

12.49

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① $P_1 = 0.2 \text{ MPa}$ $T_1 = 20^\circ\text{C}$ $\phi_1 = 0$	② saturated air $T_2 = 20^\circ\text{C}$
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(a)  $m_{\text{H}_2\text{O}} = ? \text{ kg}$

If the air is saturated at state ② then  $P_r = P_{\text{sat}}(20^\circ\text{C})$

$$P_r = P_g = 0.02339 \text{ bar} = 2.339 \text{ kPa}$$

$$pV = mRT \Rightarrow m = \frac{pV}{RT}$$

$$R = \frac{8.314 \text{ kJ/kmole}\cdot\text{K}}{18.02 \text{ kg/kmole}} = 0.461 \frac{\text{kJ}}{\text{kg}\cdot\text{K}}$$

$$m = 0.00866 \text{ kg}$$

(b)  $p = 0.2 \text{ MPa} + 0.002339 \text{ MPa}$

$$p = 2.0234 \text{ bar}$$