3 (a) (i) Explain what is meant by an *ideal gas*.

[2]

(ii) Use the kinetic theory of gases to explain why when the volume of an ideal gas decreases at constant temperature, the pressure of the gas increases.

[4]

(b) A fixed amount of an ideal gas undergoes a cycle of changes A→B→C→A as shown in Fig. 3.1.

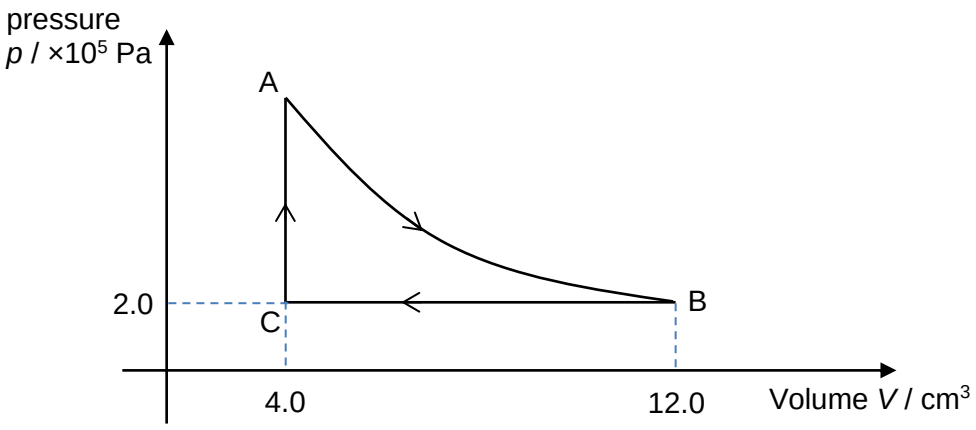

Fig. 3.1

(i) Determine the work done on the ideal gas during the process B→C.

work done on gas = _____ J [2]

(ii) Explain why there is a net thermal energy absorbed by the ideal gas when it undergoes a cycle of changes A→B→C→A.

[3]

[Total: 11]