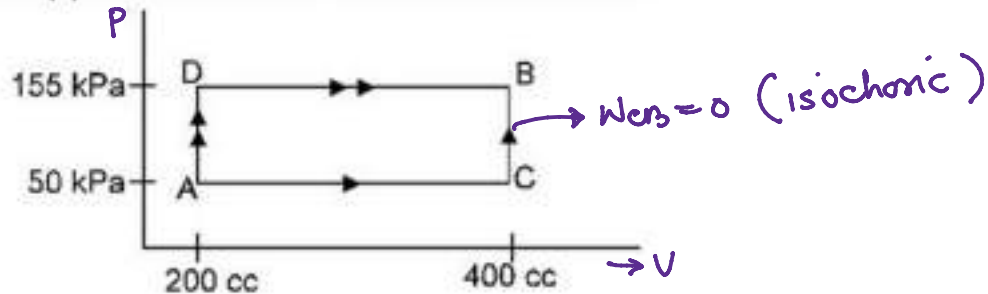$$\Delta Q = \Delta U + \Delta W$$

$$0 = \Delta U + (-4.350)$$

$$\boxed{\Delta U = 4.35 \text{ J}}$$

EXAMPLE: 50 cal of heat should be supplied to take a system from the state A to the state B through the path ACB as shown in figure. Find the quantity of heat to be supplied to take it from A to B via ADB.

$$\Delta Q_{ADB} = ?$$

$W_{CB} = 0$ (isochoric)

For process ACB :

$$\Delta Q = 50 \text{ cal} = 50 \times 4.18 \text{ J}$$

$$\Delta Q_{ACB} = 209 \text{ J}$$

$$\Delta W_{ACB} = W_{AC} + W_{CB} = + p(V_C - V_A) + 0$$

$$= 50 \times 10^3 \times 200 \times 10^{-6} = 10000 \times 10^{-3} \text{ J}$$

②