Question 1
$$V = 89m^{3} \qquad P_{0}V = nRT_{0}$$

$$n = 6000 \text{ mol} \qquad P_{0} = nRT_{0}$$

$$T_{0} = 270 \text{ K}$$

$$T_{1} = 350 \text{ K} \qquad P_{0} = (6000 \text{ mol})(8.3 \text{H J mol}^{-1})(2.70 \text{ K})$$

$$R = 8.3 \text{H J mol}^{-1} \qquad 89m^{3}$$

$$P_{0} = 151333 P_{0} \approx 0.15 \text{ MPa}$$

$$Question 2$$

$$V = 3.2 \text{ L}$$

$$P_{0} = 3.3 \text{ atm}$$

$$T_{0} = 330 \text{ K}$$

$$M = 20.2 \text{ g mol}^{-1}$$

$$P_{0}V = (\frac{m}{M})RT_{0}$$

$$R = 0.0821 \text{ Latm mol}^{-1} \text{ K}^{-1} \qquad m = P_{0}VM$$

$$m = ?$$

$$m = (3.3 \text{ atm})(3.2 \text{ L})(20.2 \text{ g mol}^{-1})$$

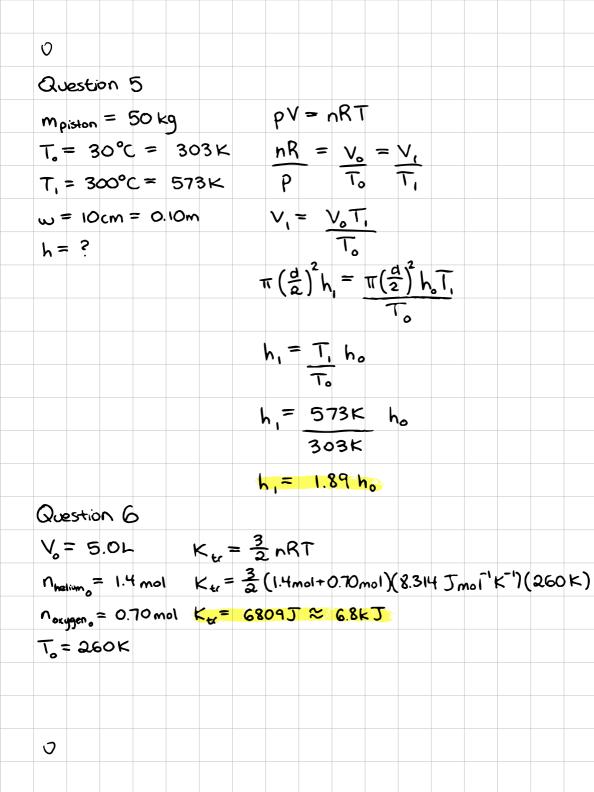
$$(0.0821 \text{ atm mol}^{-1} \text{K}^{-1})(330 \text{ K})$$

$$m = 7.87 \text{ L} = 0.00787 \text{ m}^{3}$$

$$= 7.87 \times 10^{-3} \text{ m}^{3} \approx 7.9 \times 10^{-3} \text{ m}^{3}$$

Question 3

$$V_{c} = 12.0m^{3}$$
 $V_{c} = 12.0m^{3}$ 
 $V_{c} = 10.0m^{3}$ 
 $V_{c} = 24.0m^{2}$ 
 $V_{c} = 24.5m^{2}$ 
 $V_{c} = 10.1m^{2}$ 
 $V_{c} = 20.0m^{2}$ 
 $V_{c} = 20.0m^{2$ 



Question 7

$$V_0 = V$$
 $V_1 = \frac{1}{2}V$ 
 $V = M$ 
 $V_1 = \frac{1}{2}V$ 
 $V = M$ 
 $V_2 = V$ 
 $V_3 = V$ 
 $V_4 = V$ 
 $V_4 = V$ 
 $V_4 = V$ 
 $V_5 = V$ 
 $V_6 = V$ 
 $V_7 = V$ 
 $V_8 = V$ 

Question 9

$$n = 10$$
 $i = 0$ 
 $V_{i} = [15 + i] ms^{-1}$ 
 $V_{rms} = \sqrt{(v^{2})_{avg}}$ 
 $V_{rms} = \sqrt{\left(v^{2}\right)_{avg}}$ 
 $V_{rms} = 30.2 ms^{-1}$ 

Question 10

 $T_{sun} = 5800 \text{ K}$ 
 $V_{rms} = ?$ 
 $m = 1.67 \times 10^{-27} \text{ kg}$ 
 $V_{rms} = \sqrt{\frac{3kT}{M}}$ 
 $V_{rms} = \sqrt{\frac{3(1.38 \times 10^{-23} \text{ kg})}{1.67 \times 10^{-27} \text{ kg}}}$ 
 $V_{rms} = 11991 \text{ ms}^{-1} \approx 1.20 \times 10^{9} \text{ ms}^{-1}$ 
 $O$ 

