35. The total work is the sum of the work done by gravity on the elevator, the work done by gravity on the counterweight, and the work done by the motor on the system: $W_T = W_e + W_c + W_s$. Since the elevator moves at constant velocity, its kinetic energy does not change and according to the work-kinetic energy theorem the total work done is zero. This means $W_e + W_c + W_s = 0$. The elevator moves upward through 54 m, so the work done by gravity on it is

$$W_e = -m_e g d = -(1200 \, \text{kg})(9.8 \, \text{m/s}^2)(54 \, \text{m}) = -6.35 \times 10^5 \, \text{J} \, .$$

The counterweight moves downward the same distance, so the work done by gravity on it is

$$W_c = m_c g d = (950 \, \text{kg}) \left(9.8 \, \text{m/s}^2 \right) (54 \, \text{m}) = 5.03 \times 10^5 \, \text{J} \, .$$

Since $W_T = 0$, the work done by the motor on the system is

$$W_s = -W_e - W_c = 6.35 \times 10^5 \, \text{J} - 5.03 \times 10^5 \, \text{J} = 1.32 \times 10^5 \, \text{J} \, .$$

This work is done in a time interval of $\Delta t = 3.0 \, \text{min} = 180 \, \text{s}$, so the power supplied by the motor to lift the elevator is

$$P = \frac{W_s}{\Delta t} = \frac{1.32 \times 10^5 \, \text{J}}{180 \, \text{s}} = 7.4 \times 10^2 \, \text{W} \, .$$