

- 2 (a) Explain what is meant by the Avogadro constant.

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.....  
.....

[2]

- (b) Argon-40 ( $^{40}_{18}\text{Ar}$ ) may be assumed to be an ideal gas.

A mass of 3.2 g of argon-40 has a volume of  $210\text{cm}^3$  at a temperature of  $37^\circ\text{C}$ .

Determine, for this mass of argon-40 gas,

- (i) the amount, in mol,

amount = ..... mol [1]

- (ii) the pressure,

pressure = ..... Pa [2]

- (iii) the root-mean-square (r.m.s.) speed of an argon atom.

r.m.s. speed = .....  $\text{ms}^{-1}$  [3]

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