Code No: **RT42192** **R13** **Set No. 1**

IV B.Tech II Semester Regular/Supplementary Examinations, April - 2018

AUTOMATA THEORY AND COMPILER DESING

(Electronics and Computer Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
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PART–A *(22 Marks)*

1. a) Define DFA and NFA. [4]
   b) What is ambiguous grammar? Explain with example. [4]
   c) What is Context free Grammar? [3]
   d) Write about Left recursion with an example. [4]
   e) Define Symbol table. [3]
   f) What are the code improving transformations on basic blocks? [4]

PART–B *(3x16 = 48 Marks)*

2. a) Write the regular expression for the following over {a,b} such that each string start and ends with the different symbol. [8]
   b) Construct a Finite Automata for the Regular expression (00+11)*00. [8]

3. a) If G is the grammar S→ SbS/a, consider W=abababa and show that G is ambiguous? [8]
   b) Let G be the grammar S→0B/1A, A→0/0S/1AA, B→1/1S/0BB for the string 00110101 find LMD, RMD and derivation tree? [8]

4. a) Differentiate between Bottom up and Top down parsing techniques. [8]
   b) Construct SLR Parsing table for the grammar E→E+T/T, T→T*F/F,F→(E)/id. [8]

5. a) Translate the expression -(a+b) * (c+d) + (a+b+c) in to Quadruple, Triple and Indirect triple. [8]
   b) Discuss in brief about overloading of functions and operators. [8]

6. a) What are self organizing lists? How can this be used to organize a symbol table? Explain with an example? [8]
   b) Explain in brief about static storage allocation strategy. [8]

7. a) Explain in brief about the structure preserving transformation of basic blocks? [8]
   b) Define code generation? What are the issues in the design of a code generator? [8]