$$\eta = \frac{W}{Q_1} \Rightarrow \eta = \frac{Q_1 - Q_2}{Q_1} \Rightarrow \eta = 1 - \frac{Q_2}{Q_1}$$

As, $\eta \neq 1 \Rightarrow \frac{Q_2}{Q_1} \neq 0 \Rightarrow \underline{\underline{Q_2 \neq 0}}$

Note:

$$Q_1 = \mu R T_1 \cdot \log_e \frac{V_2}{V_1} \quad \text{--- (1)}$$

$$Q_2 = -\mu R T_2 \log_e \frac{V_3}{V_4} \quad \text{--- (3)}$$

or $$Q_2 = -\mu R T_2 \log_e \frac{V_2}{V_1} \quad \text{--- (11)} \quad \left\{ \because \frac{V_3}{V_4} = \frac{V_2}{V_1} \right.$$

Q_1 and Q_2 are the heat exchanged in isothermal condition at temp T_1 and T_2 respectively.

$$\boxed{\frac{Q_1}{|Q_2|} = \frac{T_1}{T_2}} \quad \leftarrow (12)$$

So, the amount of heat exchanged between a system and surrounding in isothermal condition is proportional to the absolute temp. at which the process takes place.