

$$1) U = \{w, x, y, z\}$$

$$L((xoy)^* U ((wvz)^* o (xoz))) \Leftrightarrow \langle \text{def. } L(p \cup q) \rangle$$

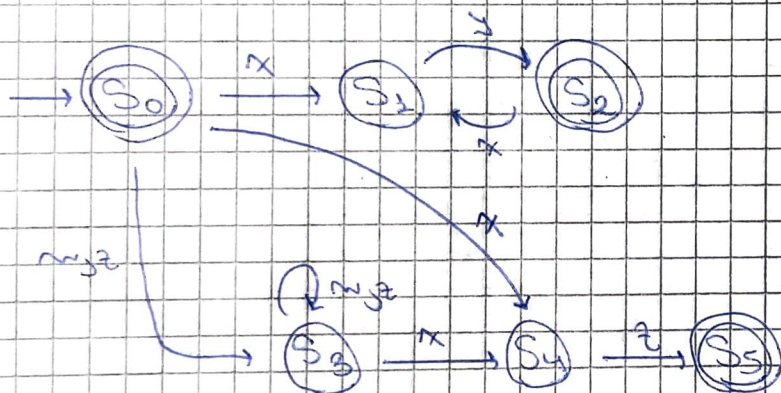
$$\Leftrightarrow L((xoy)^*) \cup L(((wvz)^* o (xoz))) \Leftrightarrow \langle \text{def. } L(p^*), \text{ def. } L(p \circ q) \rangle$$

$$\Leftrightarrow L((xoy)^*) \cup (L((wvz)^*) o L(xoz)) \Leftrightarrow \langle \text{def. } L(p \cup q), \text{ def. } L(p^*), \text{ def. } L(x) \rangle$$

$$\Leftrightarrow \underbrace{\{xy\}^* \cup (\{wvz\}^* o xz)}_{L_1}$$

(a)

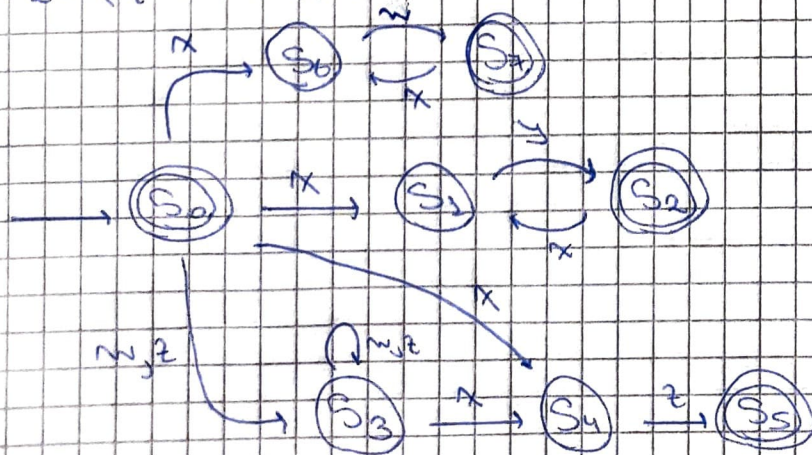
$$A_1 = (\{w, x, y, z\}, \{s_0, s_1, s_2, s_3, s_4, s_5\}, T, s_0, \{s_0, s_2, s_5\})$$



(b)

$$L_2 = xw o \{xw\}^*$$

$$A_2 = (\{w, x, y, z\}, \{s_0, s_1, s_2, s_3, s_4, s_5, s_6, s_7\}, T, s_0, \{s_0, s_2, s_5, s_7\})$$



$$c) G_1 = (\{C, X\}, \{x, w\}, P, \sigma)$$

$$P) \sigma \rightarrow xC \quad C \rightarrow wX/w$$

$$X \rightarrow xC$$

$$2) L_3 = \{a^m b^{2m} c^n \mid m, n \in \mathbb{N}\}$$

a) Casos

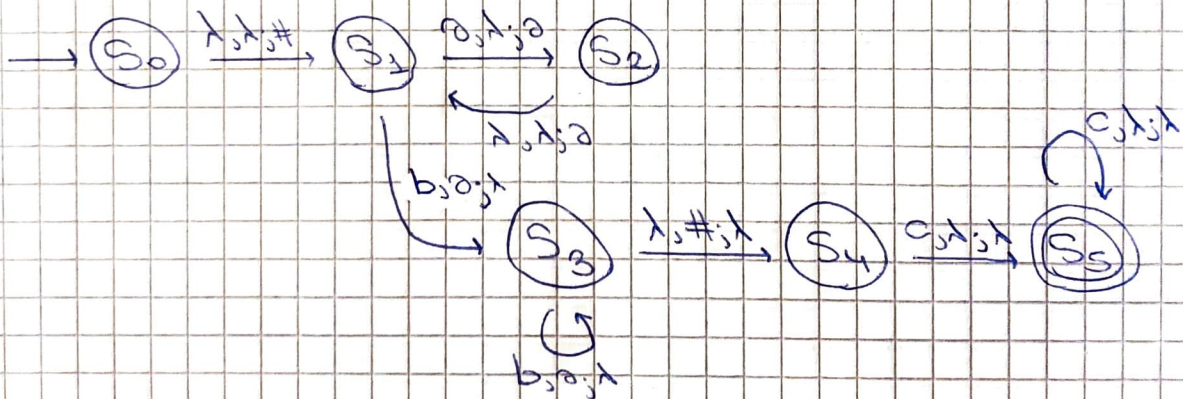
$$(i) m=1, n=1 \rightarrow abbc$$

$$(ii) m=1, n=k \rightarrow abb c^k$$

$$(iii) m=k, n=1 \rightarrow a^k b^{2k} c$$

$$(iv) m=k, n=j \rightarrow a^k b^{2k} c^j$$

$$A_3 = (\{s_0, s_1, s_2, s_3, s_4, s_5\}, \{a, b, c, \lambda\}, \{\#, \epsilon, T, s_0, \{s_5\}\})$$



$$b) G_2 = (\{B, C\}, \{a, b, c\}, P, \sigma)$$

$$P) \sigma \rightarrow aBbbc$$

$$B \rightarrow aBbb/\lambda$$

$$C \rightarrow cC/c$$