THIS PIECE OF STUDY MATERIAL HAS BEEN BROUGHT TO YOU BY

MUSTUDENTS UNITED

contributed by - *Shoeb*

of college - *RIZVI college of Engineering*

TCS Theory Question bank

1.Basic concepts and Finite Automata

1. Explain applications of Finite Automata(FA).
2. Differentiate between FA, PDA and TM.
3. Compare and contrast Moore and Mealy machines.
4. Differentiate between DFA and NFA.
5. Short note on Moore and Mealy machine.
6. Explain Finite State Machine(FSM).

2. Regular Expressions and Languages

1. Explain and give formal definition of pumping lemma for regular language.
2. Short note on Decision properties of Regular language.
3. Explain applications of Regular Expressions.
4. Define Regular language.
5. Short note on Arden's theorem.
6. What are the closure properties of RL.

3. Grammars

1. Write a short note on Chomsky Hierarchy with an example.
2. Steps for converting CFG to CNF.

4. Pushdown Automata (PDA)

1. Explain the ways of acceptance by a PDA.
2. Differentiate between PDA and NPDA.
3. Explain applications for PDA.
4. Write a short note on: Definition and working of PDA.
5. Explain non-deterministic PDA.

5. Turing machine (TM)

1. Write a short note on: Variants of Turing machines.
2. Explain applications for TM.
3. Write a short note on: Universal Turing machine.

6. Undecidability

1. Write a short note on: Post Correspondence problem.
2. Write a short note on: TM Halting problem.
3. Write a short note on: Recursive and Recursively enumerable languages.
4. Write a short note on: Rice's theorem.