1 h
2 e
3-2
49 h
46 -4
59 h
56 h

DE LA SALLE UNIVERSITY
RELIGIO MORES CULTURA
MANILA

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Subject STALGCM

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Section S17

1. Let x be empty state

$(L_1 \cup L_2)$

	0	1
→AD*	BE	CD
BD*	BE	AD
CD*	CE	CD
AE*	BD	CE
BB	BD	AE
CE	CD	CE

L_3^R

	0	1
→FG*	FG	F
F	X	F
H	H	HG
X	X	X

$(L_1 \cup L_2) - (L_3^R)$

	0	1
→ADFG*	BEFG	CDF
ADF*	BEX	CDF
ADH*	BEH	CDHG
ADX*	BEX	CDX
BDFG*	BEFG	ADF
BDF*	BEX	ADF
BDH*	BEH	ADHG
BDX*	BEX	ADX
CDFG*	CEFG	CDF
CDF*	CEX	CDF
CDH*	CEH	CDHG
CDX*	CEX	CDX
AEFG*	BDFG	CEF
AEF*	BDX	CEF
AEH*	BDH	CEHG
AEX*	BDX	CE
BEFG	BDFG	AEF
BEF	BDX	AEF
BEH	BDH	AEHG
BEX	BDX	AEX
CEFG	CDFG	CEF
CEF	CDX	CEF
CEH	CDH	CEHG
CEX	CDX	CEX

$\overline{(L_1 \cup L_2) - (L_3^R)}$

	0	1
→ADFG	BEFG	CDF
ADF	BEX	CDF
ADH	BEH	CDHG
ADX	BEX	CDX
BDFG	BEFG	ADFG
BDF	BEX	ADF
BDH	BEH	ADHG
BDX	BEX	ADX
CDFG	CEFG	CDF
CDF	CEX	CDF
CDH	CEH	CDHG
CDX	CEX	CDX
AEFG	BDFG	CE
AEF	BDX	CEF
AEH	BDH	CEHG
AEX	BDX	CEX
BEFG*	BDFG	AEF
BEF*	BDX	AEF
BEH*	BDH	ABHG
BEX*	BDX	AEX
CEFG*	CDFG	CEF
CEF*	CDX	CEF
CEH*	CDH	CEHG
CEX*	CDX	CEX

2.

For all $p \in Z^+$ we can generate a string $1^p \in L$.

Let:

$x = 0^{\alpha}$

$y = 0^{(p-\alpha)}$

$z = 1^p$ where $\alpha < p$

Since there is only one input and the pumping length needs to be a prime number,

$\therefore$ L is not a regular language.

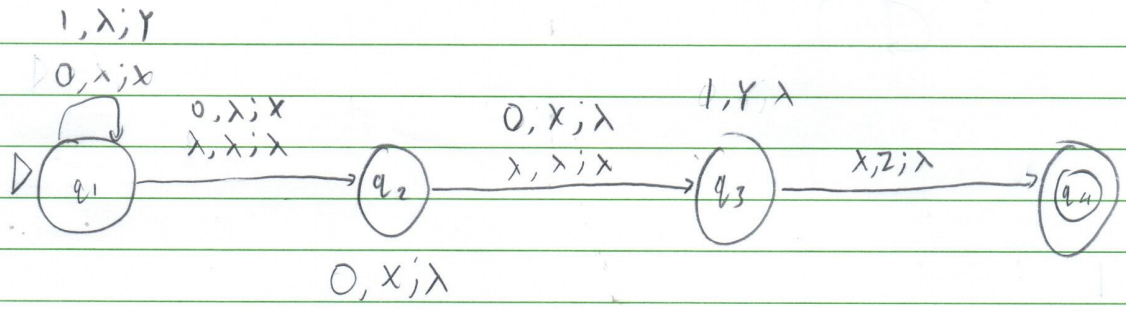
3.

a) True
b) True
c) True
d) False
e) False

2

4.

a) JFLAP Format: READ, POP; PUSH



b)

i. False
ii. True
iii. True
iv. True
v. False

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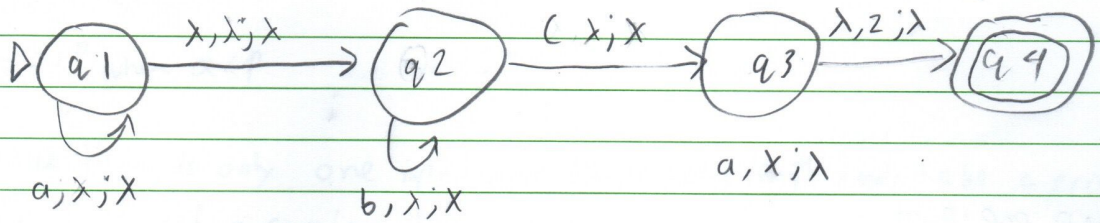
5.

a) JFLAP Format : READ, POP; PUSH



b)

$\Sigma \rightarrow A$

$A \rightarrow aBc \mid aaC$

$B \rightarrow aaB \mid bBc \mid b$

$C \rightarrow c$