Roll No												

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

MAKE UP EXAMINATION – JAN 2023

Course Code: CSE 2018/CSE208

Course Name: THEORY OF COMPUTATION

Program & Sem: B.TECH

Date: 25/JAN/2023

Time: 9.30AM – 12.30PM

Max Marks: 100

Weightage: 50%

Instructions:

(i) Read the all questions carefully and answer accordingly.

Part A [Memory Recall Questions]

Answer all the Questions. Each question carries 5 marks. (4Qx 5M= 20M)

1. Define DFA and distinguish between DFA and NFA (C.O.No.1) [Knowledge]

2. Define Automata. List applications of Finite automata (C.O.No.1) [Knowledge]

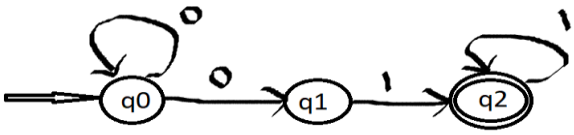
3. Define Turing Machine along with an example (C.O.No.4) [Knowledge]

4. Define regular expression formally and also justify whether regular expression can be written to non regular languages (C.O.No.3) [Knowledge]

Part B [Thought Provoking Questions]

Answer all the Questions. Each question carries 10 marks. (5Qx10M=50M)

5. Design a DFA to accept the strings accepting all strings substring aab. Write the machine for the same and check whether the given string ababba is valid or not (C.O.No-2) [Comprehension]
6. Construct a DFA accepting the language L={w101w| w belongs to (0+1)*} (C.O.No-2) [Comprehension]
7. Prove that the language L={$a^n b^n$| n>=1} is not regular using pumping lemma theorem (C.O.No-3) [Comprehension]
8. Design a NFA accepting the strings ab,aab,aba. Also write the ,machine for the same. (C.O.No-2) [Comprehension]
9. Convert the given NFA to DFA using Lazy Evaluation method.



(C.O.No. 2) [Application]

Part C [Problem Solving Questions]

Answer all the Questions. Each question carries 15 marks. (2Qx15M=30M)

10. Construct the PDA for the language L={$a^n b^{2n}$| n>=1}. Write the instantaneous descriptor for the string aabbbb.
11. Construct the Turing Machine for the language L={$a^n b^n c^n$| n>=1}. Write the machine for the same.