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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute)

Affiliated to Dr. A.P.J. Abdul Kalam Technical University, Uttar Pradesh, Lucknow

MCA

FIRST YEAR (SEMESTER-II) THEORY EXAMINATION (2020-2021)

(Subjective Type)

Subject Code: AMCA0204 **Max. Mks. : 30**

Subject: Theory of Automata and Formal Languages **Time : 50 Minutes**

General Instructions:

All questions are compulsory.

Question No. 1 to 15 are subjective type question carrying 3 marks each. Attempt any 10 out of 15 questions.

Q.No	Question Content	Question Image	Category	Sub Category	Marks	Options Randomization	Type	Difficulty
1	Define non deterministic finite automata and deterministic finite automata		Attempt any 10 Questions	10 X 3= 30	3		Subjective	Brilliant
2	Draw a DFA for the language accepting strings starting with ‘ab’ over input alphabets Σ = {a, b}		Attempt any 10 Questions	10 X 3= 30	3		Subjective	Brilliant
3	List different applications of Finite Automata		Attempt any 10 Questions	10 X 3= 30	3		Subjective	Brilliant
4	Define Regular Expression.		Attempt any 10 Questions	10 X 3= 30	3		Subjective	Brilliant
5	State Arden theorem.		Attempt any 10 Questions	10 X 3= 30	3		Subjective	Brilliant
6	Construct a regular expression for the language over the set Σ={a,b} in which set of all strings having even numbers of a’s		Attempt any 10 Questions	10 X 3= 30	3		Subjective	Brilliant
7	What is null production and unit production?		Attempt any 10 Questions	10 X 3= 30	3		Subjective	Brilliant
8	What is ambiguity?		Attempt any 10 Questions	10 X 3= 30	3		Subjective	Brilliant

Q.No	Question Content	Question Image	Category	Sub Category	Marks	Options Randomization	Type	Difficulty
9	Define Pushdown Automata with block diagram.		Attempt any 10 Questions	10 X 3= 30	3		Subjective	Brilliant
10	Define a Turing Machine with block diagram.		Attempt any 10 Questions	10 X 3= 30	3		Subjective	Brilliant
11	Write short note on Universal Turing Machine.		Attempt any 10 Questions	10 X 3= 30	3		Subjective	Brilliant
12	Differentiate between PDA and Turing machine.		Attempt any 10 Questions	10 X 3= 30	3		Subjective	Brilliant
13	Differentiate between decidable and undecidable problem		Attempt any 10 Questions	10 X 3= 30	3		Subjective	Brilliant
14	Differentiate between recursive and recursive enumerable languages		Attempt any 10 Questions	10 X 3= 30	3		Subjective	Brilliant
15	What are NP and NP-Hard problems?		Attempt any 10 Questions	10 X 3= 30	3		Subjective	Brilliant