



Time:		Max.Marks: 100					
S.NO	Answer All Questions	Choice	Options	Marks	CO	CO BTL	COI BTL
1.	Construct e-NFA for the following regular expression using subset method and then convert it to DFA. $(a+b)^*(aa+bb)(a+b)^*$.	choice Q-2		10Marks	CO1	4	3
2.	Outline the properties of Regular Expressions in detail.			10Marks	CO1	4	1
3.	Answer 3A and 3B.	choice Q-4		15Marks	CO1	4	4
3.A.	Derive the regular expression for the language accepting all combinations of a's except the null string, over the set $\Sigma = \{a\}$.			5Marks	CO1	4	4
3.B.	Design NFA with $\Sigma = \{0, 1\}$ and accept all string of length at least 2.			10Marks	CO1	4	2
4.	Answer 4A and 4B.			15Marks	CO1	4	5
4.A.	Formulate NFA for language $L = a(bab)^* \cup a(ba)^*$.			5Marks	CO1	4	2
4.B.	Construct the parse tree for the strings 'ababbba' and 'bbbbba' from the following grammar $S \rightarrow aS/bS/a/b/\epsilon$.			10Marks	CO1	4	5
5.	Demonstrate various phases of language processing system with an example high level code for finding the factorial of a number.	choice Q-6		10Marks	CO2	5	2
6.	Relate the phases of compiler for the given expression, position = initial + rate * 60.			10Marks	CO2	5	2
7.	Answer 7A and 7B.	choice Q-8		15Marks	CO2	5	5
7.A.	Consider the following grammar: $S \rightarrow aAS \mid aA \rightarrow SbA \mid SS \mid ba$ For the input string "aabbaa" find LMD and RMD.			5Marks	CO2	5	3
7.B.	Draw the derivation tree for the above example given in 7A.			10Marks	CO2	5	5
8.	Answer 8A and 8B.			15Marks	CO2	5	5
8.A.	Describe the processes in lexical analysis.			5Marks	CO2	5	4
8.B.	Construct CFG's for the language $\{w \mid \text{the length of } w \text{ is odd and its middle is } 0\}$.			10Marks	CO2	5	5
9.	How to remove unreachable productions as a part of parsing. Demonstrate with the below example. $S \rightarrow aB \mid bA \mid A \rightarrow a \mid bAA \mid aS \mid B \rightarrow b \mid aBB \mid bS \mid C \rightarrow aD \mid bS \mid \epsilon \mid D \rightarrow bD \mid \epsilon$	choice Q-10		10Marks	CO3	5	1
10.	Describe in detail about, Lexical Analysis, Syntactic Analysis and Semantic Analysis during parsing an input string.			10Marks	CO3	5	1