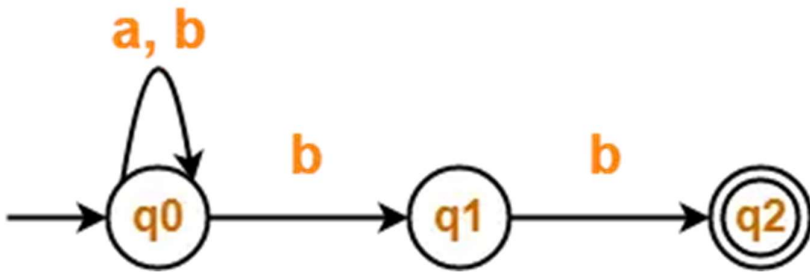


DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE Regular/Supplementary Winter Examination – 2023 Course: B. Tech. Branch : Computer and Allied Semester :V Subject Code & Name: Theory Of Computation (BTCOC502) Max Marks: 60 Date:03/01/2024 Duration: 3 Hrs.			
Instructions to the Students: 1. All the questions are compulsory. 2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question. 3. Use of non-programmable scientific calculators is allowed. 4. Assume suitable data wherever necessary and mention it clearly.			
		(Level/CO)	Marks
Q. 1	Solve Any Two of the following.		12
A)	Find the string set for following regular expressions. (i)00* (ii)a*b* (iii) (0+1)*	Create	6
B)	What are the elements of Deterministic Finite Automaton? How it is represented?	Remember	6
C)	Design Non Deterministic Finite Automaton that accepts set of all strings over {0,1} that start with 0 or 1 and end with 01 or 10.	Design	6
Q.2	Solve Any Two of the following.		12
A)	Distinguish between Mealy machine and Moore machine.	Remember	6
B)	Apply subset construction algorithm to convert following Non Deterministic Finite Automaton to Deterministic Finite Automaton 	Apply	6
C)	Consider the following production rules. S → aAB A → bBb B → A ε Obtain leftmost and rightmost derivation for string “abbbb”	Apply	6

Q. 3	Solve Any Two of the following.		12
A)	Show that the given grammar is ambiguous grammar. $E \rightarrow E+E$ $E \rightarrow E * E$ $E \rightarrow a$	Apply	6
B)	Explain Chomsky classification of grammar.	Remember	6
C)	Find Context Free Grammar without ϵ- productions equivalent to the following grammar . $S \rightarrow ABaC$ $A \rightarrow BC$ $B \rightarrow b \mid \epsilon$ $C \rightarrow D \mid \epsilon$ $D \rightarrow d$	Apply	6
Q.4	Solve Any Two of the following.		12
A)	Reduce the following grammar to Chomsky Normal Form(CNF). $S \rightarrow aAD$ $A \rightarrow aB \mid bAB$ $B \rightarrow b$ $D \rightarrow d$	Apply	6
B)	Design Push down Automata (PDA) to accept language $L=(a,b)^*$ where $n_a = n_b$.	Design	6
C)	Distinguish between Deterministic and Non Deterministic PDA.	Remember	6
Q. 5	Solve Any Two of the following.		12
A)	What are the different components of Turing machine?	Remember	6
B)	What is halt state of Turing machine? Explain Church Turing thesis.	Understand	6
C)	Design Turing machine that erases all non-blank symbols from its tape .	Design	6
	*** End ***		