

حل تمرینات ترمودینامیک - ماسنیر

تمرین 1: حالت اول  $T_C = 300 \text{ K}$

$$\eta_{\text{Max}} = 74\% \quad \eta_{\text{Max}} = 1 - \frac{T_C}{T_H}$$

$$\frac{74}{100} = 1 - \frac{300}{T_H}$$

$$\frac{300}{T_H} = 1 - \frac{74}{100} = \frac{26}{100}$$

$$T_H = \frac{300 \times 100}{26} = 500 \text{ K}$$

حالت دوم:  $T_H = 500 + 100 = 400 \text{ K}$

$$\eta_{\text{Max}} = 1 - \frac{T_C}{T_H} = 1 - \frac{300}{400} = 1 - \frac{3}{4} = \frac{1}{4}$$

$$\boxed{\eta_{\text{Max}} = 25\%}$$

تمرین 2:  $T_C = 300 \text{ K}$   $T_H = 500 \text{ K}$

$$Q_H = 1000 \text{ J}$$

$$\eta_{\text{Max}} = 1 - \frac{T_C}{T_H} = 1 - \frac{300}{500} \quad (\text{الف})$$

$$\eta_{\text{Max}} = 1 - \frac{3}{5} = \frac{2}{5} = \boxed{74\%}$$

$$\eta = \frac{|W|}{Q_H} \quad (\text{ب})$$

$$74\% = \frac{|W|}{1000} \rightarrow |W| = \boxed{740 \text{ J}}$$

$$|Q_C| = Q_H - |W| = 1000 - 740 = \boxed{260 \text{ J}}$$

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