Printed Page:- R

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)

(Objective Type)

Subject Code: AMCA0204 **Max. Mks. : 70**

Subject: Theory of Automata and Formal Languages **Time : 70 Minutes**

General Instructions:

All questions are compulsory.

Question No- 1 to 15 are objective type question carrying 2 marks each.

Question No- 16 to 35 are also objective type/Glossary based question carrying 2 marks each.

Q.No	Question Content	Question Image	Category	Sub Category	Marks	Type	Difficulty	Correct	Option1	Option2	Option3	Option4
1	Which of the following is not a part of 5-tuple of Deterministic Finite Automata?		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	Output Alphabet	Input alphabet	Transition function	Initial State	Output Alphabet
2	The Kleene star (Σ*)is a____________ operator on a set of symbols		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	unary	unary	binary	It may be unary or binary	None Of Above
3	Let Σ = {a, b}. How many strings are there in Σ4.		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	16	256	16	4	64
4	A --------------is an FSM whose output depends on the present state as well as the present input		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	Mealy Machine	PDA	Mealy Machine	Moore Machine	DFA
5	R1 and R2 are two regular expressions. Which of the following is not true?		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	R1-R2 is regular expression.	R1+R2 is regular expression	R1-R2 is regular expression.	R* is regular expression	R1R2 is regular expression
6	A language is regular if and only if		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	accepted by DFA	accepted by DFA	accepted by PDA	accepted by LBA	accepted by Turing machine
7	Match the following grammars to their Automaton 1. Unrestricted grammar a) Pushdown automaton 2. Context-sensitive grammar b) Finite state automaton 3. Context-free grammar c) Linear-bounded automaton 4. Regular grammar d) Turing machine		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	(1,d)(2,c)(3,a)(4,b)	(1,d)(2,a)(3,d)(4,c)	(1,b)(2,d)(3,c)(4,a)	(1,b)(2,c)(3,a)(4,d)	(1,d)(2,c)(3,a)(4,b)
8	Which of the following does not belong to CFG ?		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	End Symbol	Terminal Symbol	End Symbol	Start symbol	Non terminal Symbol
9	Type-1 grammars generate ____________languages		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	context-sensitive	Regular	context-free	context-sensitive	All of above
10	A Turing machine that is able to simulate other Turing machines:		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	Universal Turing machine	Nested Turing machines	Universal Turing machine	Counter machine	None of the mentioned
11	Which of the following a Turing machine does not consist of?		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	state register	Input tape	head	state register	none of the mentioned
12	Which of the following is true for the language L= {ap | p is prime number}		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	It is neither regular nor context-free, but accepted by a Turing machine	It is not accepted by a Turing Machine	It is regular but not context-free	It is context-free but not regular	It is neither regular nor context-free, but accepted by a Turing machine
13	Which of the following statement is false?		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	Undecidable problems are solvable	Decidable problems are solvable	Undecidable problems are solvable	Undecidable problems are unsolvable	All of them
14	PCP stands for?		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	Post Correspondence Problem	Post Correspondence Problem	Post Corresponding Problem	Pre Correspondence problem	none of the mentioned

Q.No	Question Content	Question Image	Category	Sub Category	Marks	Type	Difficulty	Correct	Option1	Option2	Option3	Option4
15	Halting problem is an example for?		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	undecidable problem	Decidable problem	undecidable problem	complete problem	traceable problem
16	if M=({q0,q1,q2,q3},{0,1},δ ,q0,{q3}) then Final state is______________		Glossary I	Glossary I	2	Single Choice	Brilliant	{q3}	{0,1}	{q3}	{q0,q1,q2,q3}	q0
17	if M=({q0,q1,q2,q3},{0,1},δ ,q0,{q3}) then alphabet is______________		Glossary I	Glossary I	2	Single Choice	Brilliant	{0,1}	{q0,q1,q2,q3}	{0,1}	q0	{q3}
18	if M=({q0,q1,q2,q3},{0,1},δ ,q0,{q3}) total number of states are_______________		Glossary I	Glossary I	2	Single Choice	Brilliant	{q0,q1,q2,q3}	{q0,q1,q2,q3}	{0,1}	q0	{q3}
19	if M=({q0,q1,q2,q3},{0,1},δ ,q0,{q3}) then initial state is____________		Glossary I	Glossary I	2	Single Choice	Brilliant	q0	{q0,q1,q2,q3}	{0,1}	q0	{q3}
20	In Moore machine, output is produced over the change of:_________________		Glossary II	Glossary II	2	Single Choice	Brilliant	states	Transducers	states	Input+1	6-Tuples
21	For a give Moore Machine, Given Input=’101010’, thus the output would be of length_______________		Glossary II	Glossary II	2	Single Choice	Brilliant	Input+1	Transducers	states	Input+1	6-Tuples
22	There are __________________ in the definition of Moore Machine.		Glossary II	Glossary II	2	Single Choice	Brilliant	6-Tuples	Transducers	states	Input+1	6-Tuples
23	Mealy and Moore machine can be categorized as_____________		Glossary II	Glossary II	2	Single Choice	Brilliant	Transducers	Transducers	states	Input+1	6-Tuples
24	unrestricted grammar__________		Glossary III	Glossary III	2	Single Choice	Brilliant	Type 0	Type 1	Type 0	Type 2	Type 3
25	Regular Grammar_________		Glossary III	Glossary III	2	Single Choice	Brilliant	Type 3	Type 1	Type 0	Type 2	Type 3
26	context free grammar__________		Glossary III	Glossary III	2	Single Choice	Brilliant	Type 2	Type 1	Type 0	Type 2	Type 3
27	context sensitive grammar____________		Glossary III	Glossary III	2	Single Choice	Brilliant	Type 1	Type 1	Type 0	Type 2	Type 3
28	A TM is expressed as a 7-tuple (Q, T, B, Σ, δ, q0, F) where B denote__________________		Glossary IV	Glossary IV	2	Single Choice	Brilliant	blank symbol	tape alphabet	initial state	blank symbol	transition function
29	A TM is expressed as a 7-tuple (Q, T, B, Σ, δ, q0, F) where δ, denote		Glossary IV	Glossary IV	2	Single Choice	Brilliant	transition function	tape alphabet	initial state	blank symbol	transition function
30	A TM is expressed as a 7-tuple (Q, T, B, Σ, δ, q0, F) where T, denote__________________		Glossary IV	Glossary IV	2	Single Choice	Brilliant	tape alphabet	tape alphabet	initial state	blank symbol	transition function
31	A TM is expressed as a 7-tuple (Q, T, B, Σ, δ, q0, F) where q0 , denote__________________		Glossary IV	Glossary IV	2	Single Choice	Brilliant	initial state	tape alphabet	initial state	blank symbol	transition function
32	RE languages are also called as Turing _______________.		Glossary V	Glossary V	2	Single Choice	Brilliant	recognizable languages	TRUE	recognizable languages	decidable languages	FALSE
33	REC languages are also called as Turing _______________.		Glossary V	Glossary V	2	Single Choice	Brilliant	decidable languages	TRUE	recognizable languages	decidable languages	FALSE
34	Recursive languages are subset of recursive enumerable language		Glossary V	Glossary V	2	Single Choice	Brilliant	TRUE	TRUE	recognizable languages	decidable languages	FALSE
35	Recursive enumerable languages are subset of Recursive languages		Glossary V	Glossary V	2	Single Choice	Brilliant	FALSE	TRUE	recognizable languages	decidable languages	FALSE