Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
MID TERM EXAMINATION - MAY 2023

Semester : Semester IV - 2021
Course Code : CSE2018
Course Name : Sem IV - CSE2018 - Theory of Computation
Program : CAI

Date : 19-MAY-2023
Time : 10.30AM - 12.00PM
Max Marks : 50
Weightage : 25%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS **(5 X 2 = 10M)**

1. Define alphabet. Give example for alphabet set of decimal numbers.

(CO1) [Knowledge]

2. Define the following terms with an example for each.

1. Length of the string
2. Reversal

(CO1) [Knowledge]

3. Define Epsilon Closure of a state with an example.

(CO2) [Knowledge]

4. Define Positive Closure with a suitable example.

(CO1) [Knowledge]

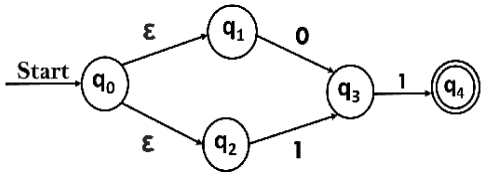
5. What is meant by DFA? Explain with an example.

(CO2) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS **(4 X 5 = 20M)**

6. Convert the following NFA with ϵ-transition into its equivalent DFA.



(CO2) [Comprehension]

7. Compare the differences between DFA, NFA, and ε-NFA.

(CO2) [Comprehension]

8. Design a DFA L(M) = {w | w ϵ {0, 1}*} and w is a string that does not contain consecutive 1's.

(CO1) [Comprehension]

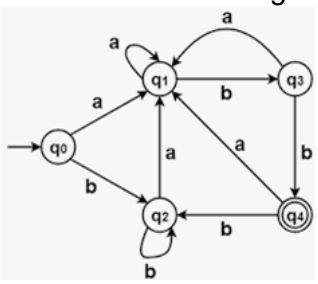
9. Construct a DFA to accept strings of 0's and 1's ending with the string 110.

(CO1) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS **(2 X 10 = 20M)**

10. Minimize the following DFA.



(CO2) [Application]

11. Construct a NFA to accept all strings ending in ab over an alphabet {a, b} and obtain its equivalent DFA

(CO2) [Application]