Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
MID TERM EXAMINATION - NOV 2023

Semester : Semester III - 2022
Course Code : CSE2018
Course Name : Sem III - CSE2018 - Theory of Computation
Program : B. TECH

Date : 3-NOV-2023
Time : 11:30AM - 1:00PM
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

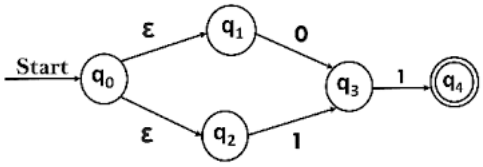
ANSWER ALL THE QUESTIONS **(5 X 2 = 10M)**

1. Consider £ as alphabet set. Define null string as a power setof this alphabet set?
(CO1) [Knowledge]
2. Define grammar.write its Types
(CO1) [Knowledge]
3. Which automata is more powerful and which is least powerful?
(CO2) [Knowledge]
4. Write Regular Expression for the set of strings over {0, 1} that have atleast one.
(CO2) [Knowledge]
5. Define non-deterministic automata with example.
(CO2) [Knowledge]

PART B

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

6. Calcualte E closures of allstates for the given machine



(CO1) [Comprehension]

7. Check the acceptance of given string forgiven machine
i,aabb
ii, abab

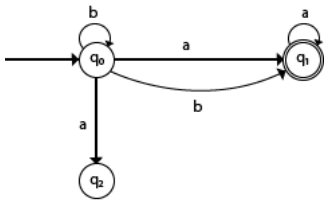


Fig:- NDFA

(CO1) [Comprehension]

8. Enumerate the Diffrence Between NFA & DFA.

(CO2) [Comprehension]

9. Design machine to accept odd numer of a's and even number of b's

(CO2) [Comprehension]

PART C

ANSWER THE FOLLOWING QUESTION **(1 X 20 = 20M)**

10. a) Minimise given DFA

δ	a	b
→A	B	A
B	A	C
C	D	B
*D	D	A
E	D	F
F	G	E
G	F	G
H	G	D

b) Convert given NFA to DFA

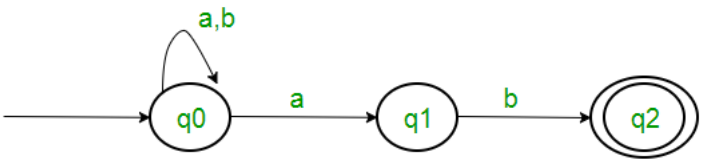


Figure 1

(CO2) [Application]