

Case II :

$$\Delta Q'_{AB} = 9.35 \text{ cal} = 9.35 \times 4.19 \text{ J} \\ = 39.1765 \text{ J}$$

$$\Delta W'_{AB} = ?$$

$$\Delta Q'_{AB} = \Delta U'_{AB} + \Delta W'_{AB}$$

$$\Delta U'_{AB} = \Delta U_{AB} = 22.3 \text{ J}$$

$$39.1765 = 22.3 + \Delta W'_{AB}$$

$$39.1765 - 22.3 = \Delta W'_{AB}$$

$$\Delta W'_{AB} = 16.7865 \text{ J}$$

work done by the system.