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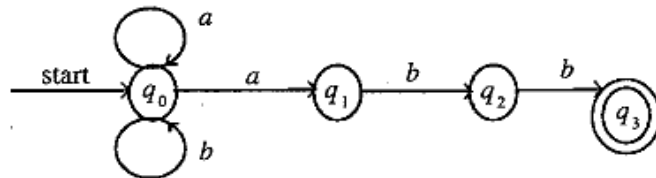
**CS-7002 (CBGS)****B.E. VII Semester**

Examination, November 2019

**Choice Based Grading System (CBGS)****Compiler Design***Time : Three Hours**Maximum Marks : 70*

- Note:** i) Attempt any five questions.  
 ii) All questions carry equal marks.  
 iii) Part (a) and (b) of the question selected is to be solved.

- Explain different phases of compiler.
  - Explain the role and function of the lexical analyzer. What are the main issues in design of lexical analyzer?
- Obtain a DFA equivalent to the NFA given:



- Differentiate between NFA and DFA under following points:

Power, Transition function, Time complexity, Supremacy, Transition Diagram and Transition Table.

- Differentiate between Top Down Parsing (Predictive Parsing) and Bottom Up Parsing (Shift Reduce Parsing).
  - Consider the grammar:  
 $S \rightarrow aAcBc$   
 $A \rightarrow Ab / b$   
 and  $B \rightarrow d$   
 Shift reduce for the string  $abcbdc$ . Define handle and handle pruning.
- Why is it necessary to eliminate left recursion in top down parsing? Consider predictive parsing table for:  
 $S \rightarrow (L) / a$   
 $L \rightarrow L, s/s$
  - Differentiate between simple LR parser and canonical LR parser.
- What is the difference between synthesized and inherited attribute? Explain with example.
  - Explain about the syntax directed translation scheme for the Boolean expression with example.
- What is activation tree? How control stack is maintained with the help of activation tree? Explain with example.
  - Explain the concept of static, stack and heap allocation.
- Explain the terms basic blocks and flow graphs.
  - Construct syntax tree and DAG for the following expression.  
 $a := b * - c + b * - c$
- Write short notes on:
    - Global Data Flow Analysis
    - Loop Optimization
  - Explain the concept of dead code elimination.

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