P #C

Ch 12 Worksheet

f) $\Delta U_{AB} = +8635\ J$

$W_{AB} = -P \cdot \Delta V = -(1.2 \times 10^5\ Pa)(72 \times 10^{-3}\ m^3) - (24 \times 10^{-3}$,
$= -5760\ J$

$\Delta U = W + Q$
$(8635\ J) = (-5760\ J) + Q$

$\boxed{Q_{AB} = +14,400\ J}$

g) $\Delta U_{BC} = -8635\ J$
$W_{BC} = 0 \quad (\Delta V = 0)$

$\Delta U = W + Q$
$-8635\ J = 0 + Q$

$\boxed{Q_{BC} = -8635\ J}$

h) $W_{AB} = -5760\ J$ (from f)
$W_{BC} = 0$ (from g)
$W_{CA} = +3164\ J$

$W_{net} = -5760\ J + 0 + 3164\ J$
$= -2596\ J$

$\Delta U = 0$ (cycle)

$\Delta U = W + Q$
$0 = -2596\ J + Q$

$\boxed{Q_{net} = +2596\ J}$