a) Define the objective function F and give a mathematical formulation of the optimization problem.

→ Objective: Maximize revenue.

F = Earnings − Expenses

$$F(T) = q \cdot p_B \cdot m_B - \left(q \cdot p_A \cdot m_A + q \cdot p_T \left| T - 298 \right| \right)$$

Where,

$p_B = 7 \left[€/mol \right]$

m_B → amount of B produced [mol]

$p_A = 2 \left[€/mol \right]$

m_A → amount of A produced [mol]

$q = 0{,}12 \left[m^3/s \right]$

$p_T = 0{,}06 \left[€/m^3/K \right]$

T → temperature