

### Table of Contents



1. Tutorial
2. TOC Previous Years Solved
3. TOC PYQs Hindi Videos

## 1. Tutorial

- Definition of Deterministic Finite Automata
- Notations for DFA
- How do a DFA Process Strings?
- Properties of transition functions
- What is Trap state ?
- Minimization of DFA
- DFA solved examples
- Definition Non Deterministic Finite Automata
- NFA with  $\epsilon$ -Moves
- Remove  $\epsilon$  transitions from NFA
- NFA with  $\epsilon$  to DFA Indirect Method
- Equivalent of DFA and NFA
- Moore machine
- Mealy Machine
- Moore to Mealy machine
- Mealy to Moore Machine
- Difference between Mealy and Moore machine
- What is Regular Expression
- Regular expression
- Regular Expression Examples

- Regular expression to CFG
- Regular expression to Regular grammar
- closure properties of regular languages
- What is Regular Set in TOC
- CNF: Conjunctive Normal Form
- CNF from  $S \rightarrow aAD; A \rightarrow aB/bAB; B \rightarrow b, D \rightarrow d$ .
- Grammar is ambiguous.  $S \rightarrow aSbS|bSaS| \epsilon$
- leftmost and rightmost derivations
- CFL are not closed under intersection
- Arden's Law
- Pushdown Automata

## 2. TOC Previous Years Solved

- Design a NFA that accepts the language over the alphabet,  $\Sigma = \{0, 1, 2\}$  where the decimal equivalent of the language is divisible by 3.
- DFA end with 1 contain 00 | RGPV TOC draw
- NFA to DFA | RGPV TOC
- Moore to Mealy | RGPV TOC PYQ
- DFA accept even 0 and even 1 | RGPV TOC PYQ
- Short note on automata | RGPV TOC PYQ
- DFA ending with 00 start with 0 no epsilon | RGPV TOC PYQ
- DFA ending with 101 | RGPV TOC PYQ
- CFL are not closed under intersection | RGPV TOC
- RGPV Define Mealy and Moore Machine
- Difference between Mealy and Moore machine | RGPV TOC

- Mealy to Moore Conversion | RGPV | Prof. Jayesh Umre
- Construct Moore machine for Mealy machine
- RGPV TOC What is Trap state
- RGPV TOC properties of transition functions
- leftmost and rightmost derivations | RGPV TOC
- RGPV TOC design finite automata problems
- Grammar is ambiguous.  $S \rightarrow aSbS|bSaS| \epsilon$  | RGPV TOC
- Regular expression to Regular grammar | RGPV TOC
- Regular expression to CFG | RGPV TOC
- Definition of Deterministic Finite Automata | RGPV TOC
- DFA end with 1 contain 00 | RGPV TOC draw
- RGPV TOC Short note on equivalent of DFA and NFA
- RGPV TOC What do you understand by DFA how to represent it
- RGPV short note on automata
- NFA accepting two consecutive a's or two consecutive b's | RGPV TOC
- RGPV notes Write short note on NFA
- DFA which accept 00 and 11 at the end of a string | RGPV TOC
- CNF from  $S \rightarrow aAD; A \rightarrow aB/bAB; B \rightarrow b, D \rightarrow d$ .

### 3. TOC PYQs Hindi Videos

- 01 What is DFA in Hindi video
- 02 What is NFA in Hindi video
- 03 Trap State in Hindi video
- 04 Draw a DFA accepting strings starting with ab | TOC in Hindi video
- 05 Draw a DFA starting with 'a' | TOC in Hindi video

- 06 Draw a DFA starting with 'aba' | TOC in Hindi video
- 07 Draw a DFA accepting strings starting with 'aa' | TOC in Hindi video
- 08 Draw a DFA starting with 'aa' or 'bb' | TOC in Hindi video
- 09 Draw a DFA ending with 'ab' | TOC in Hindi video
- 10 Draw a DFA ending with 'abb' | TOC in Hindi video
- 11 DFA for the language {w/w contains the substring abab} | TOC in Hindi video
- 12 Minimization of DFA | TOC in Hindi video
- 13 NFA accepting strings starting with a | TOC in Hindi video
- 14 Draw a NFA for strings starting with 'ab' | TOC in Hindi video
- 15 Design a NFA for {c b a b<sup>n</sup>} | TOC in Hindi video
- 16 Construct a finite automata for language {0<sup>n</sup> | n mod 3 = 2, n ≥ 0} | TOC in Hindi video
- 17 Design a Finite Automata which accepts set of strings containing four 1's
- 18 Draw a NFA and DFA for the language accepting strings ending with 'aa' in Hindi video
- 19 Draw a NFA and convert to DFA for the language accepting strings ending with 'b' in Hindi video
- 20 NFA to DFA conversion example 2 | TOC in Hindi video
- 21 NFA to DFA conversion example 03 | subset conversion methods | TOC in Hindi video
- 22 Mealy to Moore Conversion | TOC in Hindi video
- 23 Moore to Mealy conversion | TOC in Hindi video
- 24 DFA NFA accepting string ending with 00 and 11 | TOC in Hindi video
- 25 Regular Expression in TOC | TOC in Hindi video
- 26 Regular Expression examples | TOC in Hindi video
- 27 Regular Expression to NFA example 01 | TOC in Hindi video
- 28 Regular Expression to NFA solved examples 02 | TOC in Hindi video

- 29 Arden's Theorem proved | TOC in Hindi video
- 30 Ardens Theorem solved examples | Regular Expression from Automata in Hindi video
- 31 What is CFG | Context Free Grammar | TOC in Hindi video
- 32 Construct CFG for language having any number of a | Context Free Grammar in Hindi video
- 33 Derivation Tree, left most, right most, solved examples | TOC in Hindi video
- 34 Left most and Right most derivation in TOC in Hindi video
- 35 Derivation from Grammar examples in TOC in hindi video
- 36 Ambiguity in Grammar examples 01 | CFG | TOC in Hindi video
- 37 Ambiguity in Grammar Solved Examples 02 | CFG in Hindi video
- 38 Ambiguity in Grammar Solved Examples 03 | CFG | TOC in Hindi video
- 39 Equivalent Grammar Solved Examples in TOC in Hindi video
- 40 Equivalent grammar solved examples 02 in TOC in Hindi video
- 41 Chomsky's Normal Form (CNF) in Hindi video
- 42 CFG to CNF Conversion in TOC in Hindi video
- 43 CFG to CNF conversion solved example in Hindi video | TOC
- 44 Grammar to CNF conversion solved examples in Hindi video | TOC
- 45 GREIBACH NORMAL FORM (GNF) in TOC in Hindi video
- 46 Simplify the grammar, removal of null production with solved examples | TOC in Hindi video
- 47 Convert CFG to LMD, RMD, Parse tree with solved examples in Hindi video | TOC
- 48 Convert CFG Grammar to NFA to DFA | TOC in Hindi video
- 49 Pushdown Automata explained, PDA Examples in Hindi video | TOC
- 50 Difference between Regular Grammar regular expression repression regular languages in TOC in Hindi video
- 51 JFLAP | TOC in Hindi video

- 52 Design a Turing machine using JFLAP | TOC in Hindi video
-