

Environmental Science, Problems Chapter 6

6.1

How long will the oil last in Latin America if the oil consumption is 6 % of the total oil consumption ($6.3 \cdot 10^7$ barrel/day) and if the estimated amount is $95 \cdot 10^9$ barrels.

Answer: 70 years

6.2

Calculate the specific heat capacity c of water, if the energy to heat 1.0 kg from 20°C to 60°C is measured to be 172 kJ.

Answer: 4.3 kJ/kg·K

6.3

Calculate the thermal efficiency η where we have an apparatus with a hot reservoir at temperature $T_H = 60^\circ\text{C}$ and a cool reservoir at temperature $T_C = 20^\circ\text{C}$.

Answer: $\leq 12\%$

6.4

Determine the temperature of the hot reservoir if the thermal efficiency $\eta = 15\%$ where we have an apparatus with a cool reservoir at $T_C = 20^\circ\text{C}$.

Answer: 72°C

6.5

Determine the coefficient of performance (COP or CEP) if we have a refrigerator where the temperature of the hot reservoir is 30°C and the temperature of the cool reservoir is -7°C .

Answer: 7