

P4-7a (8th Ed.); P. 6.10a (7th Ed.)

This is a simple question that seems a bit out of place in this chapter. All you have to do is plug the vapor pressures and molecular weights into the ideal gas equation. So...

$$V = 5\text{ m}^3 \times 5\text{ m}^3 \times 3\text{ m}^3 = 75\text{ m}^3$$

$$n = \frac{m}{M}$$

$$m = \frac{pVM}{RT}$$

$$(a) = \frac{(3.2\text{ kPa})(75\text{ m}^3)(18.02 \times 10^{-3}\text{ kg mol}^{-1})}{(8.3145\text{ J K}^{-1}\text{ mol}^{-1})(298.15\text{ K})} = \boxed{1.7\text{ kg}}$$

$$(b) \quad \boxed{31\text{ kg}} \quad (c) \quad \boxed{1.4\text{ g}}$$