THEORY OF COMPUTATION ASSIGNMENT-1

1. **Explain the concept of Automation.**
2. **Explain Transition Diagram, Transition Table and Transition Diagram by taking an example.**
3. **What is the difference between Deterministic Finite Automata (DFA) and Non-deterministic Finite Automata(NDFA).**
4. **Explain the concept of Automata with output with example.**
5. **What is the difference between Mealy and Moore machine? Explain with example.**
6. **Explain the procedure for transforming a mealy machine into a Moore machine.**
7. **Explain the procedure for transforming a Moore Machine into a Mealy Machine.**
8. **Explain Construction of Deterministic Finite Automata from Non-deterministic Finite Automata.**
9. **Write procedure for construction of Minimum Automata or State Minimization of DFA.**
10. **Design DFA to accept odd and even numbers represented using binary notation.**
11. **Design DFA which accept L(M)= {w $|$ w $\in$ {0,1}*} and w is a string that does not contain consecutive 1's.**
12. **Construct a DFA the language recognized by the automaton being L= { 0^m1^n $|$ m$\geq$0 and n $\geq$1 }**
13. Differentiate between strings and word of language using example.
14. Differentiate between kleene closure and positive closure.
15. Draw DFA for all strings over {0,1} consisting of even number of 0's and 1's.

16. Draw a finite automaton that accepts all binary strings where 0's and 1's are alternative.

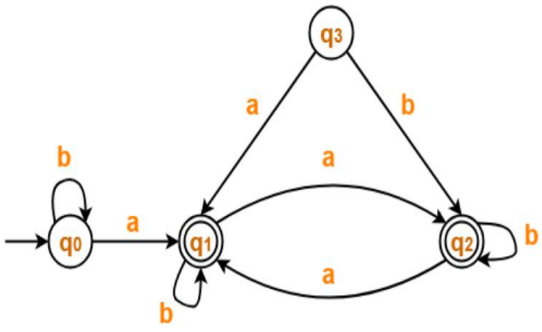
17. State and prove pumping lemma theorem for Context Free Languages. By using pumping lemma prove that L= { $a^n b^n a^n$ | n> 0 } is not context free language.

18. Find the regular expression corresponding each of following subset {0,1}

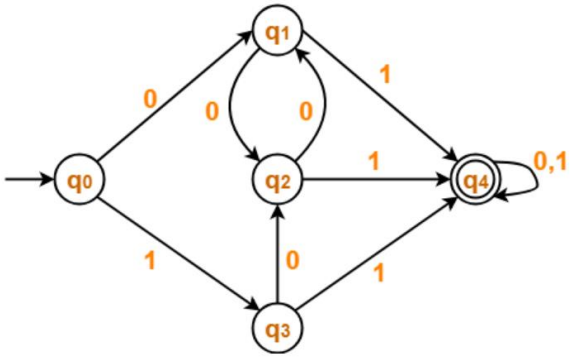
a. The language of all strings containing at least two 0's.

b. The language of all strings containing at most two 0's.

19. Minimize the given DFA



(a)

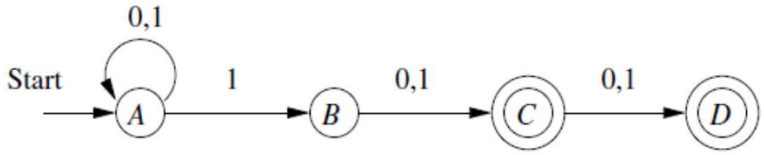


(b)

20. Convert (0+1)*1(0+1) to NFA

21. Convert (0+1)*1 to NFA

22. Converting NFA to Regular Expression



23. What are different closure properties of CFL? Explain with an example.