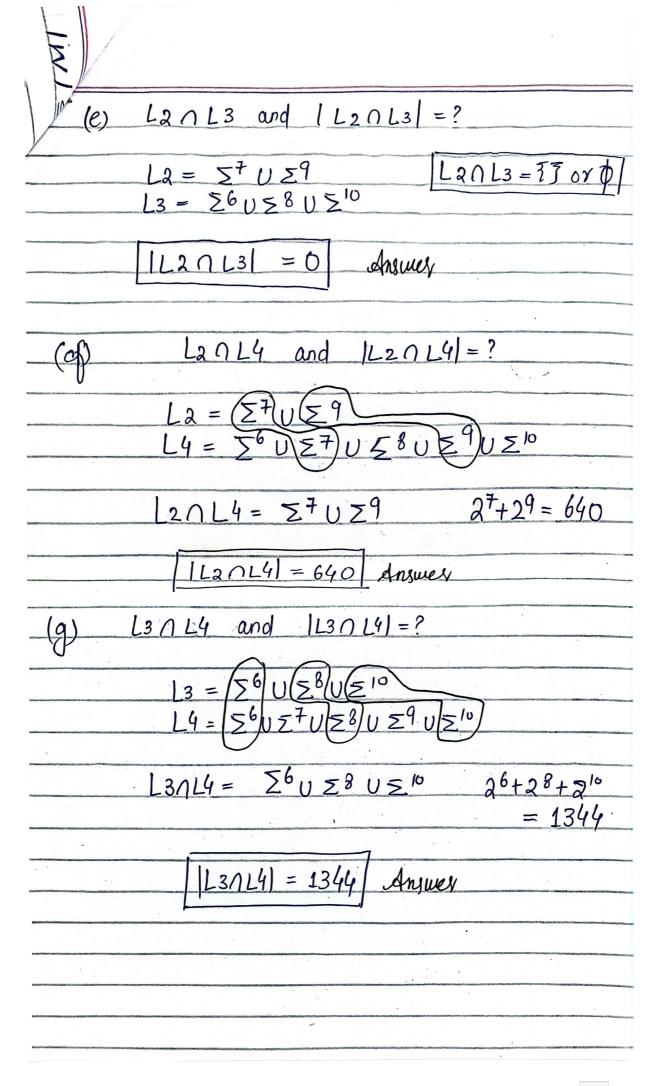
Theory of Automata 221-6946
Homework #1 Fatima Imran
$\frac{\text{Problem #1}}{\text{Considex}} = \frac{2a,b}{3}$
(a) $L1 = \Sigma^0 \cup \Sigma^1 \cup \Sigma^2 \cup \Sigma^3 L = ?$ $L1 = \overline{1} \wedge, \alpha, b, \alpha\alpha, ab, ba, bb,$ $aaa, aab, aba, abb, baa, bab, bba,$ bbb
111 = 15 dusues
(b) $L2 = \overline{1}w \text{ over } \ge W > 5 \text{ and } w \le 10 \text{ and}$ $ w \text{ is odd } \overline{3} \qquad L2 = ?$
$L2 = \sum_{i=1}^{7} U \sum_{i=1}^{7} W > 5 8 w \leq 10$ $6, 7, 8, 9, 10$
IWI ù odd 7,9
there are two elements (a,b) or get of alphabets
$2^{7} = 128$ $2^{9} = 512$
121 = 640 Answer

 $L3 = \overline{2} \text{ wover } \Sigma | 1 \text{ m} | > 5 \text{ 8 in } \omega$ $8 | \text{w} \text{ is even } \overline{3}$ (r) 13 = 560 E8U E10 IW/ >5 8 N = 10 6, 7, 8, 9, 10 IWI is even 6, 8, 10 Since, set of alphabels contains two elements so 26+28+210 64+256+1024 1131 = 1344 Answer $dy = \frac{7}{2} w \text{ over } \Sigma | |w| > 58 |w| \leq 10\frac{7}{2}$ $|L4| = ? \qquad L4 = \Sigma^6 U \Sigma^7 U \Sigma^8 U \Sigma$ U 210 IW/ >5 and IW/ < 10 6,7,8,9,10 Since set of alphabets consist of two elements 50, 26+27+28+29+210 64+ 128+ 256+ 512 + 1024 124 = 1984 Answer



L2-L4 and |L2-L4| = ?58 U Z7 U Z8 U Z L4 & 123-L4 =? SEU 28U 210 56U = 7 U = 8 U 59 U = 10 Problem# 2: 1s = 4 & sum of digits in s are ≥ 5 = TROVEY Z and 002 000 001 020 010 022 00 20 21 22

	Working.				
	S	s <u>wyonan</u>			
1		212 5			
51 0	0	~ . 2215			
T	1	0123 ~			
2	2	~ 2013 ~ Total = 4			
Σ2 .00	0	v. 120 3 m			
01	1	0213 0			
	1	102 3 10			
. 11	2	× 210 3 ×			
02	2_				
20	2	∨ ∑4 valid strings	Million or the same of the sam		
22	-	2222 8 1212 6 2211 6	2		
12.	3_	V 2012 5 1221 6 2121 6)		
2	3	and the second s	7_		
Σ_3 000	10	V.2120 5 2022 6 2122 7			
001	1	20215 11126 22127	L		
010	1	2102 5 4121 6 222117			
011	2		-		
100	1	21116	-		
101	2	1122 6			
110	2		National Property		
	3		nonenzone		
002	2				
620	2				
022	4				
200	2				
202	4				
220	4				
222	6		MATERIA PROPERTY AND ADDRESS OF THE PARTY AND		
112	4	~			
121	4	V	· ·		
122	(
711	4	V	-		

54 = 34 = 81 combinations

					The
0000	ovv.	1011	3~.	2020	9-1
000	1	1012	90	2100	34/
0002	2~	1020	3~	2101	gr /
odo	1	1021	4	2102	5
0011	2~	1022	5	2110	4
0012	3 ~	1100	2~	2111	5
0020	2~	1101	30.	2112	6~~
0021	3~	1102	4v	2/20	5
0022	4	1110	3v.	2121	600
0100		1111	40	2122	7
0101	21	1112	5	2200	40
0/02	3~	1120	4v	2201	5
0110	2	1/2/	5	2202	6~~
0110	300	1200	6VV	22/0	5
0 (2	3	NAME OF TAXABLE PARTY OF TAXABLE PARTY.	3~	2211	600
0120	The state of the s	[20]	40	22/2	7
0121	4	1202	5	2220	6.1
- 0 22	5	12/0	4v	22211	7
- 0200	2~	1211	5	2222	80,
- 020	3~	1212	6VV		
- 020	44	1220	5		
- 0210	3~	1221	6VV	Total =	= 3/
021	14	1222	7		
- 02/2	5	2000	22		
- 0221	4	2001	3 ~	Security of the security of th	
022		2002	Lev	acquesta es en como de en esta en como en entre	
- 022:	6VV	2010	3 V	aga kagamat dan berasakan sebesah sebahan sebilah sebi	
- 1000		2011	1.1		
- 1001	2 /	2017	7	gateria en exemplos de la estada en esta	
- 1002	31		6VV		
- 10/0		2022	6		
1010	2	2021			

There are total 19 digits whose swoop digits in 8 is 5 \$ = 11	
S = 11 when sum = 6 $S = 4 when sum = 7$ $S = 1 when sum = 8$ $S0 > [L1] = 35 Answey$ $(b) L2 = 76 over z s = 4 and sum of digits$ $V divisible by 27 000$ $2 211 Thuse are total 62$ $11 0000 wordy in L2$ $02 0002$ $20 L2 = 62 Answey$ $22 000 S S = 62 S = 62$ $1121 = 62 Answey$ $101 S S = 62$ $110 S = 62$ 11	
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$S = 4 \text{when } \text{sum} = 7$ $S = 1 \text{when } \text{sum} = 8$ $S0_2 L1 = 35 \text{Answey}$ $(b) L_2 = 76 \text{ over } \text{wardy} \text{and } \text{sum of } \text{digits} \text{is divisible by } 27 \text{oo} \text{oo} \text{oo} \text{wardy in } \text{L2}$ $0.000 \text{wardy in } \text{L2}$ $0.2 0.002 \text{wardy in } \text{L2}$ $0.2 0.002 \text{ll} \text{ll} \text{ll} \text{looking} \text{oo} \text{ll} \text{ll} \text{looking} \text{oo} \text{oo} \text{looking} \text{oo} \text{looking} \text{oo} \text{looking} \text{oo} \text{looking} lookin$	s is 5
$S = 4 \text{when } \text{sum} = 7$ $S = 1 \text{when } \text{sum} = 8$ $S0_2 L1 = 35 \text{Answey}$ $(b) L_2 = 76 \text{ over } \text{wardy} \text{and } \text{sum of } \text{digits} \text{is divisible by } 27 \text{oo} \text{oo} \text{oo} \text{wardy in } \text{L2}$ $0.000 \text{wardy in } \text{L2}$ $0.2 0.002 \text{wardy in } \text{L2}$ $0.2 0.002 \text{ll} \text{ll} \text{ll} \text{looking} \text{oo} \text{ll} \text{ll} \text{looking} \text{oo} \text{oo} \text{looking} \text{oo} \text{looking} \text{oo} \text{looking} \text{oo} \text{looking} lookin$	
$S = 1 \text{when } som = 8$ $So, L1 = 35 \text{Answey}$ $(b) L_2 = 76 \text{ onely } z s = 4 \text{ and } som \text{ of } digits$ $U \text{ divisible by } 27 000$ $2 211 \text{These are lotal } 62$ $11 0000 \text{wordy in } L2$ $02 0002$ $20 L2 = 62 \text{Answey}$ $22 000$ $011 \text{check working } \text{to diverting } to divertin$	
So =	
(b) L2=\$6 over \$ z \ \sigma \	
2 211 These are total 62 11 0000 wordy in L2 02 0002 20 : [1L21 = 62] Answer 22 : 000 011 Check working 101 on 110 page marked 002 red 020 pen 022 200	80, L1 =35 Answer
2 211 These are total 62 11 0000 wordy in L2 02 0002 20	(b) 12=35 supl = 151=4 and sum of digita
2 211 These are total 62 11 0000 wordy in L2 02 0002 20 : [1L21 = 62] Answer 22 : 000 011 Check working 101 on 110 page marked 002 red 020 pen 022 200	is divisible by 27
1 0000 wordy in L2 02 0002 20	0 00
02 0002 20	
$ \begin{array}{c c} 20 & & & & & & \\ 22 & & & & & & \\ 000 & & & & & & \\ 011 & & & & & & \\ 011 & & & & & & & \\ 101 & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & &$	그 보다는 사람들은 아이들은 사람들이 많은 사람들이 되었다면 되었다면 하는 것이 없는 것이 없는 것이 없는 것이 없는데 없는데 없는데 없는데 없는데 없는데 없는데 없는데 없다면 없다면 없다면 없다면 사람들이 없다면
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121	121

