14 Xenon gas is used as an anaesthetic. The gas is stored in cylinders, under pressure. A cylinder with a volume of 6.0×10^{-2} m^3 contains 7.5×10^{24} atoms of xenon.

(a) The gas in the cylinder is at a temperature of 20 °C.

Calculate the pressure exerted by the gas.

(3)

Pressure exerted by gas = ...

(b) Gas is removed from the cylinder. The temperature of the gas decreases by 5.0 °C and the new pressure of the gas is 4.50×10^5 Pa.

Calculate the percentage of the original number of gas molecules remaining in the cylinder.

(2)

Percentage = ...

(Total for Question 14 = 5 marks)