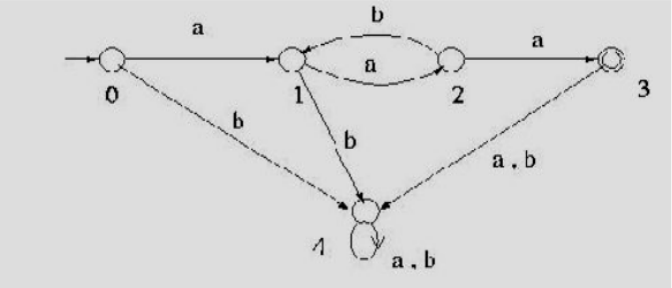
IEC College of Engineering and Technology, Greater Noida
Department of CSE/IT
Even Sem., Session 2022-23
Assignment-1

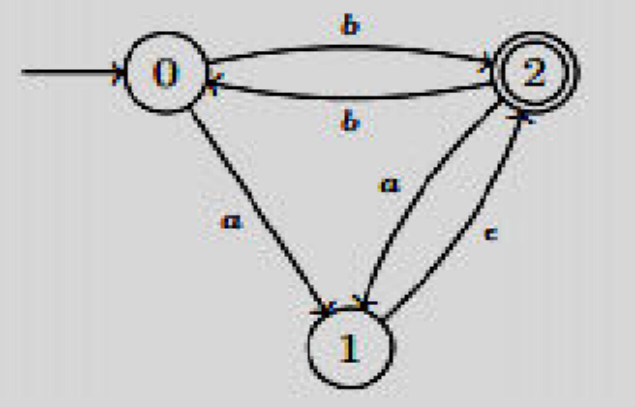
Submission Date: 30/05/23

Subject Name with Code: Theory of Automata and Formal Languages (KCS-402)

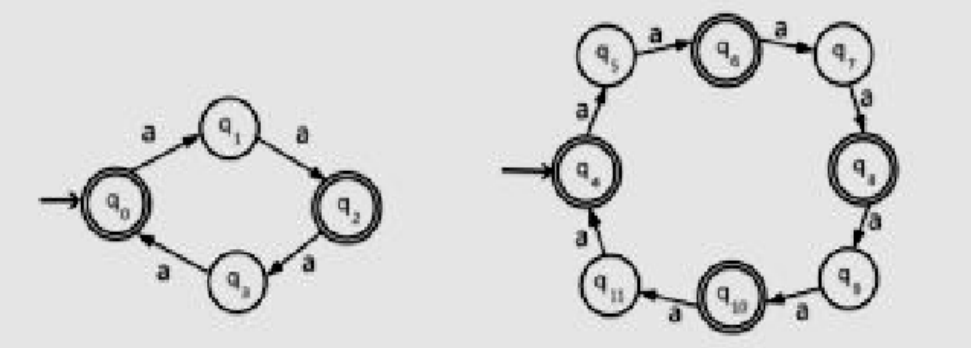
1. Design the DFA that accepts an even number of a's and even number of b's.
2. Consider the DFA given below and identify the L accepted by the machine.



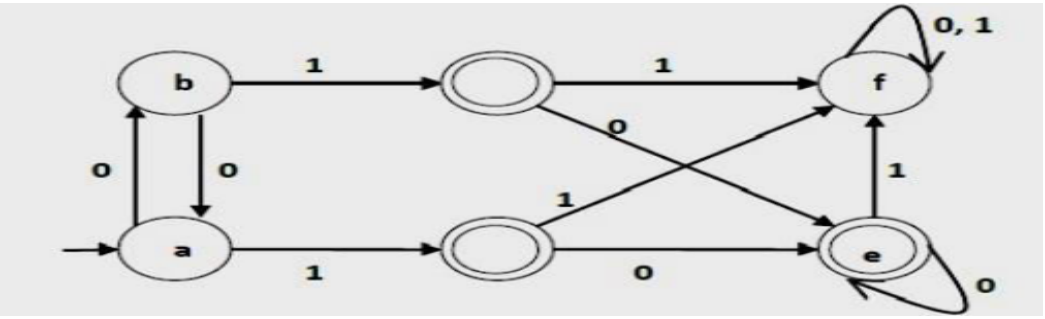
3. Convert the NFA- ε to DFA.



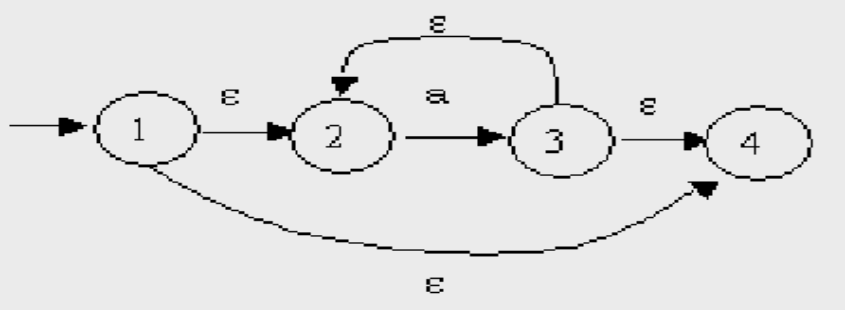
4. Check with the comparison method for testing equivalence of two FA given.



5. Minimize the automata given below.



6. Compute the epsilon- closure for the given NFA. Convert it into DFA.



7. What are checking off symbols?.
8. Define alphabet, string and language.
9. Design a NFA that accepts all the strings for input alphabet {a,b} containing the substring abba.
10. Convert NFA into equivalent DFA by taking any suitable example.
11. Define Deterministic Finite Automata (DFA) and design a DFA that accepts the binary number whose equivalent is divisible by 5.
12. Describe Mealy and Moore machines with examples. Convert the given Mealy machine as shown in Fig. 2 into Moore Machine.

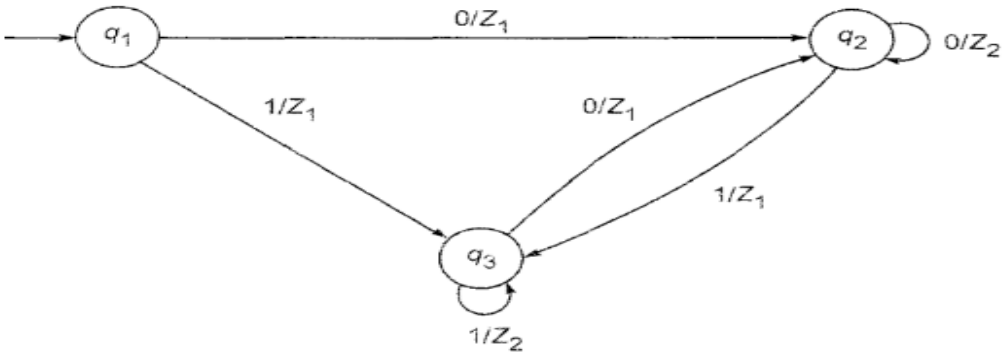


Fig. 2

13. Construct the minimum state automata equivalent to DFA described by Fig. 3.

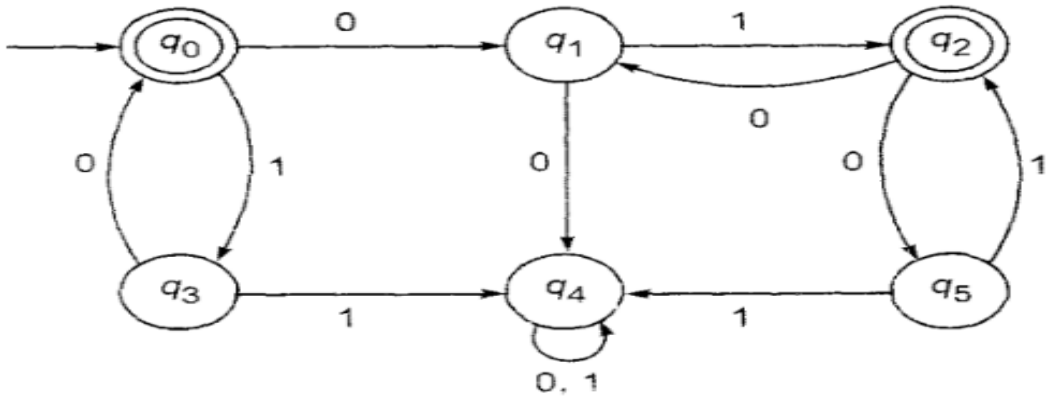
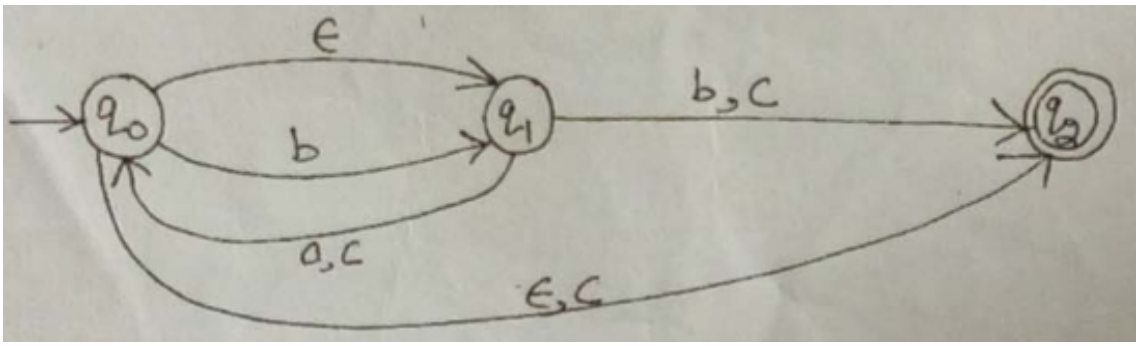


Fig. 3

14. Design a FA to accept the string that always ends with 101.
15. What do you mean by ε-Closure in FA?
16. Construct a minimum state DFA from a given FA.



17. Design FA for ternary numbers divisible by 5.
18. Explain Myhill-Nerode Theorem using suitable examples.
19. Give the definition of Deterministic Finite Automaton (DFA).
20. Construct a Non Deterministic Finite Automaton (NFA) for the language L which accepts all the strings in which the third symbol from the right end is always 'a' over Σ = {a, b}.