1 A fixed mass of monatomic ideal gas undergoes the cycle ABCA of changes shown in Fig. 1.1.

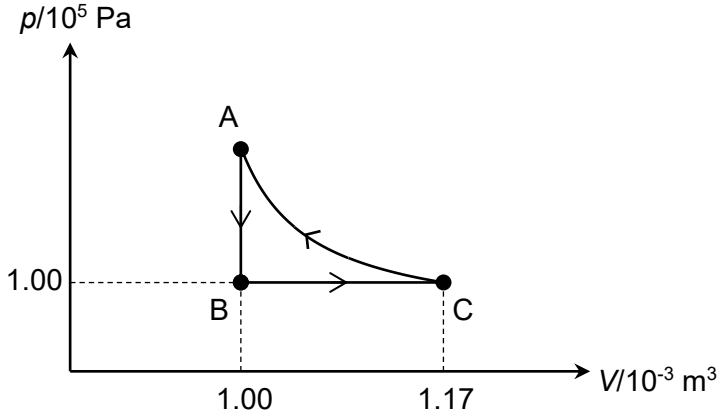

Fig. 1.1 (not to scale)

The temperature of the gas at points A, B and C is 350 K, 300 K and 350 K respectively.

(a) Calculate the amount of gas in moles.

amount of gas = ...mol [2]

(b) Show that the change in internal energy ΔU of the gas during process AB is 25.0 J.

[1]

(c) The answer to part **(b)** is also the amount of heat released by the gas during process AB. Explain why this is so.

.....

.....[1]

(d) The gas is heated at constant pressure from point B to point C. Calculate the work done by the gas, and the heat supply to the gas from point B to point C.

work done by the gas = ... J

heat supply = ... J
[3]

(e) Deduce whether heat is absorbed or released by the gas during the cycle ABCA. Explain your deduction.

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.....[2]