

Total No. of Questions :8}

[Total No. of Printed Pages :2

Roll No

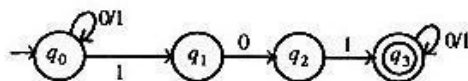
MCA-304
MCA. III Semester
 Examination, June 2017
Theory of Computation

Time : Three Hours

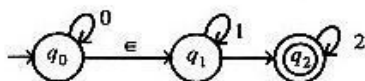
Maximum Marks : 70

Note: i) Attempt any five questions.
 ii) All question carry equal marks.

1. Construct DFA equivalent to the NFA.



2. Construct minimized DFA equivalent to given NFA.



3. Design CFG for the language:

$$L = \{a^n b^m c^m d^n / n \geq 1, m \geq 1\}$$

4. Design CFG for the regular expression

$$r = 0^*1(0+1)^*$$

[2]

5. Design PDA for the language.

$$L = \{WCW^R / W \in (0,1)^*\} \text{ Where } W \text{ is a word and } W^R \text{ is reverse of } W.$$

6. Design PDA to accept
- $L = \{0^n | n > 0\}$
- .

7. Design Turing machine for the language:

$$L = \{a^n b^n / n \geq 0\}$$

8. Answer any four of the following:

- a) Construct a DFA for the regular expression aa^*/bb^* .
 b) Find the language accepted by the given CFG:

$$S \rightarrow AB$$

$$A \rightarrow E/OA$$

$$B \rightarrow E/IB$$

- c) Differentiate between deterministic PDA and Non deterministic PDA.
 d) Explain halting problem in Turing machine.
 e) Explain Recursive set and partial recursive function?
 f) Define Linear bounded automata?
