## Q. 03

An ideal gas undergoes isothermal process from some initial state i to final state f. Choose the correct alternatives.

a. dU = 0
b. dQ= 0
c. dQ = dU
d. dQ = dW

**Sol.** In the isothermal process the temperature is constant therefore internal energy is constant and thus the net change in internal energy is zero.

$\Delta U = 0$ and $\Delta U = \Delta Q - \Delta W$

$\therefore \Delta Q - \Delta W = 0 \Rightarrow \Delta Q = \Delta W$

option (a, d) is correct.