A3

c)

Supp. $\mathcal{L}(R) \subseteq \mathcal{L}(S) \subseteq \mathcal{L}(T)$

Note: $(R^* + T)^* \equiv S^* + T^* \Leftrightarrow \mathcal{L}(R^* + T)^* = \mathcal{L}(S)^* \cup \mathcal{L}(T)^*$

$\Rightarrow \mathcal{L}(R)^{**} \cup \mathcal{L}(T)^* = \mathcal{L}(S)^* \cup \mathcal{L}(T)^*$

Use $\mathcal{L}(R)^{**} = \mathcal{L}(R)^*$ (This may need proof)

If this is true,

$\mathcal{L}(R)^* \cup \mathcal{L}(T)^* = \mathcal{L}(T)^*$ by supp.

and $\mathcal{L}(S)^* \cup \mathcal{L}(T)^* = \mathcal{L}(T)^*$ by supp.

Thus $\mathcal{L}(R)^* \cup \mathcal{L}(T)^* = \mathcal{L}(S)^* \cup \mathcal{L}(T)^*$