J.C BOSE UNIVERSITY OF SCIENCE AND TECHNOLOGY, YMCA
FARIDABAD
1st SESSIONAL EXAMINATION, Sept2025
B.Tech Semester: CE51
Subject: Formal Languages, Automata and compiler Design
Paper Code: PCC-CS-502

Note: Attempt any three questions.
Time: 1 hr 30 min

Maximum Marks: 30

| CO1 | Q1 | a) If $L = (1^3+1^5)^*$, then what is the largest string possible that can not be generated by L? | 5 marks |
| | | b) How many palindrome of length 12 are there over $\Sigma = \{0,1\}$ | 5 marks |

CO2	Q2	Generate grammar for the following languages:	
		a) $L = \{a^n$ such that $n mod3 \neq 0\}$	5 marks
		b) $L = \{a^{2n}b^{3n+2}$ such that $n>=0\}$	5 marks

CO1	Q3	Design Non Deterministic Finite Automata for the following languages:	
		a) $L=\{ a^nb^{2n}$ such that $n>=0\}$	5 marks
		b) $L =$ set of all strings ending with ab, bc or ca over $\Sigma = \{a,b,c\}$	5 marks

CO1	Q4	Design Deterministic Finite Automata for the following languages:	
		a) $L =$ set of all binary strings containing 1011 as substring.	5 marks
		b) $L = \{w \in\{0,1\}^* \mid d(w)mod\ 3=0\}$	5 marks
		where d(w)=decimal representation of w.	
		Ex. d(001)=1	