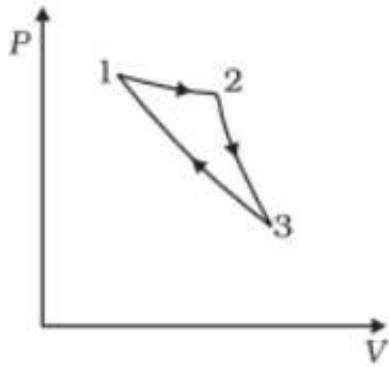**6.** Consider a cycle followed by an engine (Fig.)

1 to 2 is isothermal

2 to 3 is adiabatic

3 to 1 is adiabatic

Such a process does not exist because

a. heat is completely converted to mechanical energy in such a process, which is not possible.

b. mechanical energy is completely converted to heat in this process, which is not possible.

c. curves representing two adiabatic processes don't intersect.

d. curves representing an adiabatic process and an isothermal process don't intersect.

Sol. If two(similar) curves eat each other it means one could transform from one state to another without changing energy(heat) which is not possible.Heat cannot be converted completely to mechanical energy.

option (a, c) is correct.