B.Tech IV Year I Semester (R09) Supplementary Examinations June 2017

AUTOMATA & COMPILER DESIGN

(Electronics & Computer Engineering)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

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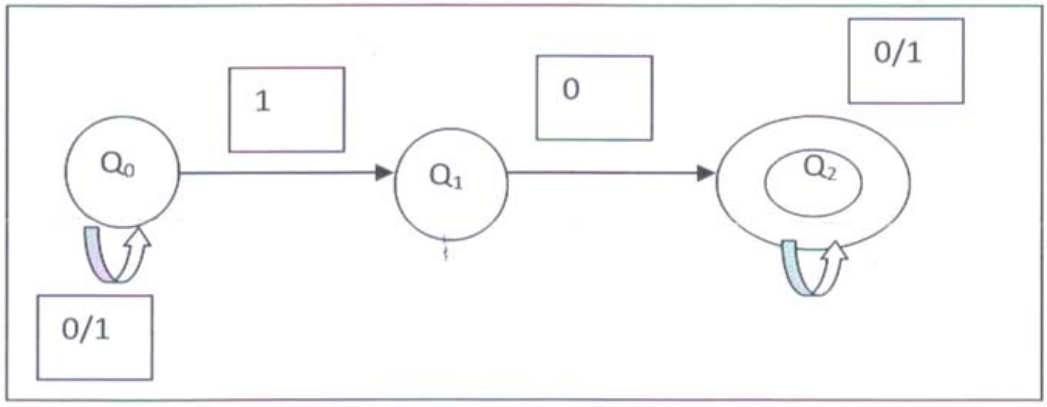
1 (a) Construct NFA for the regular expression (0+1)*110(0+1)*.

(b) Convert the following NFA to its equivalent DFA.



2 Construct predictive parser for the following grammar and parse the string not (true or (not false)).

$Expr \rightarrow \text{Expr or Term/Term}$

$Term \rightarrow Term\ and\ factor/factor$

$Factor \rightarrow not\ factor/(Expr)/\text{true/false}$

3 Construct LR(1) parse for the following grammar and parse the string id*(id+id).

$E \rightarrow E + T/T$

$T \rightarrow T*F/F$

$F \rightarrow (E)/id.$

4 (a) What are S-attributed and L-attributed grammars? How are they useful?

(b) For the expression a = b+c*d+e-f/g, construct the syntax tree and show how inherited and synthesized values are passed.

5 (a) Explain the Chomsky's hierarchy of languages.

(b) What are basic types in programming languages?

(c) How error recovery is achieved in type mismatch errors?

6 Explain the structure and purpose of each field of activation record.

7 (a) Explain code optimization phase of a compiler.

(b) Discuss basic block optimization in detail.

8 Write notes on the following:

(a) Machine dependent code generation.

(b) Machine dependent code optimization with examples.

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