L.J. Institute of Engineering & Technology, Ahmedabad

TOC Practice Book_2024

Note: The Practice Book is for reference only, LJU Test paper may not be compulsory set from this

chapter_number	group_id	question_text	answer_text	marks	option1	option2	option3	option4
1	1	RR*can be expressed in which of the forms:	R+	1	R+	R-	R+U R-	R
1	2	If ∑={0,1}, then Φ* will result to:	ε	1	ε	Φ	∑	None of the mention
1	3	Which among the following is not an associative operation?	None of the mentioned	1	Union	Concatenation	Dot	None of the mentioned
1	4	Which of the following statements about Regular Expression Is/are incorrect?	The iteration of a regular expression is also a regular expression	1	The union of two regular expressions is also a regular expression	The concatenation of two regular expressions is also a regular expression	The iteration of a regular expression is also regular expression	All
1	5	Dot operator in regular expression resembles which of the following?	Expressions are juxta posed	1	Expressions are juxtaposed	Expressions are multiplied	Cross operation	None of the mentioned
1	6	Which of the following regular expressions represents the set of strings which do not contain a substring ‘rt’ if ∑={r,t}	t*r*	1	(rt)*	(tr)*	r*t*	t*r*
1	7	Finite Automata can recognize	regular grammar	1	any grammar	regular grammar	context free grammar	recursive grammar
1	8	Finite automata requires minimum ____number of stacks.	0	1	0	1	2	3
1	9	FSM with output capability can be used to add two given integer in binary representation.	TRUE	1				
1	10	The appropriate precedence order of operations over a Regular Language is	Kleene, Dot, Union	1	Kleene, Union, Concatenate	Kleene, Star, Union	Kleene, Dot, Union	star, Union, Dot
1	11	Which statement is false about the following definition of terms: 1) Alphabet is a finite non-empty set of symbols 2) String is a finite sequence of symbols chosen from some alphabet . 3) Language is a set of strings all of which symbols chosen from alphabet	None of Above	1	Only 1	Both 1 & 2	Both 1&3	None of Above
1	12	_____ is a finite collection of symbols from the alphabet.	string	1	string	state	symbols	alphabet
1	13	W is any string whose length is n in {0, 1}* and L is the set of all sub-strings of W. The minimum number of states in a non-deterministic finite automaton that accepts L is _____.	n+1	1	n	n+1	2^n	2n
1	14	The basic limitation of finite automata is that.	It can’t remember arbitrary large amount of information.	1	It can’t remember arbitrary large amount of information.	It sometimes recognize grammar that are not regular	It sometimes fails to recognize regular grammar	All of the mentioned
2	15	Which of the following is not a regular expression?	[(0+1)- (0b+a1)*(a+b)]*	1	[(a+b)* (aa+ bb)	[(0+1)- (0b+a1)*(a+b)]*	(01+11+10)*	(1+2+0)* (1+2)*
2	16	The language described by the regular expression (0+1)*0(0+1)*0(0+1)* over the alphabet {0,1} is the set of	All strings containing at least two 0’s	1	All strings containing atleast two 1’s	All strings that begin and end with either 0’s or 1’s	All strings containing atleast two 0’s	All strings containing the substring 00
2	17	Which of the following is not a regular expression?	$(a+b)^* - (aa)$	1	$(a+b)^*abb$	0+1	$(a+b)^* - (aa)$	a^*bb^*b
2	18	Generate a regular expression for the following problem statement:P(x): String of length 5 or less but not containing epsilon	$(1+0)^5$	1	(1+0)(1+0)(1+0)(1+0)(1+0)	$(10)^6$	$(1+0)^5$	$(1+0+\in)^5$
2	19	The language described by the regular expression over the alphabet {0 1} is the set of :(0+1) ((0+1)(0+1))*	All strings should have Odd Length	1	All strings containing at least two 1’s	All strings should have Odd Length	All strings should have Even Length	All strings containing the substring 00
2	20	Construct a r.e for the language which accepts all strings with atleast two c’s over the set Σ={c,b}		1				

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2	21	Give a regular expression for the following regular language: The set of all strings containing 00.		1				
2	22	For which of the following applications regular expressions can be used?	All of these	1	Designing compiler s	Developing text editors	Simulating sequential circuits	All of these
2	23	Regular Expression R and the language described by it can be represented as:	c)R, L(R)	1	a)R, R(L)	b) L(R) , R(L)	c)R,L(R)	d) All of the mentioned
2	24	If R is a regular expression, then which of the followings is FALSE?	d) (R*)*= R+	1	a) R*= (R)*	b) R*R*= R*	c) RR*= R^+	d) (R*)*= R+
2	25	Regular expression for strings of length 7 or less is?	$(1+0+\varepsilon)^7$	1	$(10)^7$	$(1+0)^7$	$(1+0+\varepsilon)^7$	None of these
2	26	Which of the following statements is/are TRUE? 1. If L1 U L2 is regular, then both L1 and L2 must be regular. 2. The class of regular languages is closed under infinite union.	Neither 1 and 2	1	1 only	2 only	Both 1 and 2	Neither 1 and 2
2	27	The language of all words with at least 2 a's can be described by the regular expression: (1) (ab)* a a (ba)* (2) (a + b) * a b* a (a + b) * (3) b* a b* a (a + b) *	All 1,2,3	1	1 Only	2 Only	All 1,2,3	None of these
2	28	Which of the following is not a regular expression? 1) [(a+ b) * + (aa+ bb) *] 2) [(0+ 1) + (0b+ a1) * - (a+b)]* 3) (01 +11 +10) * 4) (1+01 +0) * (1+0) *	Only 2	1	Only 1	Only 2	All 1,2,3	None of These
2	29	Generate a regular expression for the following problem statement:P(x): string of length 6 or less but not containing epsilon for {0,1} *	$(1+0)^6$	1	$(1+0)^6$	(1+0) (1+0) (1+0) (1+0)	$(10)^6$	$(1+0+\varepsilon)^6$
2	30	Which of the following is/are correct? Statement 1: ε represents a single string in the set Statement 2: Φ represents the language that consist of no string Statement 3: (0+ε) (1+ε) represents {0, 1, 01, 11, 00, 10, ε}.	Statement 1 & 2 are correct but 3 is false.	1	All Statements are correct	Statement 1 is false but 2 and 3 both are correct	Statement 1 and 2 both are false and 3 is correct	Statement 1 & 2 are correct but 3 is false.
2	31	Let for ∑ = {0,1} R= (∑∑∑)*, the language of R would be:	{w/w is a string of length multiple of 3}	1	{w/w is a string of odd length}	{w/w is a string of length multiple of 3}	{w/w is a string of length 3}	{w/w is a string of even length}
2	32	Regular expression for all strings starts with ab and ends with bba is?	ab(a+b)*bba	1	ab(a+b)*bba	ab(a+b)*+ (a+b)*bba	ab(a+b)*bba + bba(a+b)*ab	ab+(a+b)*bba
2	33	Which strings are valid for Regular Expression aa(bb)*	aa, aabb, aabbbb, …	0.5	bb, bbbb, bbbbbb, …	abb, abbbb, abbbbbb …	aa, aabb, aabbbb, …	aabb, aabbbb, aabbbb,…
2	34	Regular Expression for all strings starts with ab and ends with b defined over {a,b}	ab(a+b)* b	0.5	ab(a+b)b	ab(a+b)* b	ab* b	abb(a+b)*
2	35	Write Regular Expressions for the following languages of all strings in{0,1}* Strings with odd numbers of 1's(Ones)		2				
2	36	Write Regular Expressions for the following languages of all strings in {0,1}* Strings that start with 1 and do not end with 10.		2				
2	37	Write a R.E for the set of all strings ending with 1 and does not contain 00.		2				
2	38	Construct R.E for all strings in {0,1}* that do not end with 11.		2				

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2	39	Find a regular expression corresponding to each of the following subsets of {0,1}*. The language of all strings containing both 101 and 010 as substrings.		2				
2	40	Write a regular expression for language L over {0,1} such that every string in L i)Begins with 00 and ends with 11. ii)Contains alternate 0 and 1		2				
2	41	Write regular expression for the following languages L={x ε (0,1)*|x contains both 101 and 110}		2				
2	42	Find regular expression for following i.Language of all strings containing exactly two 0's. ii.Language of all strings that begins and ends with 00 or 11 iii. Language of all strings in which every 0 is followed immediately by 11		2				
2	43	Write RE for the languages of all Strings that do not end with 01.		1				
2	44	Find a regular expression corresponding to each of the following subsets of{0,1}* 1. The language of all strings that begin or end with 00 or 11. 2.The language of all strings containing both 11 and 010 as substrings		2				
2	45	Write Regular Expression for the following language of all strings in {0,1}* String Starts with 1 and has even length		2				
2	46	What are the closure properties of regular languages?		1				
2	47	Find a regular expression corresponding to each of the following subsetsof{0,1}* (i) The language of all strings beginning with 1 and ending with 0		2				
2	48	Write Regular Expression over the alphabets {a,b} consisting strings: Second last character as 'a' Starting with 'a' and ending with 'b'		2				
2	49	Define Regular Expression. Find Regular Expression corresponding to each of the following subsets of {0,1}* The Language of all strings containing exactly two 1's		2				
2	50	Find a regular expression of following subsets of {0,1}* The language of all strings with next to last symbol 0		2				
2	51	Find a regular expression corresponding to each of the following subsets of {0,1}* (i). the language of all strings that do not end with 10		2				
3	52	The total number of state required to automate the given regular expression (bb | aa)*	4	1	3	2	4	6
3	53	The total number of states required to automate the given regular expression: BAAA, consider ∑= {A,B}	5	1	3	4	5	6
3	54	Finite automata requires minimum _____number of stacks.	0	1	0	1	2	3

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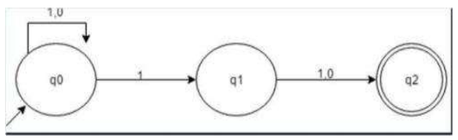
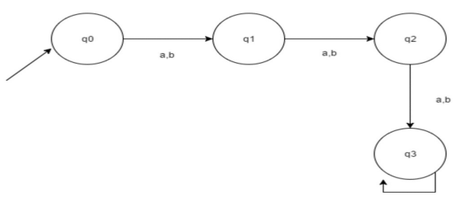
3	55	The total number of states required to automate the given regular expression (a+b)^* abb	4	1	4	5	2	3
3	56	FSM with output capability can be used to add _given integer in binary representation.	2	1	3	1	0	5
3	57	We can represent one language in more one FSMs, true or false?	TRUE	1	May be true	TRUE	Cannot be said	FALSE
3	58	"The basic limitations of Finite Automata is	It can't remember arbitrary large amountof information.	1	It sometime recognizes grammar that are not regular	It can't remember arbitrary large amount of information.	It some time fails to recognize the Regular grammar.	All of the mentioned
3	59	A language is regular if and only if	Accepted by DFA	1	Accepted by PDA	Accepted by LBA	Accepted by Turing Machine	Accepted by DFA
3	60	There are _____tuples in finite state machine.	5	1	4	3	5	0
3	61	Which of the following is not a part of 5-tuple finite automata?	Output alphabet	1	Input alphabet	Output alphabet	Set of states	Transition function
3	62	Number of states require to accept string ends with 10.	3	1	4	3	5	0
3	63	The DFA shown represents all strings which has 1 at second last position. 	Wrong position	1	Wrong position	Correct	May be correct	Incorrect,Incomplete DFA
3	64	Language of finite automata is.	Type3	1	Type 0	Type1	Type 3	Type 4
3	65	Number of final state require to accept Φ in minimal finite automata.	No Fina l State Req uired	1	1	2	No Final State Required	4
3	66	The non- Kleene Star operation accepts the following string of finite length over set A = {0,1} | where string s contains even number of 0 and 1	1,111,001,100	1	ε,0011,11001100	10,011,010,101	1,111,001,100	111,100,110,010,101
3	67	To get a string of n terminals, the number of productions to be used is:	2n-1	1	n^2	2n+1	2n-1	n+2
3	68	The minimum Possible No. of states of a FA that accepts the Regular Language L= {w1 a w2 | w1, w2 ϵ {a, b} *, |w1|= 2, |w2| ≥3} is:	8	1	5	6	8	9
3	69	Which among the following states would be notated as the final state/acceptance state? L= {x ϵ ∑= {a, b} | length of x is atmost 2} 	q2	1	q0	q1	q2	q3
3	70	Which of the following option is correct?	NFA is slower to process and it representation uses less memory	1	NFA is slower to process and its representation uses more memory than DFA	DFA is faster to process and its representation uses less memory than NFA	NFA is slower to process and its representation uses less memory than DFA	DFA is slower to process and its representation uses less mem ory than NFA
3	71	What is wrong in the given definition? Def:({q0,q1,q2},{0,1},δ,q3, {q3})	Initial and Final states do not belong to the Graph	1	Initial and final states can't be same	The defi nition does not satisfy 5 Tuple definition of NFA	Initialand Final states do not belong to the Graph	There are no transition definition
3	72	What is the relation between DFA and NFA on the basis of computational power?	Equal	1	DFA>NFA	NFA>DFA	Equal	Can' t be said

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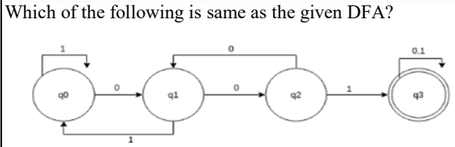
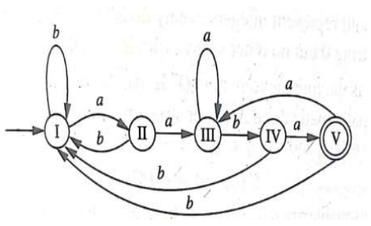
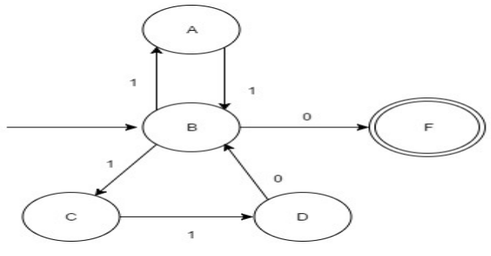
3	73	Given:∑={a,b} L={xϵ∑*|x is a string combination} ∑4 represents which among the following?	{aaaa, abab , ε, abaa aabb}	1	{aa, ab, ba, bb} {aa, ab, ba, bb}	{aaaa, abab , ε, abaa aabb}	{aaa ,aab, aba, bbb}	All of the mentioned
3	74	Which of the following pairs of regular expression are not equivalent?	none of the above	1	(a+b)* and (a*+ b)*	(a*+ b)* and (a+b)*	(ab)* aand a(ba)	none of the above
3	75	We have two statements S1 and S2 whose definition are as follows: S1 - {0^ 2n | n ≥ 1|} is regular language. S2 - {0^m 1^n 0^(m + n) | m ≥ 1 and n ≥ 1|} is a regular language	Only S1 is correct	1	Both S1 and S2 are correct	Only S1 is correct	Neither S1 nor S2 is correct	Only S2 is correct
3	76	The minimum number of states in any DFA accepting the regular language L=(111+11111)* is	9	1	7	5	9	11
3	77	How many states are present in the smallest finite automaton which accepts the language {x | length of x is divisible by 3}?	4	1	4	5	3	2
3	78	Which of the following regular expression identities are true?	(r+ s)*= (r*s*)*	1	(r+s)*=r*s*	(r+ s)*= (r*s*)*	(r+ s)*= r* + s*	r*s*=r*+s*
3	79	Which one is correct regarding Regular Expression?	both	1	We can draw FA for each regular expression	RE defines regular languages	Both	We can't draw FA for some regular expression
3	80	Which of the following is same as the given DFA?  	(0+1)*001(0+1)*	1	(0+1)*010(0+1)*	1*001(0+1)*	(01)*(0+0+1)(01)*	(0+1)*001(0+1)*
3	81	Which of the following does the given FA represent?  	b*aaba	1	b*aaba	baaba. (b)*	(aaba)+	a+b)*baaba
3	82	Which of the following does the given NFA represent?  	(11+110)*0	1	(110)*0	(11)(110)0	(00+11)*	(11+110)*0
3	83	Draw FA for the Strings: 1) The strings where no. of 0's is multiple of three over ∑= {0,1}. 2) 0[0+1(1+01)*00]*1(1+01)*0		2				
3	84	Draw NFA for the following (0+1) * 10 (0+1)		2				
3	85	Design a DFA that reads string defined over and accepts only those strings which end up either 'aa' or 'bb'.		2				

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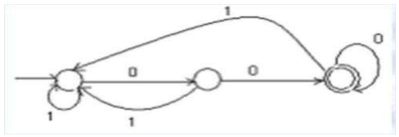
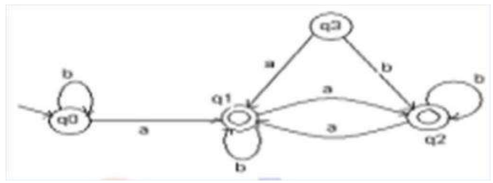
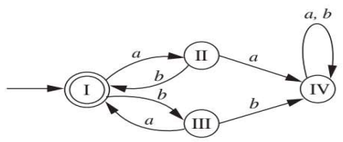
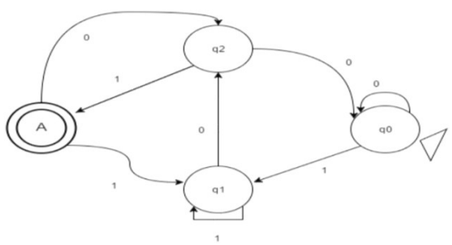
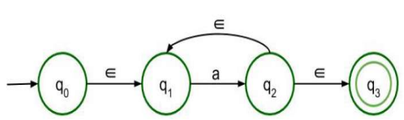
3	86	Draw NFA to accept strings over alphabet {0,1} such that the third symbol from right end is 0. b) Draw NFA for the string a(ab+baa)^* (aba)^* (aa+bab)a		3				
3	87	Draw DFA for the following - 1) L1= {x ϵ (0,1)* | x end with 01} 2) (0+1)*.(10+11)		4				
4	88	"The DFA shown below accepts the set of all strings over {0,1} that 	End with 00	1	End with 0	End with 00	Begin either with 0 or 1	Contain the substring 00
4	89	Which one of the following is true for the automata 	b*a(a+b)*	1	b*ab*ab* ab*	b*ab*ab*	b*a(a+b)*	(a+b)*
4	90	Which one of the following is true for the automata 	(ab+ba)*	1	(ab)*ab+(ba)*ab	b*ab*ab*	b*a(a+b)*	(ab+ba)*
4	91	What the following DFA accepts? 	x is a string such that it ends with '101'	1	x is a string such that it ends with '101'	x is a string such that it ends with '01'	x is a string such that it ends with '10'	None of these
4	92	Which R.E. is true for this automata? 	a+	1	a+	ε	a	a*
4	93	NFA,in its name has' non- deterministic' because of:	The choice of path is non-deterministic	1	The result is undetermined	The state to be transited next is non-deterministic	None of the mentioned	The choice of path is non-deterministic

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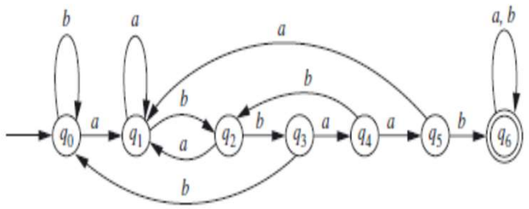
4	94	If you consider a regular expression r, in which r = (11 + 111)* over Σ = {0, 1}, then the number of states in minimal DFA and NFA respectively are:		1	DFA – 3, NFA – 5	DFA – 3, NFA – 3	DFA – 3, NFA – 4	DFA – 4, NFA – 3
4	95	Draw FA for Regular Expression: (111+100)*0		2				
4	96	Draw FA for Regular Expression: (11+100)*1		2				
4	97	Draw DFA for Regular Expression: (bbb + baa)*a		2				
4	98	What is the regular expression of following FA? 		2				
4	99	Draw FA for Regular Expression:0(10+01)*+1(00+ 01)*		2				
4	100	(i) Construct DFA for the R.E b(aa)*a + a(bb)*b (ii)Construct NFA for the R.E (a*bb)*+bb*a*		4				
4	101	Draw FA for the string 1) The string with next to last symbol as 0. 2) The string with number of 0's odd and numbers of 1's odd		4				
4	102	Draw FA for 1) (11+110)*0 2) {11}*{00}*		4				
4	103	Draw FA for the string The string in {0,1}*ending in 10 or 11.		4				
4	104	Draw FA for the strings: The string in {a,b}* ending in aba.		4				
4	105	Draw FA for the strings: 1) The string in{0,1}*ending in 00 or 01. 2) The string corresponding to regular expression (10 + 110)*1.		4				
4	106	Draw FA for the corresponding language 1) 1(01+10)*+0(11+10)* 2) (010+00)*(10)*		4				
4	107	Draw FA for the corresponding language 1) (1+110)*0 2) (1+10+110)*0		4				
4	108	Draw FA for the corresponding language 1) 1(1+10)*+10(0+01)* 2) 0+(10)*+01*0		4				
4	109	Draw FA for the string 1) The string with number of 0's odd and numbers of 1's even. 2) (0+1)(01)*(011)*		4				
4	110	Draw FA for accepting: 1) The string in {0,1}* ending in 1 and not containing substring 00. 2) The string with even numbers of 0's and even numbers of 1's.		4				

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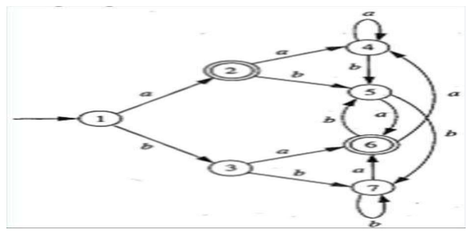
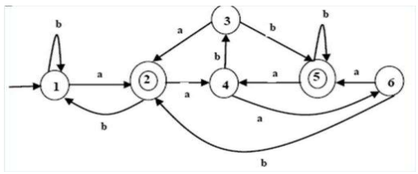
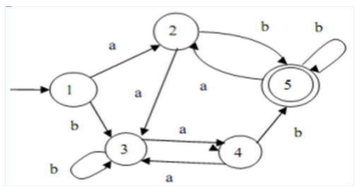
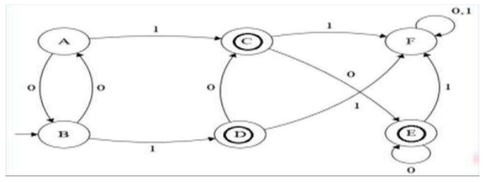
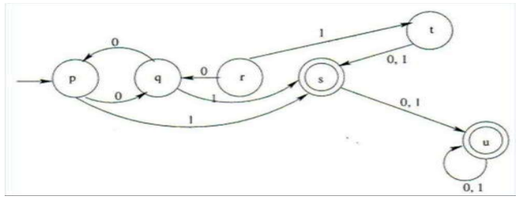
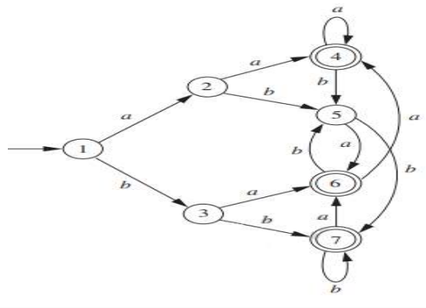
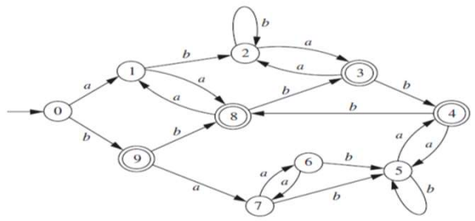
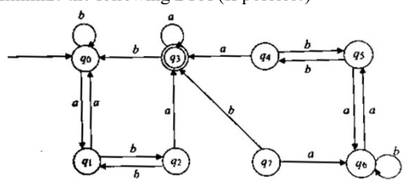
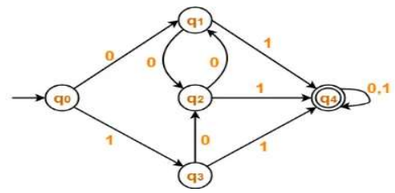
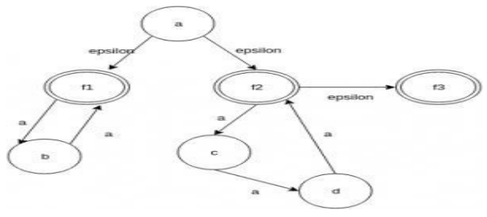
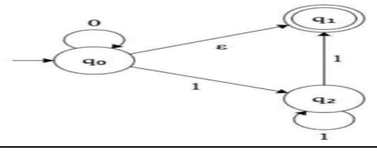
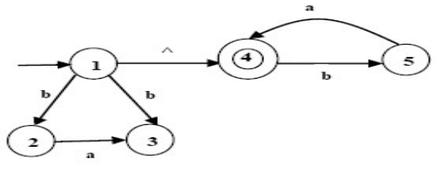
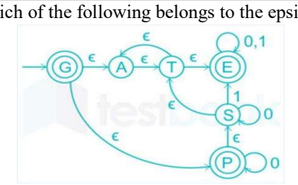
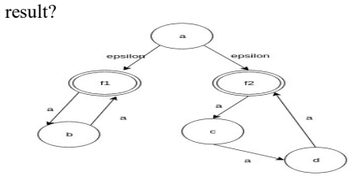
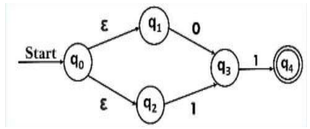
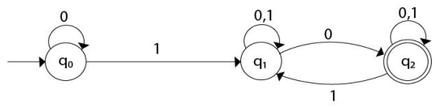
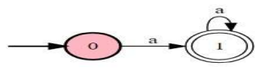
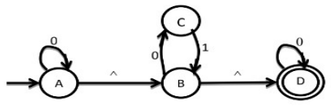
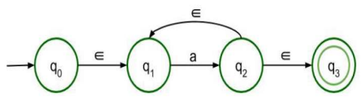
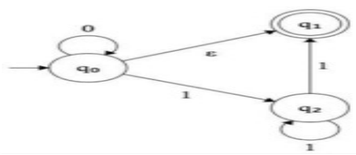
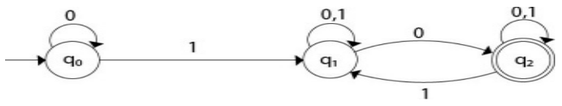
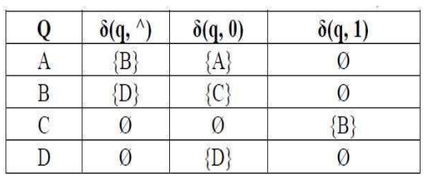
4	111	Draw DFA for the following languages Draw DFA for the following languages 1) L1={xϵ(0,1)*|x contains 110111} 2) L2={x ϵ (0,1)*|x contains odd numbers of 1's and even numbers of 0's}		4				
4	112	Draw DFA for the following languages 1) L1={xϵ(0,1)*|x do not contains 110} 2) L2={xϵ(0,1)*|x do not contain 00 as a substring}		4				
4	113	Draw FA for each of the following RE: 1) (0+1)*(1+00)(0+1)* 2) (0+1)*(01+110)		4				
4	114	Draw DFA for the following languages 1) L1={xϵ(0,1)*|x end with 01} 2) (0+1)*(10+11)		4				
4	115	Draw FA for the following languages 1) L1={xϵ(0,1)*|ends with 11} 2) L2={xϵ(0,1)*|x contains both 101 and 110}		4				
4	116	Draw the deterministic finite automata for the language of all those strings having double 0 or double 1 as substring.		4				
4	117	Draw FA for Strings containing either ab or bba.		2				
4	118	Draw FA for the string: The string in {a, b}* does not containing aaab.		2				
4	119	Draw NFA for the following regular expressions: R.E.= a (bb+ab+aa)		2				
4	120	Draw FA for each of the following RE 1) (a+b)*baaa 2) (bbb+ baa)*a		4				
4	121	For following NFA,find minimum FA accepting same language 		4				
4	122	For the following RE,draw an NFA 1) (a+b)*(abba*+(ab)*ba) 2) (aa+aab)*b		4				
4	123	For the following RE,draw an NFA 1) ((0+1)*10+(00)*(11)*)* 2) (0+1)*1(0+1)		4				
4	124	For the following RE,draw an NFA 1) (0+1)*(011+01010)(0+1)* 2) (0+1)(01)*(011)*		4				
4	125	For the following RE,draw an NFA 1) (0+1)*(10+110)*1 2) 0*(01)*1+1*0		4				
4	126	Draw NFA for (i) Binary number where its first and last digits are same. (ii) (0+1)*(111+100)*0		4				

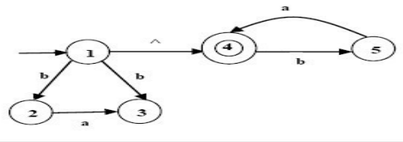
chapter_number	group_id	question_text	answer_text	marks	option1	option2	option3	option4
4	127	Draw NFA for the following regular expression (a+b)*(abb+ababa)(a+b)*		2				
4	128	Minimize the following DFA if possible: 		4				
4	129	Minimize the following DFA if possible: 		4				
4	130	Minimize the following DFA if possible: Q δ(q,a) δ(q,b) - +1 {3} {2} 2 {4} {1} 3 {5} {4} 4 {4} {4} 5 {3} {2}		4				
4	131	Minimize the following DFA if possible: 		4				
4	132	Minimize the following DFA if possible: 		4				
4	133	Minimize the following DFA (if possible) 		4				

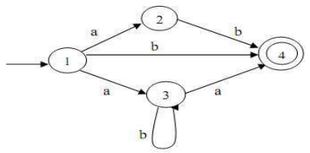
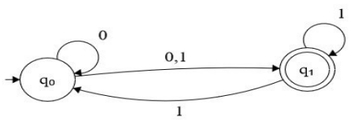
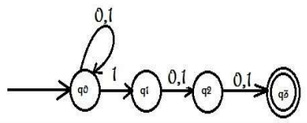
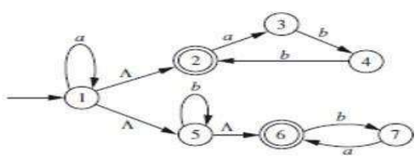
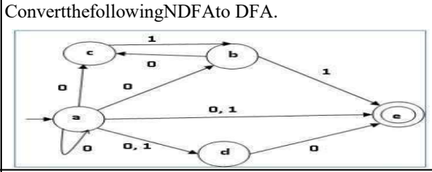
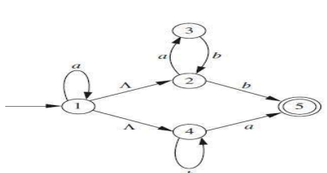
chapter_number	group_id	question_text	answer_text	marks	option1	option2	option3	option4
4	134	Minimize the following DFA (If Possible). 		4				
4	135	Minimize the following DFA (If possible) 		4				
4	136	Minimize the following DFA (If Possible). 		4				
5	137	Which of the following belongs to the epsilon closure set of a? 	{a, f1,f2,f3}	1	{a, f1,f2,f3}	{a, f1,f2}	{f1,f2, f3}	{a, f2,f3}
5	138	ε-closure of q1 in the given transition graph: 	{q0,q1}	1	{q1}	{q1,q2}	{q0,q1,q2}	{q0,q1}
5	139	Which of the following belongs to the epsilon closure set of 1? 	{1,4}	1	{1,2,3}	{1,4}	{1,2}	{1}
5	140	According to the given transitions, which among the following are the epsilon closures of q1 for the given NFA? Δ(q1,ε)={q2,q3,q4} Δ (q4, 1) = q1 Δ(q1,ε)=q1	{q1, q2, q3, q4}	1	{q4}	{q1, q2, q3, q4}	{q1,q3}	{q1,q3,q4}

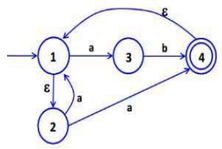
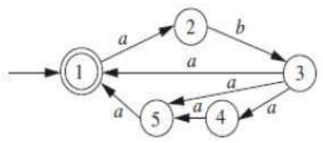
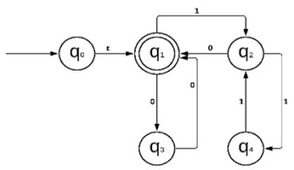
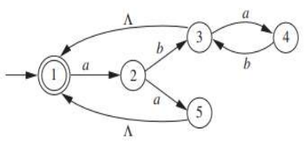
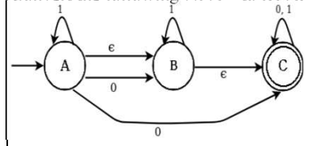
chapter_number	group_id	question_text	answer_text	marks	option1	option2	option3	option4
5	141	Which of the following belongs to the epsilon closure set of S? 	{S, T,A,E}	1	{S, T}	{S, T,A,E}	{S}	{S, P,T}
5	142	Complement of a DFA can be obtained by	making final states non-final and nonfinal to final	1	making final states non-final and non-final to final	no trival method	remains all states as it is	making starting state as final state
5	143	Remove all the epsilon transitions in the given diagram and compute the number of a-transitions in the result? 	7	1	7	3	5	6
5	144	While converting NFA with null to DFA, what will be δ'(A, 0) for the following NFA? 	{q3}	1	{q0,q1,q2}	{q1,q2}	{q3}	{q0,q1}
5	145	Which new state is generated while converting NFA to DFA and finding δ'([q1],0)? 	[q1,q2]	1	[q0,q1,q2]	[q1,q2]	[q2]	[q1]
5	146	Conversion of a DFA to an NFA?	Requires the subset construction	1	Is impossible	Requires the subset construction	Is chancy	Is non deterministic
5	147	If we consider an arbitrary NFA (non-deterministicfinite automaton) with N states in total, the maximum number of states that are there in an equivalent DFA (minimized) is at least:	2^N	1	N!	2N	2^N	N^2
5	148	The total time needed to run any input string in DFA is ……. than time required in NFA.	less	1	more	less	equal	None of these
5	149	Which of the following cannot use Empty String transition?	DFA	1	FA	NFA	DFA	None of these
5	150	Which of the following can use Empty String transition?	NFA	1	FA	NFA	DFA	All of these
5	151	What is the complement of the language accepted by DFA? 	{ε}	1	ϕ	{ε}	a	a*
5	152	The automaton which allows transformation to a new state without consuming any input symbols:	NFA-ʌ	1	NFA	DFA	NFA-ʌ	All of these

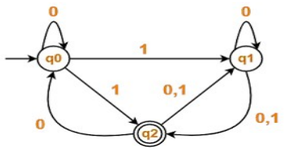
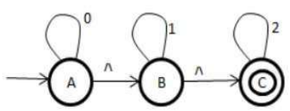
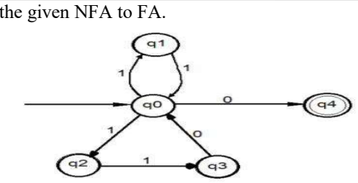
chapter_number	group_id	question_text	answer_text	marks	option1	option2	option3	option4
5	153	Which of the following options is correct for NFA to DFA conversion: Statement 1: Initial State of NFA is Initial State of DFA. Statement 2: The final state of DFA will be every combination of final state of NFA.	Statement 1 is True and Statement 2 is True	1	Statement 1 is True	Statement 2 is True	Statement 1 is True and Statement 2 is True	Statement 1 is True and Statement 2 is False
5	154	A language for which no DFA exist is a _____	Non - Regular	1	Empty set	Regular	Non - Regular	Decidable
5	155	An NFA may be converted to a DFA using _____	Subset construction	1	Inversion	Subset construction	Contradiction	Concatenation
5	156	If L is DFA-regular, L' is	DFA-regular	1	Non-regular	finite	DFA-regular	Non-finite
5	157	Which of the following belongs to the epsilon closure set of A? 	{A,B,D}	1	{A,B,D}	{A,B,C,D}	{A,B}	{A}
5	158	Which R.E. is true for this automaton? 	a^+	1	aa a^+ a^+ ε	a*	a^+	aaa
5	159	ε- closure of q2 in the given transition graph: 	Ø	1	{q0,q1,q2}	{q0, q1}	Ø	{q0}
5	160	Which is the application of NFA?	All of the mentioned	1	A regular language is produced by union of two regular languages	The concatenation of two regular languages is regular	The Kleene closure of a regular language is regular	All of the mentioned
5	161	Which of the following is true?	Every subset of a regular set is regular	1	Every subset of a regular set is regular	The union of two non-regular set is not regular	Every finite subset of non-regular set is regular	Infinite union of finite set is regular
5	162	Which new state is generated while converting NFA to DFA and finding δ'([q2], 1)? 	[q1, q2]	1	[q1, q2]	[q0 q1 q2]	[q1]	[q0]
5	163	Convert NFA-^ to NFA and DFA. Initial State:A, Final State: D 		5				

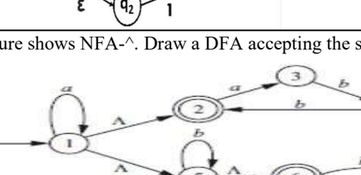
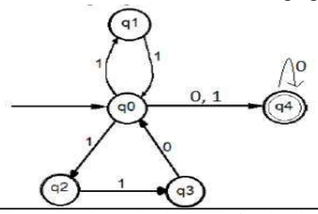
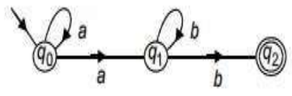
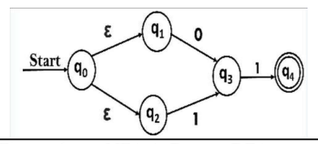
Q	δ(q, ^)	δ(q, 0)	δ(q, 1)
A	{B}	{A}	Ø
B	{D}	{C}	Ø
C	Ø	Ø	{B}
D	Ø	{D}	Ø

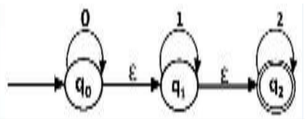
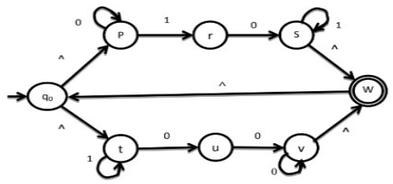
5	164	Convert the following NFA- Λ into FA. 		5				

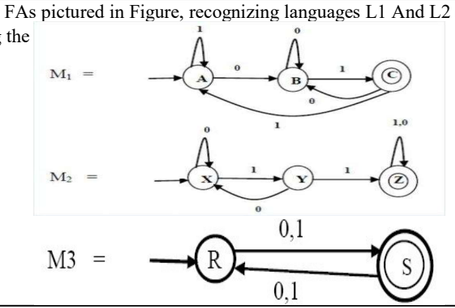
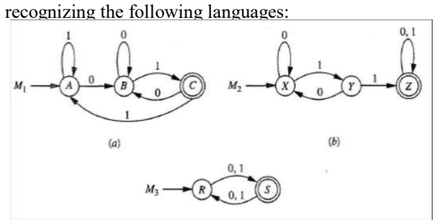
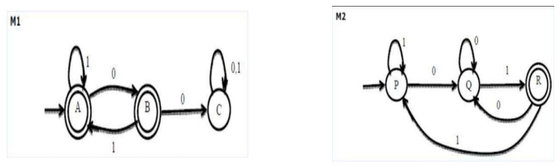
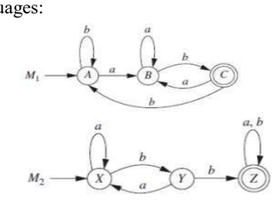
chapter_number	group_id	question_text	answer_text	marks	option1	option2	option3	option4
5	165	Convert the following NFA in to FA. 		4				
5	166	Convert the following NFA to DFA 		4				
5	167	Convert the NFA given in Table below to its corresponding DFA and draw the DFA. Current State | Input symbol: 0 | 1 →Q0 | Q1 | Q0, Q2 Q1 | Q2 | Q0 Q2* | Q0 | ---		4				
5	168	Convert NFA-^ to NFA and DFA. Initial State:A,Final State:E Q | δ(q, ^) | δ(q, 0) | δ(q, 1) A | {B,D} | {A} | Ø B | Ø | {C} | {E} C | Ø | Ø | {B} D | Ø | {E} | {D} E | Ø | Ø | Ø		5				
5	169	Convert this NFA to FA 		4				
5	170	Figure shows NFA-^.Draw an FA accepting the same language. 		5				
5	171	ConvertthefollowingNDFAto DFA. 		4				
5	172	Convert the following NFA - Λ into its equivalent DFA that accepts the same language: 		5				

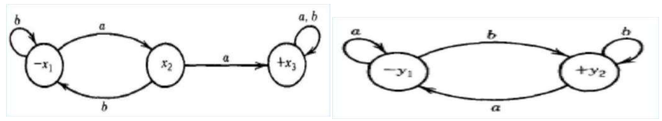
<table>
<tr><th>chapter_number</th><th>group_id</th><th>question_text</th><th>answer_text</th><th>marks</th><th>option1</th><th>option2</th><th>option3</th><th>option4</th></tr>
<tr><td>5</td><td>173</td><td>Convert NFA-Λ to FA for following figure.
  </td><td></td><td>4</td><td></td><td></td><td></td><td></td></tr>
<tr><td>5</td><td>174</td><td>Convert the following NFA into its equivalent DFA
  </td><td></td><td>5</td><td></td><td></td><td></td><td></td></tr>
<tr><td>5</td><td>175</td><td>Convert the following NFA ^ to NFA. Initial State: 1 and Final State: 7
<table><tr><th>q</th><th>δ (q, a)</th><th>δ (q, b)</th><th>δ (q,Λ)</th></tr><tr><td>1</td><td>{5}</td><td>φ</td><td>{4}</td></tr><tr><td>2</td><td>{1}</td><td>φ</td><td>φ</td></tr><tr><td>3</td><td>φ</td><td>{2}</td><td>φ</td></tr><tr><td>4</td><td>φ</td><td>{7}</td><td>{3}</td></tr><tr><td>5</td><td>φ</td><td>φ</td><td>{1}</td></tr><tr><td>6</td><td>φ</td><td>{5}</td><td>{4}</td></tr><tr><td>7</td><td>{6}</td><td>φ</td><td>φ</td></tr></table></td><td></td><td>4</td><td></td><td></td><td></td><td></td></tr>
<tr><td>5</td><td>176</td><td>Convert the Following NFA-Λ to NFA
  </td><td></td><td>3</td><td></td><td></td><td></td><td></td></tr>
<tr><td>5</td><td>177</td><td>Convert the following NFA ^ to DFA.
  </td><td></td><td>4</td><td></td><td></td><td></td><td></td></tr>
<tr><td>5</td><td>178</td><td>Convert the following NFA ^ to DFA.
  </td><td></td><td>3</td><td></td><td></td><td></td><td></td></tr>
<tr><td>5</td><td>179</td><td>Convert the following NFA into FA.
<table><tr><th>State (Q)</th><th>0</th><th>1</th></tr><tr><td>→P</td><td>{Q, S}</td><td>{Q}</td></tr><tr><td>Q*</td><td>{R}</td><td>{Q, R}</td></tr><tr><td>R</td><td>{S}</td><td>{P}</td></tr><tr><td>S*</td><td>{φ}</td><td>{P}</td></tr></table></td><td></td><td>4</td><td></td><td></td><td></td><td></td></tr>
</table>

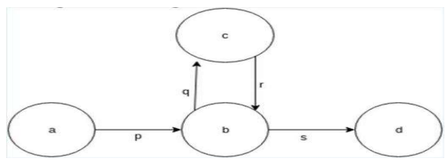
chapter_number	group_id	question_text	answer_text	marks	option1	option2	option3	option4
5	180	Convert the following NFA into FA. State (Q) | 0 | 1 →P | {P, Q} | {P} Q | {R, S} | {T} R | {P, R} | {T} *S | {Φ} | {Φ} *T | {Φ} | {Φ}		4				
5	181	Convert the following NFA to DFA State | 0 | 1 p | {q,s} | {q} *q | {r} | {q,r} r | {s} | {p} *s | Ø | {p}		3				
5	182	Convert NFA- Λ into NFA for the giveng transition table. Q | δ (q, ε) | δ (q, a) | δ (q, b) →*1 | {2} | Φ | Φ 2 | Φ | {2,3} | Φ 3 | Φ | Φ | {4} 4 | {1} | Φ | {5} 5 | Φ | {4} | Φ		4				
5	183	Convert the following NFA into its equivalent DFA. 		4				
5	184	Design a NFA for a language that accepts all string over {0,1}, in which the second last symbol is always 1. Then convert it to its equivalent DFA.		3				
5	185	Convert the Given NFA with null into its equivalent NFA 		4				
5	186	Convert the given NFA to FA. 		4				
5	187	Find Λ-Closure for each of the states in following NFA-Λ. And convert it into NFA and FA. q | δ(q,a) | δ(q,b) | δ(q,Λ 1 | ø | ø | {2} 2 | {3} | ø | {5} 3 | ø | {4} | ø 4 | {4} | ø | {1} 5 | ø | {6,7} | ø 6 | {5} | ø | ø 7 | ø | ø | {1}		5				

chapter_number	group_id	question_text	answer_text	marks	option1	option2	option3	option4
5	188	Convert the following NFA into its equivalent DFA <table><tr><th rowspan="2">State</th><th colspan="2">Input symbols</th></tr><tr><th>0</th><th>1</th></tr><tr><td>->p</td><td>{p,q}</td><td>{p}</td></tr><tr><td>q</td><td>{r,s}</td><td>{t}</td></tr><tr><td>r</td><td>{p,r}</td><td>{t}</td></tr><tr><td>s*</td><td>Ø</td><td>Ø</td></tr><tr><td>t *</td><td>Ø</td><td>Ø</td></tr></table>		5				
5	189	Convert the following ε-NFA into NFA. 		4				
5	190	Convert the following NFA-Λ to NFA, consider state 1 as Initial and final state <table><tr><th rowspan="2">State</th><th colspan="3">Input Symbols</th></tr><tr><th>^</th><th>a</th><th>b</th></tr><tr><td>1</td><td>Ø</td><td>2</td><td>Ø</td></tr><tr><td>2</td><td>Ø</td><td>5</td><td>3</td></tr><tr><td>3</td><td>1</td><td>4</td><td>Ø</td></tr><tr><td>4</td><td>Ø</td><td>Ø</td><td>3</td></tr><tr><td>5</td><td>1</td><td>Ø</td><td>Ø</td></tr></table>		4				
5	191	Convert NFA-Λ to NFA for following figure 		4				
5	192	Determine the equivalent DFAfor the above given NFA. 		3				
5	193	Convert the NFA with ε into its equivalent DFA. 		4				
5	194	Figure shows NFA-^. Draw a DFA accepting the same language 		4				
5	195	Convert the following NFA-^ to DFA <table><tr><th>q</th><th>δ(q, a)</th><th>δ(q, b)</th><th>δ(q, Λ)</th></tr><tr><td>1</td><td>{1}</td><td>Ø</td><td>{2, 4}</td></tr><tr><td>2</td><td>{3}</td><td>{5}</td><td>Ø</td></tr><tr><td>3</td><td>Ø</td><td>{2}</td><td>Ø</td></tr><tr><td>4</td><td>{5}</td><td>{4}</td><td>Ø</td></tr><tr><td>5</td><td>Ø</td><td>Ø</td><td>Ø</td></tr></table>		4				

chapter_number	group_id	question_text	answer_text	marks	option1	option2	option3	option4
5	196	Convert the given NFA into its equivalent DFA. 		4				
5	197	Calculate $\delta^*(q_0,010)$ &$\delta^*(q_0,1100)$ form for following transition diagram. 		4				
5	198	An NFA with states 1-5 and input alphabets {a,b} has following transition table Q-1 Draw its transition diagram Q-2 Calculate δ*(1,a) Q-3 Calculate δ*(1,aaabaab) q | $\delta(q,a)$ | $\delta(q,b)$ 1 | {1,2} | {1} 2 | {3} | {3} 3 | {4} | {4} 4 | {5} | Ø 5 | Ø | {5}		4				
5	199	Find ^-closure of the each of the states in following NFA-^ q | δ(q,a) | δ(q,b) | δ(q,Λ) 1 | ø | ø | {2} 2 | {3} | ø | {5} 3 | ø | {4} | ø 4 | {4} | ø | {1} 5 | ø | {6,7} | ø 6 | {5} | ø | ø 7 | ø | ø | {1}		2				
5	200	Consider the NFA-^ depicted in following table 1) Compute the ^-closure of each states. 2) Find δ*(q0,1111) 3) Find δ*(q0,0011) 4) Find δ*(q0,1001) 5) Find δ*(q0,0111) q | δ(q,0) | δ(q,1) q_0 | q_0 | q_0, q_1 q_1 | q_2 | q_2 q_2 | q_3 | q_3 q_3 | ø | ø		4				
5	201	Consider the NFA-^ depicted in following table 1) Compute the ^-closure of each states. 2) Findδ*(q0,abab) 3) Findδ*(q0,aaabbb) | Λ | a | b | c →p | Φ | {p} | {q} | {r} q | {p} | {q} | {r} | Φ *r | {q} | {r} | Φ | {p}		4				
6	202	Using kleene's Theorem Draw NFA-Λ for ((01)*10+(00)*)*		3				
6	203	Using Kleene's Theorem Draw NFA-Λ for ((0+1)*10 + (00)*)*		3				
6	204	Draw NFA-Λ recognizing the language ({0,1}*{10}U{00}*{11}*)*using kleene's theorem part1,where Σ={0,1}		3				
6	205	Using kleene's Theorem Draw NFA-Λ for ((0+1)(01)*)		3				
6	206	Using kleene's Theorem Draw NFA-Λ for $(00+1)^*(10)^*(01)^*0$		2				
6	207	Using Kleene's Theorem, Draw NFA-Λ for $(010+00)^*(10)^*$		2				
6	208	Using Kleene's Theorem Draw NFA-Λ for R.E.=((aa+bb)* (ab)*)* , where Σ = {a,b}.		3				

chapter_number	group_id	question_text	answer_text	marks	option1	option2	option3	option4
6	209	Using kleene's Theorem Draw NFA-Λ for ((aa+b)*(aba)*bab)*		3				
6	210	Let M1 and M2 be the FAs pictured in Figure, recognizing languages L1 And L2 respectively. Draw FAs recognizing the a. L1UL2' b. L2-L1 c. L1 U L2 d. L1 ∩L3 		4				
6	211	Suppose that Languages L1 and L2 are the subsets given below. WhereΣ={0,1} L1={x|00 is not a substring of x } L2={x|x ends with 01}Draw FAs recognizing the following languages (1)L1-L2 (2)L1∩L2		5				
6	212	Let M1, M2 and M3 be the FAs pictured in Figure below, recognizing languages L1, L2, and L3 respectively. Draw FAs recognizing the following languages: i. L1UL2 ii. L1∩L2 iii. L1-L2 iv. L1∩L3 v. L3-L2 		5				
6	213	Let M1 and M2 be the two FAs as given below. Draw FA recognizing (L1 U L2) and (L1-L2) where L1 and L2 correspond to M1 and M2 respectively. 		5				
6	214	Let M1 and M2 be the FAs pictured below, recognizing languages L1 and L2 respectively Draw the FAs recognizing the following languages: L1∩L2, L2–L1 **Fig. (i)** **Fig. (ii)** 		4				
6	215	L1 and L2 are two languages:L1 = {x |11 is not a substring of x} L2 ={x |x starts with 0 and ends with 0} Draw FA for both L1 and L2 and construct FA for L3=L2-L1		4				

chapter_number	group_id	question_text	answer_text	marks	option1	option2	option3	option4
6	216	Let FA1 and FA2 be the FAs as shown in the figure recognizing the languages L1 and L2 respectively.Draw an FA recognizing the language, L1 U L2. 		4				
6	217	There are 2 languages over Σ = {0 , 1} L1 = all strings containing 101 L2 = all strings ending with 11 Draw FAs recognizing following languages: (i) $L1 \cap L2'$ (ii) $L1' \cup L2'$		5				
6	218	If L1 and L2 are regular sets then intersection of these two will be:	Regular	1	Recursive	Non-recursive	Regular	Reflexive
6	219	If n(A)=110, n(B)=300, n(A-B)=50. then n(A U B) =_____	350	1	340	350	60	100
6	220	If n(A)= 300, n(A U B)= 500, n(A ∩ B)=50 and n(B')=350 then n(B)=_____	250	1	340	250	657	250
6	221	If X and Y are two sets, such that X U Y has 40 elements, X has 28 elements, Y has 22 elements, How many elements does X ∩ Y has?	10	1	30	20	10	28
6	222	Complement of a DFA can be obtained by _____	making final states to non-final and non-final to final	1	making starting state as final state	making final states to non-final and non-final to final	make final as a starting state	Remove Unreachable states
6	223	L1= accepting all string that ends with a.L2= accepting all string that ends with b. The number of state/s in minimal DFA that accept the Language L1 ∩ L2 is _____ and Number of final state/s is_____	1,1	1	4,1	3,1	2,1	1,1
6	224	S1: Regular sets are closed under union, concatenation and Kleene closure.S2: Complement of regular sets are Regular. S3: If L1 and L2 are regular sets then intersection of these two will be Non-Regular.	S1, S2 true and S3 false	1	All are true	S1, S2 true and S3 false	S1, S3 true and S2 false	All are false
6	225	If L1 is regular L2 is unknown but L1-L2 is regular, then L2 must be _____	Regular	1	Empty set	CFG	Regular	Non-regular
6	226	Define Pumping Lemma for Regular Languages. Use Pumping Lemma to show that the following languages are not regular. $L = \{0^n 1^{2n} \mid n > 0\}$ $L = \{ww^r \mid w \in (0,1)^*\}$		4				
6	227	Which of the technique can be used to prove that a language is non-regular?	Pumping Lemma	1	Arden's theorem	Pumping Lemma	Ogden's Lemma	None of Above
6	228	Show that following language is not a Regular Language using Pumping Lemma $L=\{0^i1^i \mid i>=0\}$,where$\Sigma=\{0,1\}$		4				
6	229	Prove that the language L= $\{a^n b^n a b^{n+1} \mid n=1,2,3,\ldots\}$ is non regular using pumping lemma.		4				
6	230	Show that the language L= $\{a^n b^n c^n / n>=1\}$ is non-regular using pumping lemma theory.		4				
6	231	Use the pumping lemma to show that following language is not regular: L={ww|wϵ{0,1}*}.		4				
6	232	Use the Pumping Lemma to show that the following language is not regular: L= {W Є $\{0,1\}^*$, W has No of 0's ≠ No of 1's}		4				
6	233	Define Pumping Lemma for Regular Languages. Prove that the language $L=\{a^n \mid n$ is a prime number$\}$ is not regular.		4				

chapter_number	group_id	question_text	answer_text	marks	option1	option2	option3	option4
6	234	Use the Pumping Lemma to show that the following languages are not regular: • $L=\{0^n10^{2n}/n\geq 0\}$ • $L=\{0^i1^j0^k/k>i+j\}$		4				
6	235	Use Pumping Lemma to show that L={xЄ{0,1}*|x is a palindrome} is not a regular language.		4				
6	236	Use the Pumping Lemma to show that the following language is not regular: $L = \{ 0^m 1^n / m \neq n\}$		2				
6	237	Prove that the language L= $\{a^{i^2} \mid i \geq 1\}$ not regular using pumping lemma.		2				
6	238	The logic of pumping lemma is a good example of _____	Pigeon-hole principle	1	Divide-and-conquer technique	Recursion	Arden's theorem	Pigeon-hole principle
6	239	While applying Pumping lemma over a language, we consider a string w that belong to L and fragment it into _____parts.	3	1	3	5	2	None of these
6	240	If we select a string w such that w Є L, and w=xyz.Which of the following portions cannot be an empty string?	y	1	x	y	z	None of these
6	241	Let w=xyz and y refers to the middle portion and |y|>0.What do we call the process of repeating y 0 or more times before checking that they still belong to the language L or not?	Pumping	1	Generating	Pumping	Producing	None of these
6	242	There exists a language L.We define a string w such that w Є L and w=xyz and |w|>=n for some constant integer n.What can be the maximum length of the substring xy i.e.|xy|<=_____	n	1	n	|y|	|x|	None of these
6	243	Fill in the blank in terms of p, where p is the maximum string length in L.Statement: Finite languages trivially satisfy the pumping Lemma by having n=	p+1	1	p*1	p+1	p-1	None of these
6	244	For Σ = {a , b} ,consider L={ x/x= a^{2+3k} or x= b^{10+2k} ,k>=0} Which one of the following be pumping length for L?	24	1	3	5	9	24
6	245	Answer in accordance to the third and last statement in pumping lemma:	i>= 0	1	i>0	i<0	i<=0	None of these
6	246	If d is a final state,which of the following is correct according to the given diagram? 	x=p, y=qr ,z=s	1	x=p, y=qr ,z=s	x=p, z=qrs	x=pr ,y=r, z=s	None of these
6	247	Which of the following is not an application of Pumping Lemma?	None of Above	1	$\{0^i1^i \mid i>=0\}$	$\{0^ix \mid i>=0,\ x\in\{0,1\}^*$ and $\|x\|<=i\}$	$\{0^n \mid n$ is prime$\}$	None of Above
6	248	Regular sets are closed under union,concatenation and kleene closure.	All of above	1	Union	Concatenation	Kleene closure	All of above
6	249	Complement of (a + b)* will be	Ø	1	Ø	a	a or b	a and b
6	250	Consider the DFAs M and N given above. The number of Final states in a minimal FA that accepts the language L(M) ∩ L(N) is _____ 	1	1	1	3	5	9
		Give the context free grammar for the following languages. 1.L={ a^nb^n|n>=0}						

chapter_number	group_id	question_text	answer_text	marks	option1	option2	option3	option4
7	251	2. Language for Palindrome. 3. L={x belongs to{0,1}*| n0(x) =n1(x)} 4.L={x belongs to{0,1}*| n0(x)≠n1(x)} 5.The set of odd-length strings in {a,b}*with middle symbol a.		2				
7	252	Write CFG for the following language : { $a^i b^j c^k$ | i=j+k}		3				
7	253	Generate the Context-Free Grammars that give the following languages. (i) {w | w contains at least 3 1's} (ii) {w | w starts and ends with the same symbol}		3				
7	254	Design CFG for Generating Following Language: Set of odd length strings in {a,b}* whose first, middle and last symbol are same.		2				
7	255	Write CFG for the following language: L = { $a^i b^j$ | j ≤ 2i}		2				
7	256	Find CFG for the following languages. L = { $a^i b^j a^k$ | j >i + k } L = { $a^i b^j a^k$ | i = j or j = k }		4				
7	257	Define Context Free Grammar. Find context-free grammar for the language: L = { $a^i b^j$ | i< 2j}.		3				
7	258	Design CFG for Generating Following Language: Set of even length strings in {a, b, c, d}* with two middle symbol equal.		3				
7	259	Find Context Free Grammarfor the following language. $L = \{x \in \{a,b,c\}^* \mid n_a(x) = n_b(x) = n_c(x)\}$		3				
7	260	Give the context free grammar forthe following languages. (011 +1)* (01)*		2				
7	261	Find context free grammar for the following language. L=(0+1)1*(1+(01)*)		2				
7	262	Find context free grammar for the following language. L=111(1+(01)*)		2				
7	263	Find context free grammar for the following language. L=(0/1)*1(0/1)*1(0/1)*		2				
7	264	Find RE for the following CFG. S → aS | bS|aA A → bB ,B → bC ,C → Λ		2				
7	265	Convert following CFG to RE: S→ a| aA |B A→ aaA| bA |^ B → aab		2				

chapter_number	group_id	question_text	answer_text	marks	option1	option2	option3	option4
7	266	Find the CFG for the given Languages (i) L= set of odd length string in{a,b} with middle symbol b. (ii)L= $\{a^ib^j \mid i = 2j\}$		4				
7	267	Find the CFG for the given Language (i) L= {(a+b)*+(ab(a+b)*} (ii) L= $\{a^ib^j \mid i \leq j \leq 2i\}$		2				
7	268	Construct CFG for L=$(p^i q^j r^j s^i , / i,j>=0\}$		2				
7	269	Write RE for CFG S→0A0/1B1 A→11A/ Λ B→00B/ Λ		2				
7	270	Prove that the following CFG is Ambiguous. S → aSbS | bSaS|^. Draw Parse tree for the string "abab".		3				
7	271	State whether the grammar is ambiguous or not. S -> SAB | Λ A -> AaB | a B -> AS | b Consider string 'abaaab'		2				
7	272	Let G be the grammar S → aB | bA A → a | aS | bAA B → b | bS | aBB For string aaabbabbba, find Left most derivation and right most derivation.		4				
7	273	Consider following grammar: S →A1B A → 0A | Λ B → 0B | 1B | Λ Give leftmost and rightmost derivations of the string 00101. Also draw the parse tree corresponding to this string.		4				
7	274	Consider the grammar: S ->aAS | a A ->SbA | SS | ba Derive left most and right most derivation of string "aabbaa" using given grammar.		4				
7	275	For the following CFG, find out two left most derivations for the string "aaabb" and also draw the S → XY X → XX | a ,Y → YY | b		4				
7	276	Show that CFG S→ a|Sa|bSS|SSb|SbS is ambiguous.		2				
7	277	Prove that the following CFG is Ambiguous. S → S + S | S * S | (S) | a Draw Parse tree for the string a + a * a.		2				
7	278	Prove that the following CFG is Ambiguous. S -> S + S | S * S | a | b Derive the parse tree for expression (a + a)*b from the unambiguous grammar.		4				
7	279	Prove that the following language is ambiguous S → S + S | S * S | a.		4				
7	280	Check whether the grammar is ambiguous or not? $S \rightarrow iCtS \mid iCtSeS \mid a, \quad C \rightarrow b$ where S and C are variable (Non terminal), Draw Parse tree for the string "ibtibtibtaes"		3				

chapter_number	group_id	question_text	answer_text	marks	option1	option2	option3	option4
7	281	Show that the CFG with productions S → a | Sa | bSS | SSb | SbS is ambiguous.		4				
7	282	Consider the grammar: S->ABA, A->aA | ε, B->bB | ε Is given grammar ambiguous?		4				
7	283	Define Ambiguous grammar. Write Unambiguous grammar for following grammar : E → E + E | E * E | (E) | id .Derive string “id+id*id” using unambiguous grammar.		4				
7	284	Check whether the following grammar is ambiguous or not. Justify your answer with proper reason. Trace it for the string aaabbbab. $S \rightarrow AB$ $A \rightarrow aA \mid \wedge B \rightarrow ab \mid bB \mid \wedge$		2				
7	285	Convert the CFG to CNF for the grammar S-> XYZ X->aX | bY |Λ Y->aY | bY |Λ Z->aZ |Λ		5				
7	286	Convert following CFG to equivalent Chomsky Normal Form (CNF). S → abAB A→ bAB |^ B → BAa| A | ^		4				
7	287	Given the Context Free Grammar G, find a CFG G’ in Chomsky Normal Form generating L(G) – {} S → SS | A | B A → SS | AS | a B → /\		4				
7	288	Given the context-free grammar G, find a CFG G’ in Chomsky Normal Form generating L(G) – {^}.G has production S → S(S) | ^.		4				
7	289	Given the Context Free Grammar G, find a CFG G’ in Chomsky Normal Form generating L(G) – { (1) S → aY | Ybb | Y X → /\ | a Y → aXY | bb | Xxa 2) S → AA A → B | BB B → abB | b | bb		4				
7	290	Given the CFG G, find a CFG G’ in Chomsky Normal form generating L(G) – { Λ}. S→A | B | C A→ aAa | B B→ bB | bb C→ aCaa | D D→ baD | abD | aa		4				
7	291	Convert following CFG to equivalent Chomsky Normal Form(CNF). S →AACD | ACD | AAC | CD | AC | C A →aAb | ab C →aC | a D →aDa | bDb | aa | bb.		4				
7	292	Given the CFG G, find a CFG G’ in Chomsky Normal form generating L(G) – { Λ} S→ AaA | CA | BaB A→ aaBa | CDA | aa | DC B→ bB | bAB | bb | aS D→ bD | Λ.		4				
7	293	Convert the CFG, G ({S,A,B},{a,b},P , S) to CNF , where P is as follows S → aAbB A → Ab | b B → Ba | a.		4				
7	294	For the following CFG, Find Chomsky normal form S->AACD A->aAb|ʌ C->aC|a D->aDa|bDb|ʌ		4				
7	295	Convert the following language in Chomsky normal form. S→ASB | SAB A→ BC B→ bB | c C → e		4				

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7	296	Consider following grammar: S →ASB | Λ A → aAS | a B → SbS | A | bb Eliminate useless symbols, if any. Eliminate Λ productions.		4				
7	297	What is CNF? Convert the following CFG into CNF. S → ASA | aB, A → B | S, B → b | ε.		4				
7	298	Eliminate useless symbols, ε -productions and unit productions for the following grammar: S->0A0 | 1B1 | BB, A->C, B->S | A, C->S | ε		4				
7	299	Convert the following CFG into its equivalent CNF: S → TU | V, T → aTb | Λ ,U→ cU | Λ ,V →aVc | W W →bW | Λ		4				
7	300	Define CNF. Also convert the following CFG into its equivalent CNF. S → aX | Y | bab X → ^ | Y Y → bb | bXb		4				
7	301	Convert the following grammar to CNF. S → ABDA A → aAb | Λ B → cB | c D → bDb | aDa | Λ		4				
7	302	Check whether the given grammar is in CNF. S->bA|aB A->bAA|aS|a B->aBB|bS|b If it is not in CNF, Find the equivalent CNF.		4				
7	303	Given the context-free grammar G, find a CFG G' in Chomsky Normal Form. S→0A0 | 1B1 | BB, A→0B | C B→S1 | A C→01 | Λ		4				
7	304	Convert following CFG to CNF : S->aX/Yb X->S/^ ,Y->bY/b		4				
7	305	Convert following CFG toequivalentChomsky Normal Form. S→A | B |C A→ aAa | B B→ bB | bb C→aCaa|D D→baD |abD|aa		4				
7	306	Prove that for L=ww| w Є(0,1)* L is not context-free language.		4				
7	307	Find out whether L={ $x^n y^n z^n$|n>=1} is context free or not		4				
7	308	Prove using pumping lemma that for L ={ww^r|w Є$(0,1)^*$}, L is not context -free language.		2				
7	309	The minimum number of productions required to produce a language consisting of palindrome strings over ∑={a,b} is	5	1	5	7	3	8
7	310	Consider the following statements about the context free grammar G = {S → SS, S -> ab, S → ba, S → ?} I. G is ambiguous II. G produces all strings with equal number of a's and b's III. G can be accepted by a deterministic PDA Which combination below expresses all the true statements about G?	I,II and III	1	I only	I and III only	II and III only	I,II and III
7	311	Which of the following statement is correct?	All Regular grammar are context free but not vice versa	1	All context free grammar are regular grammar but not vice versa	All Regular grammar are context free but not vice versa	Regular grammar and context	None of the mentioned
7	312	Which of the following is Type 3 language or Type 3 grammar?	Regular grammar/ Regular language	1	Regular grammar/ Regular language	Context Free Grammar / Context Free language	Context Sensitive Grammar /	Recursively Enumerable
7	313	Which of the following is Type 2 language or Type 2 grammar?	Context Free Grammar / Context free language	1	Regular grammar/ Regular language	Context Free Grammar / Context free language	Context Sensitive Grammar /	Recursively Enumerable

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7	314	What is the use of pumping lemma ?	Both of above	1	Prove languages are not regular	Prove languages are not context free	Both of above	None of them
7	315	While applying Pumping lemmaover a context free language, we consider astring Z that belong to L and fragment it into _____ parts.	5	1	2	3	4	5
7	316	Which of the expressions correctly is a requirement of pumping lemma for the context free languages?	uv^iwx^iy	1	uv^iwx^iy	u^ivwxy	u^iv^iwxy	$uv^iwx^iy^i$
7	317	The context free grammar S → SS | 0S1 | 1S0 | ε generates _____	Equal number of 0's and 1's	1	Equal number of 0's and 1's	Number of 10's only	Unequal number of 0's and 1's	Number of 11's only
7	318	Which of the following statement is false?	CFG are closed under complement.	1	CFG are closed under union.	CFG are closed under kleen's closure.	CFG are closed under complement.	None of the above
7	319	The context free languages are closed under	All of these	1	concatenation	union	closure	All of these
7	320	The language A → tB | t generated by which of the following grammar?	Type 3	1	Type 3	Type 2	Type 1	Type 0
7	321	Which of the following is correct for Chomsky hierarchy?	Regular < CFL < CSL < Unrestricted	1	CSL< Unrestricted< CFL< Regular	Regular < CFL < CSL < Unrestricted	CFL < CS L < Unrestricted < Regular	None of the mentioned
7	322	There exists a Context free grammar such that: X→Xa is	Left Recursive Grammar	1	Left Recursive Grammar	Non Recursive Grammar	Right Recursive grammar	none of these
7	323	S → aSa|bSb|a|b; The language generated by the above grammar over the alphabet {a,b} is the set of	Odd length palindrome	1	All length palindrome	Even length palindrome	Odd length palindrome	String starts and end with different
7	324	The Reduced Grammar equivalent to the grammar, whose production rules are given below is S-> AB|CA B-> BC|AB A->a C->aB/b	S->CA ,A->a, C->b	1	S->CA ,A->a, C->b	S->CA|AB, A->a, C->b	S-> CA|B, B-> BC , A->a , C->b	None of these
7	325	To derive the string length 4, How many minimum production are required for Chomsky Normal Form?	7	1	2	7	8	4
7	326	If CFG is S →aa|bb|cc|dd|(a|b|c|d)S(a|b|c|d) that accepts language:	string with two middle symbols same	1	A string of all symbols same	An even length string will start symbol same	palindrome string	string with two middle symbols same
7	327	Give CFG that contains at least three 1's	S→A1A1A1A A→0A|1A|^	1	S→A1A1A1 A→0A|1A	S→A1A1A1 A→0A|1A|^	S→A1A1A1A A→0A|1A|^	S→1A1A1A A→0A|1A|^
7	328	Give CFG for following language L={a^(n+2) b^n / n>=0}	S→aSb|aa	1	S→a Sb|aa	S→aSb	S→aSb|aaSbb	S→aab|aaS
7	329	Consider S→ aS, S→^, after elimination of null production what will be the grammar?	aS|a	1	aS	S	SS	aS|a
7	330	What is the RE equivalent to given CFG: S→X1X, X→ 0X| ^ ?	$0^*1\,0^*$	1	101	$1^+0\,1^+$	$0^*1\,0^*$	(0 +1+0)*
7	331	Consider the following Two Grammars: G1: S->SbS|a G2: S->aB|ab, A->AB|a, B>ABb|b Which of the Following Option is correct?	Both G1 and G2 are ambiguous	1	Only G1 is ambiguous	Only G2 is ambiguous	Both G1 and G2 are ambiguous	Both G1 and G2 are not ambiguous

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7	332	Which of the following strings can be generated by S →aS | bA A →d | cA	abcd	1	bccdd	abbccad	abcd	abcabcdd
7	333	If Σ = {a,b} and given productions are S→XaaX X→aX| bX|Λ Then the above grammar defines the language expressed by_____ regular expression	(a+b)*aa(a+b)*	1	(a+b)*a(a+b)*	(a+b)*aa(a+b)*	(a+b)*a(a+b)*a	(a+b)*aa
7	334	Consider the following grammar $S \rightarrow AB$ $A \rightarrow a$ $A \rightarrow BaB$ $B \rightarrow bbA$ Which of the following statement is/are true?	All of the above	1	The length of every string produced by this grammar is even	No string produced by this grammar has three consecutive $a's$	The length of substing produced by B is always odd	All of the above
7	335	Consider the language on $L = \{a^n b^{n-3} \mid n > 2\}$ $\sum = \{a, b\}$ .Which one of the following grammar generates the language L?	$S \rightarrow aaaA$ $A \rightarrow aAb \mid \varepsilon$	1	$S \rightarrow aA \mid a$ $A \rightarrow aAb \mid b$	$S \rightarrow aaA \mid \varepsilon$ $A \rightarrow aAb \mid \varepsilon$	$S \rightarrow aaaA \mid a$ $A \rightarrow aAb \mid \varepsilon$	$S \rightarrow aaaA$ $A \rightarrow aAb \mid \varepsilon$
7	336	The Context Free Grammar for is a^+	$S \rightarrow aS \mid a$	1	$S \rightarrow aS \mid a \mid \varepsilon$	$S \rightarrow aS \mid b$	$S \rightarrow aS \mid a$	$S \rightarrow aS \mid a \mid b$
7	337	Which of the following languageis generated by the given grammar? $S \rightarrow aS \mid bS \mid \varepsilon$	$\{a\|b\}^*$	1	$\{a^n b^m \mid n, m \geq 0\}$	$\{a^n b^n \mid n \geq 0\}$	$\{a\|b\}^*$	$\{a\|b\}^+$
7	338	Which of the following satisfies given language $L = \{0^i 1^j 0^k \mid j > i + k\}$	None of these	1	11100	1100	101010	None of these
7	339	Which among the following is the correct option for the given grammar? $G \rightarrow X111 \mid G1,\ X \rightarrow X0 \mid 00$	$\{0^a 1^b \mid a \geq 2, b \geq 3\}$	1	$\{0^a 1^b \mid a \geq 2, b \geq 3\}$	$\{0^a 1^b \mid a, b \geq 2\}$	$\{0^a 1^b \mid a, b > 1\}$	$\{0^a 1^b \mid a, b > 0\}$
7	340	What the does the given CFG defines? $S \rightarrow aSbS \mid bSaS \mid \epsilon$	Equal number of a's and b's	1	Strings that begin and end with the same symbol	Equal number of a's and b's	All odd and even length palindrome	All even length palindromes
7	341	The reduced grammar equivalent to the grammar, whose production rules are given below, is S $\rightarrow AB \mid CA$ $B \rightarrow AB \mid BC$ $A \rightarrow a$ $C \rightarrow aB \mid b$	$S \rightarrow CA, A \rightarrow a, C \rightarrow b$	1	$S \rightarrow CA, A \rightarrow a, C \rightarrow b$	$S \rightarrow CA \mid B, A \rightarrow a, C \rightarrow aB \mid b$	$S \rightarrow CA \mid B, B \rightarrow BC \mid B, A \rightarrow a, C \rightarrow aB \mid b$	$\rightarrow CA \mid B,\quad A \rightarrow a \mid aB$
7	342	Which among the following is the root of the parse tree?	Starting symbol S	1	Production P	Non terminal V	Terminal T	Starting symbol S
7	343	Every grammar in Chomsky Normal Form is:	Context free	1	Regular	Context free	Context sensitive	Unrestricted
7	344	While converting the context free grammar into chomsky normal form, which of the following is necessary?	All of these	1	Elimination of null production	Elimination of unit production	Converting given grammar in Chomsky normal form	All of these
7	345	In conversion from CFG to CNF, the number of non terminals to be introduced for the terminals are: S → aAB | abb|cBA	5	1	4	5	6	7
7	346	Consider G=({S,A,B,E}, {a,b,c},P,S), where P consists of S →AB, A →a, B →b and E →c. Number of productions in P after removal of useless symbols:	3	1	2	3	4	5
8	347	The language accepted by a Pushdown Automation in which the stack is limited to 10 items is best described as _____.	Regular	1	Context Free	Regular	Deterministic Context Free	Recursive
8	348	What is used to model a context free language?	PDA	1	FA	DFA	NFA	PDA
8	349	The components of PDA are/is	all of these	1	Control unit	Red unit	input tape	All of these
8	350	Which of the following is not possible algorithmically ?	Non- determinisi c PDA to determinisi c PDA	1	Regular grammar to context free grammar	Non- deterministic FSA to determinis tic FSA	Non- determinis tic PDA to deterministic PDA	determinis tic PDA to determinis tic PDA

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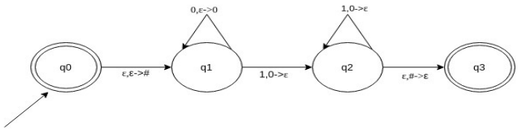
8	351	The transition a Push down automaton makes is additionally dependent upon the:	stack	1	stack	input tape	terminals	none of the mentioned
8	352	A PDA machine configuration (p, w, y) can be correctly represented as:	(current state, unprocessed input, stack content)	1	(current state, unprocessed input, stack content)	(unprocessed input, stack content, state)	(current state, stack content, input)	none of the mentioned
8	353	With reference of a DPDA, which among the following do we perform from the start state with an stack?	all of the mentioned	1	process the whole string	end in final state	end with an empty stack	all of the mentioned
8	354	A DPDA is a PDA in which:	No state p has two outgoing	1	No state p has two outgoing transitions	More than one state can have two or transitions	Atleast one state has more than	None of the mentioned
8	355	Pushdown Automata are equivalent to Context-Free _____.	Grammar	1	Spelling	Grammar	Answer	Choice
8	356	PDA is a_____automata with push down stack.	Finite	1	Finite	Infinite	Long	Short
8	357	What is acceptance by the final state? If a machine at the end of the string enters one of the final states, then the string is_.	Accepted	1	Rejected	Extended	Deleted	Accepted
8	358	Which of the given operations are eligible in PDA?	Push	1	Insert	Add	Push	Delete
8	359	A push down automata is different than finite automata by:	Its memory	1	Its memory	Number of states	both	None of these
8	360	PDA is more powerful than	Finite automata	1	Turing machine	Multi tape Turing machine	Finite automata	All of these
8	361	If the PDA does not stop on an accepting state and the stack is not empty, the string is:	rejected	1	rejected	goes into loop forever	both (a) and (b)	none of the mentioned
8	362	A language accepted by Deterministic Push down automata is closed under which of the following?	Complement	1	Complement	Union	Both (a) and (b)	None of the mentioned
8	363	A push down automata can represented using:	All of the mentioned	1	Transition graph	Transition table	ID	All of the mentioned
8	364	Which of the following are the actions that operates on stack top?	All of the mentioned	1	Pushing	Popping	Replacing	All of the mentioned
8	365	Consider the following PDA Transitions 1.d(q_0 , a ,z0) ---> (q0 , Xz0) 2.d(q0 , a ,X) ---> (q0 , X) 3.d(q0 , b ,X) ---> (q1 ,ε) 4.d(q1 , b ,z0) ---> (q1 , z_0) 5.d(q0 , ε ,z0) ---> (q1 ,ε) Where Q = {q_0,q_1}, S = {a,b},r = {z0,X},d,q_0,z_0,F = {ø}	L= $\{a^n b^m \mid n,m \geq 1\}$	1	L= $\{a^n b^n \mid n \geq 1\}$	L= $\{a^n b^m \mid n,m \geq 1\}$	L= $\{a^n b^m \mid n^1,m\}$	L= $\{a^n b^m \mid 2m\}$
8	366	What is the language L for the given PDA? 	$\{0^n 1^n \mid n>=0\}$	1	$\{0^n 1^n \mid n>=0\}$	$\{0^n 1^{2n} \mid n>=0\}$	$\{0^{2n} 1^n \mid n>=0\}$	$\{1^n \mid n>=0\}$
8	367	Consider the following PDA Transitions δ(q0, 0 ,z0) ---> (q0 , 0z0) δ(q0, 0 ,0) ---> (q0 , 00) δ(q0, 1 ,0) ---> (q1 , Λ) δ(q1, 1 ,0) ---> (q1 , Λ) δ(q1, 1 ,z0) ---> (q1 ,z0) δ(q1,Λ ,z0) ---> (q2 ,z0) Where Q = {q0,q1,q2}, $\Sigma = \{0,1\}$, $\Gamma = \{z0,0\}, F = \{q2\}$ z0 δ Which of the following language is accepted by PDA?	$L = \{0^n 1^m \mid n < m\}$	1	$L = \{0^{2n} 1^m \mid n > m\}$	$L = \{0^n 1^m \mid n = m\}$	$L = \{0^n 1^m \mid n < m\}$	$L = \{0^n 1^{2m} \mid n < m\}$

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8	368	Consider the following PDATransitions $.\delta(q_0,a,z_0)\rightarrow(q_0,az_0)$ $2.\delta(q_0,a,a)\rightarrow(q_0,aa)$ $3.\delta(q_0,b,a)\rightarrow(q_1,\epsilon)$ $4.\delta(q_1,b,a)\rightarrow(q_1,\epsilon)5.\delta(q_1,\epsilon,z_0)\rightarrow(q_2,z_0)$ $WhereQ=\{q_0,q_1,q_2\},F=\{q_2\}$	$L=\{a^nb^m \mid n,m \geq 1\}$	1	$L=\{a^nb^m \mid n,m \geq 1\}$	$L=\{a^nb^m \mid n,m \geq 0\}$	$L=\{a^nb^n \mid n \geq 1\}$	None of These
8	369	Which automata takes stack as storage?	PDA	1	PDA	CFG	CNF	DFA
8	370	Convert following CFG to PDA S→ 0S1 |00 |11. Trace it for the string “001111”		2				
8	371	For the language L= {set of strings over alphabet {a, b} with exactly twice as many a’s as b’s} design a PDA (Push Down Automata) and trace it for the string “abaabbaaaaabaab”		4				
8	372	For the language L={ $a^i b^j c^k$ | i, j, k ≥ 0 and i + j = k } design a PDA (Push Down Automata) and trace it for String “bbbbbccccc”		4				
8	373	Draw a PDA for the following language L = {$0^n 1^m 0^n$ | m,n ≥ 1} for the string “0011100”.		4				
8	374	Let G be the grammar given by S->aABB | aAA A->aBB | a B->bBB | A construct PDA for the string “aabbaaaaaa”.		4				
8	375	Find PDA for the given grammar: S → 0S1 | 00 |11 Also Trace string “001111” for the same		2				
8	376	For the language L = { xcx^r,x€{a,b}*} (Palindrome with middle character = c), Design a PDA (Push Down Automata) and trace it for string “abaacbaa”		4				
8	377	Design and draw a deterministic PDA accepting strings of the language L = { x Є{ a, b}* | na(x) > nb(x) }. Trace it for the string “ aababaab”		4				
8	378	Write PDA for following languages: { x ϵ { a,b,c}* | na(x) < nb(x) or na(x) < nc(x)}.		4				
8	379	Give transition table for deterministic PDA recognizing the following language { $a^n b^{n+m} a^m$ | n,m ≥ 0)		4				
8	380	Give transition table for deterministic PDA recognizing the following language { $a^i b^j c^k$ | i, j, k ≥ 0 and j = i or j = k }		4				
8	381	Given a CFG , G =({S,A,B},{0,1},P,S) with P as follows S --> 0B| 1A A --> 0S|1AA|0 B --> 1S| 0BB | 1 Design a PDA M corresponding to CFG, G. Show that the string “0001101110” belongs to CFL , L(G)		4				
8	382	Design a PDA,M to accept L={$a^n b^{2n}$ |n≥1}. Trace it for the string “aabbbb”.		4				
8	383	Design a PDA to recognise the language generated by the following grammar given by S→ S+S|S*S|4|2 Show the acceptance of the input string “2+2*4” by PDA.		4				
8	384	Convert following CFG to PDA. S → a | aS | bSS . Trace the string “abaa”.		4				
8	385	Given a CFG , G =({S,A,B},{0,1},P,S) with P as follows: Sà0S1/A Aà1A0 /S/ Λ Design a PDA M corresponding to CFG, G. Show that the string “001011” belongs to CFL , L(G)		4				
8	386	Construct PDA for language L={$a^m b^m c^n$ |m,n>=1}. Also trace string “aabbccc” for the given PDA		3				
8	387	Draw the PDA for the following language. L ={$a^i b^j c^k$|i=j+k}		4				
8	388	Design a PDA, while M to accept L = { $a^n b^{3n}$ | n ≥ 1 }		4				

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8	389	Write PDA for language of palindrome.Trace it with example.		4				
8	390	Draw a PDA for the following language L={0^n1^n|wЄ(0,1) and n>=0}		4				
8	391	Convert the following grammar to a PDA: I→ a|b|Ia|Ib |I0 |I1 E→I |E*E|E+E|Є		4				
8	392	Design a PDA to recognize the language generated by the following grammar: S→0AB A→1A|1 B →0B|1A|0 Show the acceptance of the input string“011100“ by this PDA.		4				
8	393	Give transition tables for deterministic PDA recognizing following language: L = {x Є {a, b}* | $n_a(x) \neq n_b(x)$} Trace it for the string “abbaababbb”		4				
8	394	Give transition table for PDA accepting the language of all odd-length strings over {a, b} with middle symbol a. Also draw a PDA for the same.		4				
8	395	Convert the following CFG into its equivalent PDA. S → AB A → BB B → AB A → a B → a | b		4				
8	396	Design a PDA to accept L ={xCy|x,y Є (a,b)*and|x|= |y|}.		4				
8	397	Convert the following CFG into CNF.S→ bA|aB A→bAA|aS|a B →aBB|bS|b		4				
8	398	Construct a PDA equivalent to the following CFG. S->0BB B->0S|1S |0		4				
8	399	Consider following PDA machine M=({p,q},{0,1},(x,z},δ,q,Z) where δ is given by δ(q,1,z)=(q,xz) δ(q,1,x)=(q,xx) δ(q,^,x)=(q,^) δ(q,0,x)=(p,x) δ(p,1,x)=(p,ε) δ(p,0,z)=(q,z) Construct Equivalent CFG.		4				
8	400	For the PDA,({q0,q1},{0,1},{0,1, z0}, δ, q0, z0, ϕ),where δ is δ(q0,ε,z0)={(q1,ε)} δ(q0,0,z0)={(q0,0z0)} δ(q0,0,0)={(q0,00)} δ(q0,1,0)={(q0,10)} δ(q0,1,1)={(q0,11)} δ(q0,0,1)={(q1,ε)} δ(q1,0,1)={(q1,ε)} δ(q1,0,0)={(q1,ε)} δ(q1,ε,z0)={(q1,ε)} Obtain CFG accepted by the above PDA.		4				
8	401	Suppose the PDA M=({q0,q1},{a,b,c},{a,b,Z0},δ,q0,Z0,{q1}) has the following transition functions 1.δ(q0,a,Λ)=(q0,a) 2.δ(q0,b,Λ)=(q0,b) 3.δ(q0,c,Λ)=(q1,Λ) 4.δ(q1,a,a)=(q1,Λ) 5.δ(q1,b,b)=(q1,Λ) Show the acceptance of abbcbba by the above PDA.		4				
8	402	Consider the PDA with following moves δ(q0, a, z0) = (q0, az0) δ(q0, a, a) = (q0, aa) δ(q0, b, a) = (q1,^) δ(q1, b, a) = (q1, ^) δ(q1,^, z0) = (q1,^) Construct Equivalent CFG.		4				

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8	403	Prove: The language pal={xϵ{a,b}*|x=x^r} cannot be accepted by any deterministic pushdown automaton		2				
9	404	Design a Turing machine to accept the language {0^n1^n | n ≥ 1}.		3				
9	405	Design a Turing machine to accept the language {a^nb^n | n ≥ 0}.		3				
9	406	Draw a transition diagram for a Turing machine accepting the following language. { a^n b^nc^n | n ≥ 1 }		7				
9	407	Draw a transition diagram for a Turing machine accepting the following language. { a^n b^nc^n | n ≥ 0 }		5				
9	408	Develop a Turing Machine to accept even length palindromes over {a,b}*.		4				
9	409	Draw a transition diagram for a Turing machine for the language of all palindromes over {a, b}.		7				
9	410	Develop a Turing Machine to accept odd length palindromes over {a,b}*.		7				
9	411	Draw a transition diagram for a Turing machine accepting the following language { x ϵ { a, b, c }* | $n_a(x) = n_b(x) = n_c(x)$ }.		5				
9	412	Design a Turing machine for deleting nth symbol from a string w from the alphabet Σ = {0,1}.		7				
9	413	Design a Turing machine for the language over {0,1} containing strings with equal number of 0's and 1's.		5				
9	414	Design a Turing Machine that creates a copy of its input string.Trace String"baa".		4				
9	415	Draw Turing machine for L = {xx | x belongs to {a, b}*}. Also trace out the same on input string "aba".		7				
9	416	Develop a Turing Machine that creates a copy of its input string to the right of the input but with a blank space separating the copy from the original.		4				

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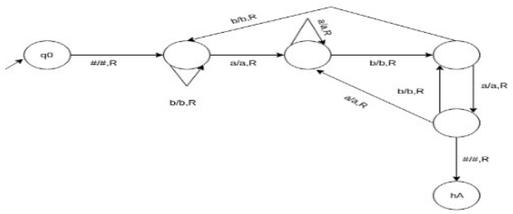
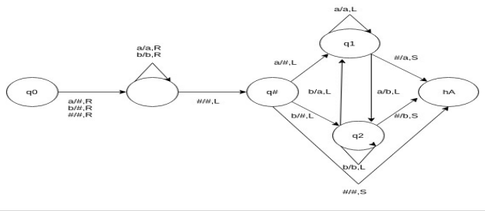
9	417	Draw a Turing Machine to reverse a string. Consider the string 011101 and also show string tracing.		4				
9	418	Draw a transition diagram for a Turing machine accepting the following language { x ϵ { a, b }* | $n_a(x) = n_b(x)$}.		7				
9	419	Construct a Turing machine for L = {$a^i b^j c^k$ | i<j<k; i ≥ 1}.Trace the string “aabbbcccc”		4				
9	420	Construct a Turing machine for L = {$a^i b^j c^k$ | i*j = k; i, j, k ≥ 1}		4				
9	421	Construct a TM for subtraction of two unary numbers f(a-b) = c where a is always greater than b.		3				
9	422	Design a Turing Machine for following language and Trace String “ abcab”.L={WcW|Wϵ{a,b}* }		4				
9	423	Design a Turing machine for addition in unary number system and draw transition table .		4				
9	424	Design a Turing machine to accept the language L= {$a^{2n}b^n$ | n>=1} with acceptance of string ‘aaaabb’.		2				
9	425	Construct TM for language of even no. of 1’s and even no. of 0’s over ∑= {0,1}.		2				
9	426	Design a Turing Machine as a Comparator and write the transition Table.		4				
9	427	Draw a transition diagram for a Turing machine accepting the following language. and Trace String“abaa”.L={a^i b a^j |0≤i<j }		4				
9	428	Draw a Turing Machine to accept a string : aaa + b*		4				
9	429	Design a Turing Machine for the Language L= {$b^n a^{n+1}$ / n>= 1.}		4				
9	430	Design a Turing machine to accept the language {$a^{2n} b^n$ | n ≥ 0}. Trace string “aaaabb”.		4				

chapter_number	group_id	question_text	answer_text	marks	option1	option2	option3	option4
9	431	Construct a TM for L={$a^n b^m a^{n+m}$ /n,m >=1} with transition table		5				
9	432	Construct a TM for obtaining 2's complement of a binary number with transition table		5				
9	433	If Turing Machine accepts all the words of language L and Rejects or loops for other words which are not in L then L is said to be_____	REL	1	Recursive Language	Regular language	REL	CFL
9	434	_____ are the ways of representing Turing Machine.	All of above	1	Transition Table	Transition Diagram	Instantaneous Description	All of above
9	435	Which of the following regular expression resembles the given diagram? 	{a,b}*{aba}	1	{a}*{b}*{a,b}	{a,b}*{aba}	{a,b}*{bab}	{a,b}*{a}*{b}*
9	436	Which of the following can accept even palindrome over {a,b}	Turing machine	1	Push down Automata	NDFA	Turing machine	All of the mentioned
9	437	Which of the functions can a turing machine not perform?	Inserting a symbol	1	Accepting a pal	Copying a string	Deleting a symbol	Inserting a symbol
9	438	If T1 and T2 are two turing machines. The composite can be represented using the expression:	T1T2	1	T1 U T2	T1T2	T1 X T2	None of the mentioned
9	439	The value of n if Turing machine is defined using n-tuples:	7	1	3	5	7	4
9	440	The following turing machine acts like: 	Delete a symbol	1	Copies a string	Insert a symbol	Delete a symbol	None of the mentioned

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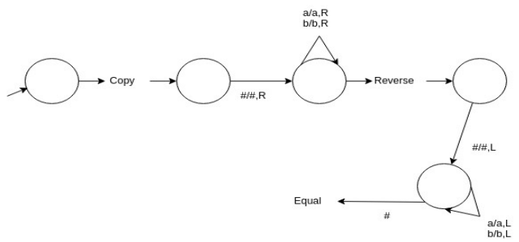
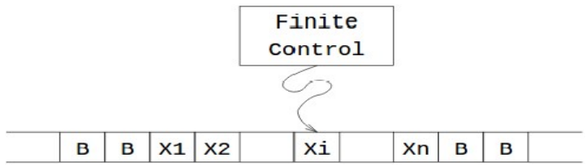
9	441	What does the following transition graph shows: 	Accepts a pal	1	Copies a symbol	Reverses a string	Accepts a pal	None of the mentioned
9	442	A turing machine has _____number of states in a CPU.	finite	1	finite	infinite	May be finite	None of the mentioned
9	443	In one move a turing machine will: 	All of the mentioned	1	Change a state	Write a tape symbol in the cell scanned	Move the tape head left or right	All of the mentioned
9	444	Statement 1: Multitrack Turing machine.Statement 2: Gamma is Cartesian product of a finite number of finite sets. Which among the following is the correct option?	Statement 1 is the assertion and Statement 2 is the reason	1	Statement 1 is the assertion and Statement 2 is the reason	Statement 1 is the reason and Statement 2 is the assertion	Statement 1 and Statement 2 are independent from each other	None of the mentioned
9	445	Which of the following statements are false?	In a n-track turing machine, n head reads and writes on all	1	A multi trackturing machine is a special kind of multi tape turing machine	4-heads move independently along 4-tracks in standard 4-tape turing	In a n-track turing machine, n head reads and writes on all the	All of the mentioned
9	446	A turing machine with several tapes in known as:	Multi-tape turing machine	1	Multi-tape turing machine	Poly-tape turing machine	Universal turing machine	All of the mentioned
9	447	A multi tape turing machine is _____ powerful than a single tape turing machine.	more	1	more	less	equal	none of the mentioned
9	448	In what ratio, more computation time is needed to simulate multi tape turing machines using single tape turing machines?	quadratically	1	doubly	triple	quadratically	none of the mentioned
9	449	Which of the following is not a Non deterministic turing machine?	Read-only turing machine	1	Probabalistic Turing machine	Read-only turing machine	Alternating Turing machine	None of the mentioned
9	450	Which of the turing machines have existential and universal states?	Alternating Turing machine	1	Alternating Turing machine	Probalistic Turing machine	Read-only turing machine	None of the mentioned
9	451	Which of the following is an extension to the basic model of Turing machine:	All of the above	1	Multi tape Turing machine	Multi head Turing machine	Nondeterministic Turing machine	All of the above
9	452	Why Turing machine is more powerful than Finite automata?	Turing machine has capability to remember arbitrary long sequence of input string.	1	Turing machine head movement is continued to one direction.	Turing machine head moment is in both directions	Turing machine has capability to remember arbitrary long sequence of input string.	All are correct
9	453	A universal Turing machine is a	Reprogrammable Truing machine	1	Single tape Turing machine	Two-tape Turing machine	Reprogrammable Truing machine	None of them
9	454	A Turing machine that is able to simulate other Turing machines:	Universal Turing machines	1	Nested Turing machines	Universal Turing machines	Multi tape Turing machine	None of these
9	455	A Turing machine with several tapes in known as:	Multi-tape Turing machine	1	Multi-tape Turing machine	Universal Turing machine	Poly-tape Turing machine	All of the mentioned

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10	456	Consider following language families. L1=context free language L2= context sensitive language L3=recursively enumerable language L4= recursively language	L1⊆L2⊆L4⊆ L3	01	L4⊆L2⊆L1⊆ L3	L1⊆L3⊆L4⊆ L2	L2⊆L1⊆L4⊆ L3	L1⊆L2⊆L4⊆ L3
10	457	Which of the following statement is false.	Every subset of recursively enumerable set is recursively	01	Every subset of recursively enumerable set is recursively	Every NFA can be converted in to DFA	Every Nondeterministic Turing machine can be converted in to deterministic Turing machine	Every regular language is also context free
10	458	Consider the properties of recursively enumerable sets: (1) Finiteness (2) Context Freedom (3) Emptiness Which of the following is true?	All (1), (2) and (3) are not decidable	01	All (1), (2) and (3) are not decidable	Only (1) and (2) are not decidable	Only (3) and (1) are not decidable	Only (3) and (1) are decidable
10	459	Which of the following is decidable for Recursive Language (RL)?	W∈ L, where W is string	01	L = ϕ	L = R, where R is given Regular set	W∈L, where W is string	L=∑*
10	460	The Language L = {a^i b c^i | i>=0} over the alphabet {a, b, c} is:	Both a and b	01	Context Free language	Deterministic Context Free language	Both a and b	None of above
10	461	Which of the following statements is not correct?	Recursive Language are not closed under intersection	01	Every Recursive Language is recursively Enumerable	Recursive Language are closed under intersection	Recursive Language are closed under complement	Recursive Language are not closed under intersection
10	462	Given the following two Statements: I.If L1 and L2 are RecursivelyEnumerable Languages over ∑, then L1 ∪ L2 and L1 ∩ L2 are II.The set of Recursively Enumerable Languages is Countable. Which of the following is correct?	Both I and II are correct	01	Only I is correct	Only II is correct	Both I and II are correct	Both I and II are not correct
10	463	Consider the following statements I. Recursive languages are closed under complementation II. Recursively enumerable languages are closed under union III. Recursively enumerable languages are closed under complementation Which of the above statement are TRUE?	I and II	01	I only	I and II	I and III	II and III
10	464	The set of every Recursively enumerable languages is	closed under intersection	01	closed under complement	An uncountable set	The subset of the set of all recursive languages	closed under intersection
10	465	A language L is said to be _____ if there is a turing machine M such that L(M)=L and M halts.	decidable	01	Turing acceptable	decidable	undecidable	none of the mentioned
10	466	If every string of a language can be determined whether it is legal or illegal in finite time the language is called _____	decidable	01	Undecidable	Decidable	Interpretive	Non deterministic
10	467	Rec-DFA = {M is a DFA and M recognizes input w}.Rec-DFA is _____	Decidable	01	Decidable	Undecidable	Non finite	None of the mentioned
10	468	If L1 and L2 are both recursively enumerable languages over ∑, then	Both A and B	01	L1 ∪ L2 is recursively	L1 ∩ L2 is recursively	Both A and B	None of these
10	469	Which of the following statement(s) is/are correct? (a)L = {a^n b^n c^n | n = 1, 2, 3...} is recursively enumerable	All of these	01	Only (a)	Both (a) and (c)	Both (b) and (c)	All of these
10	470	Which among the following are semi decidable?	All of the mentioned	01	Empty-DFA	Rec-NFA	Infinite-DFA	All of the mentioned
10	471	Decidable can be taken as a synonym to:	recursive	01	recursive	non recursive	recognizable	none of the mentioned
10	472	The problems which have no algorithm, regardless of whether or not they are accepted by a Turing machine that fails to halts on some input are referred as:	Undecidable	01	Decidable	Undecidable	Computable	None of the mentioned

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10	473	Which is false about recursively enumerable languages?	closed under complement	01	closed under union	closed under complement	closed under concatenation	closed under intersection
10	474	Which of the following statement is false?	Every recursive enumerable language is recursive.	01	Every regular language is also a context free language.	Every recursive enumerable language is recursive.	Every recursive language is recursive enumerable.	None of these
10	475	Which of the following is known as turing recognizable language?	Recursive enumerable	01	Regular	Recursive	Recursive enumerable	None of these
10	476	Recursive languages are also known as:	decidable	01	decidable	undecidable	sometimes decidable	none of the mentioned
10	477	Which of the following problems is solvable?	Writing a universal Turing machine	01	Determining of a universal Turing machine and some input will halt	Determining of an arbitrary Turing machine is an Universal TM	Determining of a universal TM can be written for fewer than k instructions for some k	Writing a universal Turing machine
10	478	The productions have no restrictions. They are any phase structure grammar including all formal grammars.	Type-0 grammars	01	Type-1 grammars	Type-0 grammars	Type-2 grammars	Type-3 grammars
10	479	If L and L' are recursively enumerable, then L is	Recursive	01	Regular	Context-free	Context sensitive	Recursive
10	480	Which of the following is true?	The complement of a recursive language is recursive	01	The complement of a recursive language is either recursive or recursively enumerable	The complement of a recursive language is recursive	The complement of a recursively enumerable language is recursively enumerable	The complement of a context free language is context free
10	481	Recursive languages are:	Recognized by Turing machine	01	A proper superset of CFG	Always recognized by PDA	Recognized by Turing	Also called type 2 language
10	482	The decision problem is the function from string to _____	Boolean	01	Char	variable	Boolean	None of the mentioned
10	483	If there exists a language L, for which there exists a TM, T, that accepts every word in L and either rejects or loops for every word that is not in L, is called	Recursively enumerable	01	Recursive	Recursively enumerable	NP-HARD	None of these
10	484	Which of the following set of computable functions are decidable?	All of the mentioned	01	The class of computable functions that are constant, and its complement	The class of indices for computable functions that are total	The class of indices for recursively enumerable sets that are coffinite	All of the mentioned
10	485	Which is false about recursive languages?	The complement of recursive language is neither recursive nor non recursive.	01	The language is recursive then it is decidable	The language is not recursive then it is undecidable	There exist a Turing Machine to accept the languages.	The complement of recursive language is neither recursive nor non recursive.
10	486	Which of the following statements are false?	Every recursive enumerable language is recursive.	01	Every recursive language is recursively enumerable.	Recursively enumerable language may not be recursive.	Every recursive enumerable language is recursive.	None of these
10	487	Bounded minimalization is a technique for:	Generating primitive recursive functions	01	Proving whether a primitive recursive function is turing computable or not	Proving whether a primitive recursive function is a total function or not	Generating primitive recursive functions	Generating partial recursive functions
10	488	Consider two languages, L1 and L2. L1 is context-free, and L2 is recursively enumerable but not recursive. Which among the following is/are necessarily true? 1. The complement of L1(L1') is recursive 2. The complement of L2(L2') is recursive 3. L1' is context-free 4. L1' ∪ L2 is recursively enumerable	1 and 4	01	1 and 4	3 and 4	1 and 2	3 only
10	489	Consider two recursively enumerable languages L and P. The languages L and P are not closed under-	Set Difference	01	Kleene Star	Intersection	Set Difference	Homomorphism
10	490	The class of unrestricted language corresponds to:	LBA	01	PDA	LBA	FA	NFA
10	491	Find unrestricted grammer generating L={a^n b^n c^n/n>=1}		02				
10	492	Find the Unrestricted grammar generating language L=L(abc)^n		02				