For Examiner's Use

2 **(a)** **(i)** State the basic assumption of the kinetic theory of gases that leads to the conclusion that the potential energy between the atoms of an ideal gas is zero.

.....

.....[1]

(ii) State what is meant by the *internal energy* of a substance.

.....

.....

.....[2]

(iii) Explain why an increase in internal energy of an ideal gas is directly related to a rise in temperature of the gas.

.....

.....

.....[2]

(b) A fixed mass of an ideal gas undergoes a cycle PQRP of changes as shown in Fig. 2.1.

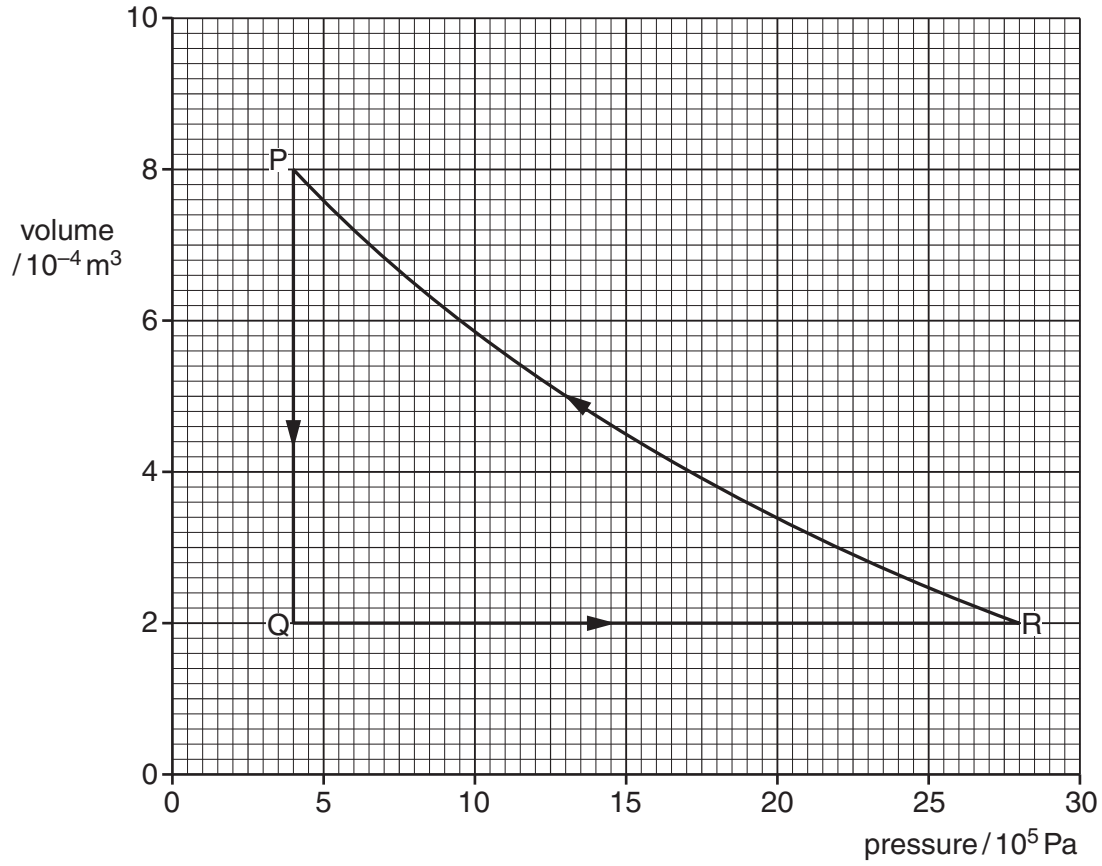

Fig. 2.1

(i) State the change in internal energy of the gas during one complete cycle PQRP.

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change = ... J [1]

(ii) Calculate the work done on the gas during the change from P to Q.

work done = ... J [2]

(iii) Some energy changes during the cycle PQRP are shown in Fig. 2.2.

change	work done on gas / J	heating supplied to gas / J	increase in internal energy / J
P → Q	.....	–600	.....
Q → R	0	+720	.....
R → P	.....	+480	.....

Fig. 2.2

Complete Fig. 2.2 to show all of the energy changes. [3]