

Code No: RT31051

**R13****SET - 1****III B. Tech I Semester Supplementary Examinations, October/November - 2018****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**

**PART -A**

- 1 a) Write the regular definition and transition diagram for identifiers and reserved words. [3M]  
b) Differentiate Parse tree and Syntax tree with an example. [4M]  
c) What is the significance of Operator precedence [4M]  
d) What is semantic rule? How to evaluate the semantic rules? [4M]  
e) Write a short note on peephole optimization. [4M]  
f) What is strength reduction? Give an example. [3M]

**PART -B**

- 2 a) Explain the role of assembler, compiler, loader and linker in the language processing system. [8M]  
b) Write about the following with respect to lexical analyzer. [8M]  
i) Relationship with regular expressions and regular definitions ii) Lexical errors.
- 3 a) Explain the structure of predictive parser. How to handle error in it? [6M]  
b) Construct the non recursive predictive parse table for the given grammar and check the acceptance of input string **abfcg** [10M]  
 $S \rightarrow A$   $A \rightarrow aB/Ad$   $B \rightarrow bBC/f$   $C \rightarrow cg$
- 4 a) Explain the working principle of CLR(1) parser and construct the parse table for the given grammar  $S \rightarrow L=R/R$   $R \rightarrow L$   $L \rightarrow *R/id$  [10M]  
b) Using the CLR (1) table constructed above check the acceptance of input string **id=id/id** and also explain the algorithm for this. [6M]
- 5 a) What is intermediate code? Translate the expression **(a+b)/(c+d)\*(a+b/c)-d** into quadruples, triples and indirect triples. [8M]  
b) Write and explain the Syntax Directed definition for the grammar [8M]  
 $E \rightarrow E1+T/E1-T/T$   $T \rightarrow (E)/id/num.$
- 6 a) Consider the C program and generate the code and Write different object code forms [8M]  
`Main() { int i, a[10]; while (i<=10) a[i]=i*5; }`  
b) What is Activation Record? Explain its usage in stack allocation strategy. How it is different from heap allocation? [8M]
- 7 Explain the following machine independent optimization techniques. [6M]  
a) Common sub expression and dead code elimination [6M]  
b) Copy propagation, constant folding. [5M]  
c) Instruction scheduling. [5M]

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