

Ex.

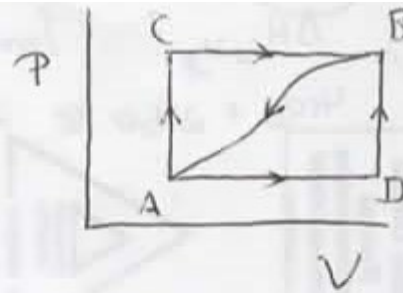
$$a) \Delta U_{AB} = \Delta U_{ACB} = \Delta U_{ADB}$$

$$\Delta U_{ACB} = q_{ACB} + w_{ACB} = 80 - 30 = 50 \text{ J}$$

$$\Delta U_{ADB} = 50 = q_{ADB} + w_{ADB}$$

$$50 = q_{ADB} - 10$$

$$q_{ADB} = 60 \text{ J}$$



$$b) \Delta U_{BA} = -\Delta U_{AB} = -50 \text{ J}$$

$$\Delta U_{BA} = q_{BA} + w_{BA}$$

$$-50 = q_{BA} + 20$$

$$\Rightarrow q_{BA} = -70 \text{ J} \quad (\text{not\u00e9ma libera cal\u00e9rie})$$

$$c) \Delta U_{AD} = 40 \text{ J}$$

$$= q_{AD} + w_{AD}$$

$$40 = q_{AD} - 10 \quad (\text{plus})$$

$$q_{AD} = 50 \text{ J}$$

$$q_{ADB} = q_{AD} + q_{DB}$$

$$q_{DB} = q_{ADB} - q_{AD}$$

$$q_{DB} = 60 - 50$$

$$q_{DB} = 10 \text{ J}$$

$$\Delta U_{ADB} = 50 \text{ J} \quad \therefore \Delta U_{ADB} = q + w$$
$$50 = 60 + w$$

