

$$\textcircled{1} \frac{49 \text{ torr} / 1 \text{ atm}}{760 \text{ torr}} = \boxed{0.064 \text{ atm}}$$

$$\frac{0.064 \text{ atm} / 101.3 \text{ kPa} / 1000 \text{ Pa}}{1 \text{ atm} / 1 \text{ kPa}} = 6531 \text{ Pa} = \boxed{6500 \text{ Pa}}$$

$$\textcircled{2} \frac{75 \text{ kPa} / 1 \text{ atm}}{101.3 \text{ kPa}} = 0.74 \text{ atm}$$

$$\frac{300 \text{ torr} / 1 \text{ atm}}{760 \text{ torr}} = 0.395 \text{ atm}$$

$$\frac{350 \text{ mmHg} / 1 \text{ atm}}{760 \text{ mmHg}} = 0.461 \text{ atm}$$

∴ Decreasing Pressures:

75 kPa, 0.60 atm, 350 mmHg, 300. torr

$$\textcircled{3} P_1 V_1 = P_2 V_2$$

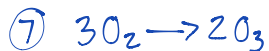
$$(5.6 \times 10^3 \text{ Pa})(1.53 \text{ L}) = (1.5 \times 10^4 \text{ Pa})(V_2)$$

$$\boxed{V_2 = 0.57 \text{ L}}$$

$$\textcircled{6} \frac{V_1}{T_1} = \frac{V_2}{T_2}$$

$$\frac{2.58 \text{ L}}{288 \text{ K}} = \frac{V_2}{311 \text{ K}}$$

$$\boxed{V_2 = 2.79 \text{ L}}$$



$$\frac{0.50 \text{ mol} / 2 \text{ mol O}_3}{3 \text{ mol O}_2} = 0.33 \text{ mol O}_3$$

$$\frac{V_1}{n_1} = \frac{V_2}{n_2}$$

$$\frac{12.2 \text{ L}}{0.50 \text{ mol}} = \frac{V_2}{0.33 \text{ mol}}$$

$$\boxed{V_2 = 8.1 \text{ L}}$$

$$\textcircled{8} PV = nKT$$

$$(1.5 \text{ atm})(8.56 \text{ L}) = n(0.0821 \frac{\text{L}\cdot\text{atm}}{\text{mol}\cdot\text{K}})(273 \text{ K})$$

$$n = 0.57 \text{ mol}$$

$$\textcircled{9} P_1 V_1 = P_2 V_2$$

$$(1.68 \text{ atm})(3.5 \text{ L}) = P_2(1.35 \text{ L})$$

$$P_2 = 4.4 \text{ atm}$$

$$\textcircled{10} \frac{V_1}{T_1} = \frac{V_2}{T_2}$$

$$\frac{3.8 \text{ L}}{278 \text{ K}} = \frac{V_2}{359 \text{ K}}$$

$$V_2 = 5 \text{ L}$$

$$\textcircled{11} \frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

$$\frac{(345 \text{ torr})(3.48 \text{ L})}{258 \text{ K}} = \frac{(468 \text{ torr})(V_2)}{309 \text{ K}}$$

$$V_2 = 3.1 \text{ L}$$

$$\textcircled{17} \text{ He } P_1 V_1 = P_2 V_2$$
$$(1.0 \text{ atm})(46 \text{ L}) = (P_2)(5.0 \text{ L})$$

$$P_2 = 9.2 \text{ atm} = P_{\text{He}}$$

$$\text{O}_2 P_1 V_1 = P_2 V_2$$
$$(1.0 \text{ atm})(12 \text{ L}) = (P_2)(5.0 \text{ L})$$

$$P_2 = 2.4 \text{ atm} = P_{\text{O}_2}$$

$$P_T = P_{\text{He}} + P_{\text{O}_2}$$

$$P_T = 9.2 \text{ atm} + 2.4 \text{ atm} = 11.6 \text{ atm}$$

$$\textcircled{18} X_A = \frac{156 \text{ torr}}{743 \text{ torr}} = 0.210$$

$$\textcircled{19} P_{\text{N}_2} = (X_{\text{N}_2})(P_T) = (0.7808)(760. \text{ torr}) = 593 \text{ torr}$$