Course Code:	MCT544	

First Semester Master In Computer Application End Semester Examination

Theory of Automata and Formal Languages

Time: 2 Hours Max. Marks: 40

Instructions to Candidates:

1. All Questions carry equal marks as indicated.
2. All Questions are compulsory.
3. Assume suitable data wherever necessary.
4. Illustrate your answers with suitable figures wherever necessary

Question		Description of Question	Marks	CO
1	(a)	Obtain Regular Expression for following automata:	04	CO1
	(b)	Write Short Notes On: (i) Moore machines (ii) Non Determinstic Finite Automata	03	CO1
2	(a)	Describe any two closure properties of regular sets.	04	CO1, CO2
	(b)	Prove that L= {ww | w is in $(0\|1)^*$} is non- regular.	03	CO1, CO2
3	(a)	Reduce the following Grammar G to CNF. G is as follows: S→aAD, A→aB | bAB, B→b, D→d	3.5	CO2
	(b)	What is parse tree? Consider the CFG : S→ XX , X→ XXX | bX | Xb | a Find the parse tree for the string bbaaaab	3.5	CO2
4	(a)	Construct a PDA accepting L={ $0^n 1^n 0^{m+n}$}	03	CO2
	(b)	Explain "Acceptance by final state" and "Acceptance by	04	CO2

State / ∑	a	b
A(Initial State)	A	B
B	B	C
C(Final State)	A	Ø

		empty stack" with respect to PDA.		
5	**(a)**	Write Short Notes on: Variants of Turing Machine	02	CO3
	(b)	Construct a Turing Machine accepting $L=\{ a^n b^n c^n$ where n >=1$\}$	04	CO3
6	**(a)**	Write short notes on : Undecidability	03	CO3
	(b)	Write short notes on : Properties of Recursively Enumerable Language	03	CO3