**List of Tutorials**

**AUTOMATA THEORY**

**1) Tutorial no.1**

a. Write and explain Definitions and types of grammar and languages.

b. Write a short note on

1) Regular expression and corresponding languages.

2) Union operations.

c. Define finite Automata.

d. Explain NFA and DFA with example.

**2) Tutorial no.2**

a. Write DFA for ∑=(a,b) for all languages that ends with 0.

b. Write a DFA which accept even number of 0 and odd no of 1.

c. What is procedure of conversion of NFA to DFA? With suitable example.

d. Explain NFAs and NFAs with null transition.

**3) Tutorial no.3**

a. What is kleene theorem?

b. Explain minimum state of FA for a regular language.

c. Explain minimizing number of state in finite automata with suitable example.

d. Explain part 1 of kleenes theorem with proof.

1. **Tutorial no.4**
2. Defines grammar and language.
3. Explain Derivation and ambiguity with example.
4. Write a short note on
   * 1. Union Concatenation and \*s of CFLs

**5) Tutorial no.5**

1. What is process of eliminating production and unit production fom CFG? Explain using any example.
2. What is eliminating useless variables from a context free grammer explain with example.
3. Write a short note on
   * 1. Top-Down
     2. Recursive Descent and bottom up parsing.

**6) Tutorial no.6**

1. Define push down automata.
2. Explain deterministic PDA & types of acceptance using example.
3. Write a note on equivalence of CFGs.
4. Construct PDA for following grammar.
   * 1. S->aIaSIbSSISbS

**7) Tutorial no.7**

1. Define pumping lemma.
2. With the help of example explain pumping lemma.
3. Write a short note on
   * 1. Intersection of CFL with example.
     2. Complement of CFL with example.
     3. Construct free and non context free grammer.

**8) Tutorial no.8**

1. What is turing machine define the turing machine.
2. Construct turing machine of language with palindrome.
3. Explain with example what is acceptance of turing machine.
4. What is computing a funcion with a TM?

**9) Tutorial no.9**

1. construct turing machine with accept the language which is
   * 1. L={1^/where n is even}
2. Construct turing machine which accept the language which is
   * 1. L={1^/where n is odd}
3. Construct turing machine which accept the language which is
   * 1. L={ss/s belong(a,b)\*}

**10) Tutorial no.10**

1. Write a short note on
   * 1. Turing machine with doubly infinite steps.
     2. More than one tape.
     3. Non-deterministic TM
     4. Universal TM.