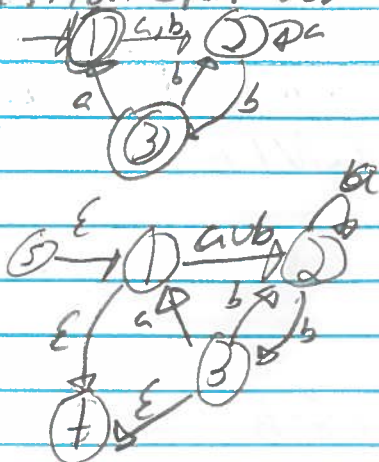


Question 1, 21 (b)

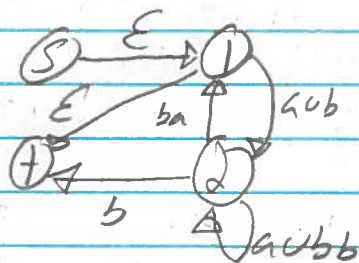
Convert to GNFA



Eliminate 3 first
 $2 \rightarrow 3 \rightarrow 1 : b \epsilon a$
 $2 \rightarrow 3 \rightarrow 1 : ba$
 $2 \rightarrow 3 \rightarrow 2 : bb$

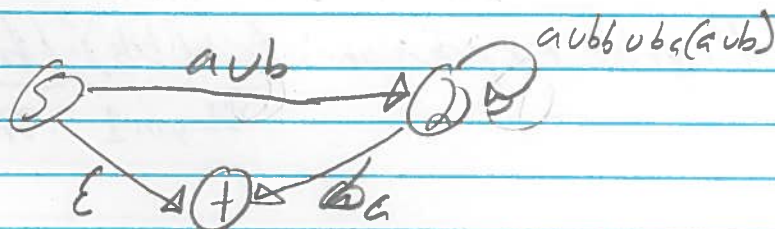
Eliminate 1 next

$S \rightarrow 1 \rightarrow t : \epsilon \epsilon = \epsilon$
 $S \rightarrow 1 \rightarrow 2 : (a \cup b)$
 $2 \rightarrow 1 \rightarrow t : b \epsilon = ba$
 $2 \rightarrow 1 \rightarrow 2 : ba(a \cup b)$



Eliminate 2 last

$S \rightarrow 2 \rightarrow t :$
 $(a \cup b)(a \cup b \cup ba(a \cup b))^*(ba)$



Final Equation $S \rightarrow t$
 $\epsilon \cup [(a \cup b)(a \cup b \cup ba(a \cup b))^* ba]$