2 **(a)** State what is meant by an *ideal* gas.

.....

.....

.....[2]

(b) The mean-square speed of the atoms of a fixed mass of an ideal gas at 32 °C is $1.9 \times 10^6\,m^2\,s^{-2}$.

The gas is heated at constant volume to a temperature of 80 °C.

Determine

(i) the rise, in kelvin, of the temperature of the gas,

temperature rise = ... K [1]

(ii) the root-mean-square (r.m.s.) speed of the atoms at 80 °C.

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

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