4. a) $L \rightarrow En$, $E \rightarrow E+T/T$, $T \rightarrow (T/F)/F$, $F \rightarrow (E)/num$ for the given desktop calculator generate syntax directed translator scheme. [7M]
- b) What is the use of sentential forms in bottom-up parsing especially in shift-reduce operations? Explain with an example. [7M]
5. a) Explain the translation scheme for Boolean expression using the back patching technique. [7M]
- b) For the given expression generate different kinds of three-address codes and explain the storage requirements of each: [7M]

$$A=b/c+d*s-60\%r-h.$$
6. a) Discuss and analyze all the allocation strategies in a run-time storage environment. [7M]
- b) Write the algorithm for a simple code generator. And explain various issues that affect the efficiency of generated code. [7M]
7. a) What is code optimization? Explain about various levels and types of optimizations. [7M]
- b) Describe the application of peephole? What kinds of peephole techniques can be used to perform machine-dependent optimizations? [7M]
