

## Answer on Question#66276 – Chemistry – General chemistry

### Question:

Excercise 5.8

A syringe containing 1.20 mL of oxygen gas is cooled from 96.6 °C to 0.1 °C. What is the final volume  $V_f$  of oxygen gas?

### Solution:

$$T_1 = 96.6^\circ\text{C} = 96.6 + 273.2 = 369.8 \text{ K}$$

$$T_2 = 0.1^\circ\text{C} = 0.1 + 273.2 = 273.3 \text{ K}$$

From Charles' Law:

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$

$$V_2 = \frac{V_1 \times T_2}{T_1} = \frac{1.20 \text{ mL} \times 273.3 \text{ K}}{369.8 \text{ K}} = 0.887 \text{ mL}$$

**Answer:** 0.887 mL is final volume of oxygen gas.

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