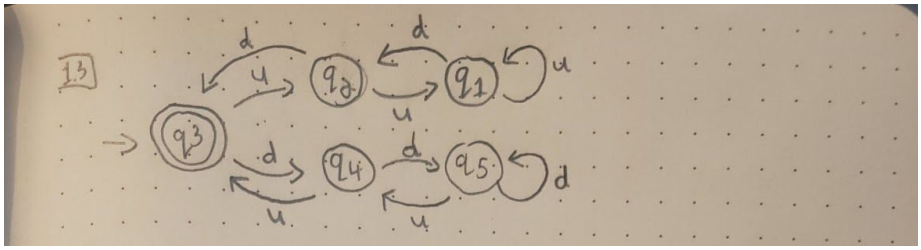
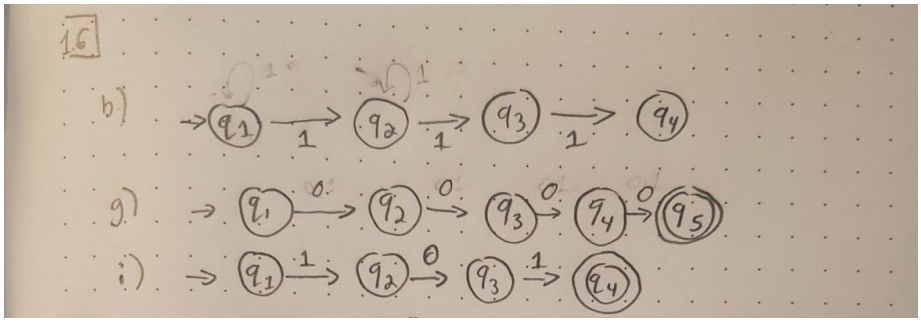
Joseph O'Neill
CSIS 616

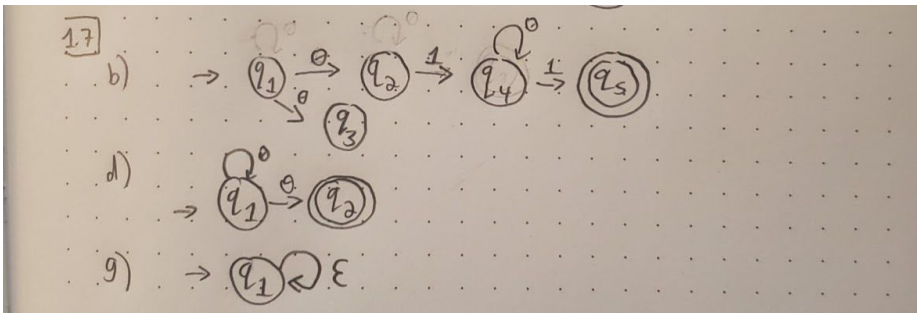
a.)



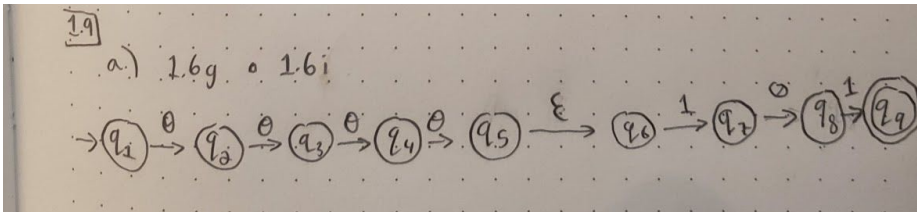
b.)



c.)



d.)



e.)

b.) 0*1110*
g.) (**ΣΣΣΣΣ**)*
i.) 1**Σ***(1)

f.)

b.)	**True**	**False**
	abab	aaaa
	aabab	bbbb
f.)	**True**	**False**
	aba	aaa
	bab	bbb
h.)	**True**	**False**
	a	b
	ba	∅ (empty set)

g.)

a.)

b.)

c.) A1 = $\{a^{2n} \mid n \geq 0\}$ is regular

$S = a^{2p} = xy^iz$

Condition 3.) $|xy| \leq p$ and $p < 2^p$ which means $|y| < 2^p$

$|xyyz| = |xyz|+|y| < 2^p + 2^p$

Condition 2.) $|y| > 0$

so $2p < |xyyz| < 2^{p+1}$

Thus the length of xyyz cannot be a power of 2 and is a contradiction