

- 1 (a) A fixed amount of ideal monatomic gas is contained in a cylinder as shown in Fig. 1.1.

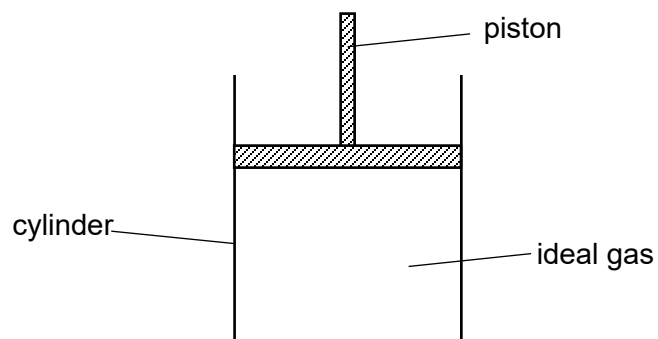


Fig. 1.1

The cylinder is fitted with a movable piston which is light and frictionless. When the piston is moved down to compress the gas, both the temperature and pressure of the gas are observed to increase.

Use the kinetic theory of gases to explain,

- (i) the increase in temperature.

.....

.....

.....

[1]

- (ii) the increase in pressure.

.....

.....

.....

.....

[2]

- (b) The gas in the cylinder is made to undergo a cycle of changes $A \rightarrow B \rightarrow C \rightarrow A$, as shown in Fig. 1.2.

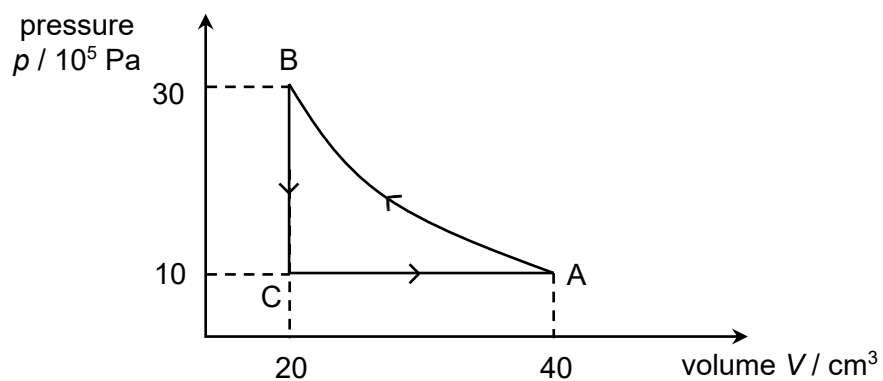


Fig. 1.2

- (i) Show that the increase in internal energy of the gas during the change $A \rightarrow B$ is 30 J.

[2]

- (ii) Calculate the heat supplied to the gas during the change $B \rightarrow C \rightarrow A$.

heat supplied = J [3]

