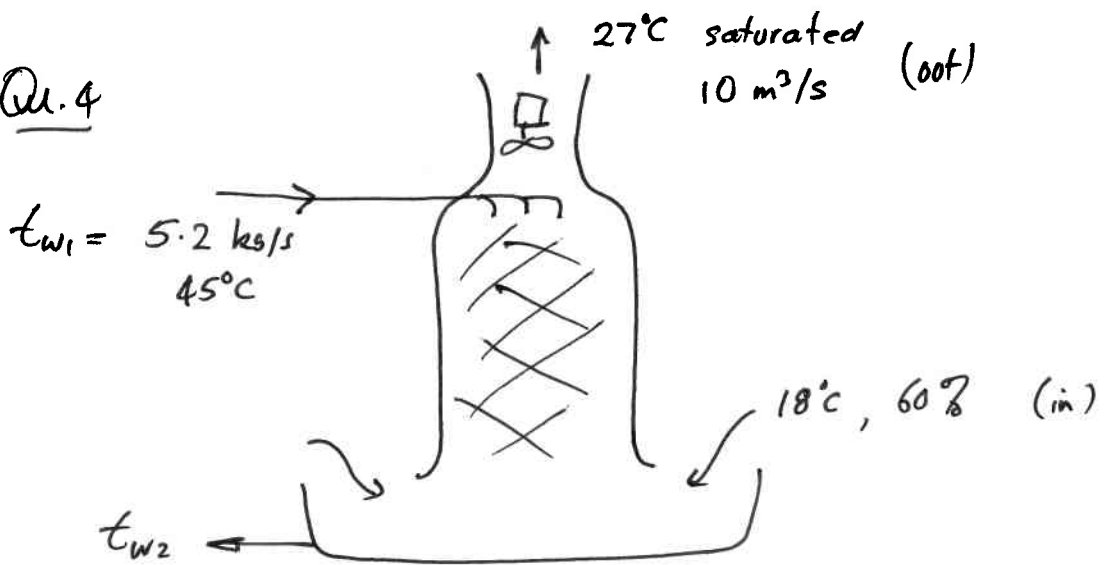


Qu. 4



Ignoring enthalpy flow of make-up water

$$\Delta H_{\text{water}} = \Delta H_{\text{air}}$$
$$\dot{m}_w c_{pw} (t_{w1} - t_{w2}) = \dot{m}_a (h_{in} - h_{out})$$

$$h_{in} = 38.0 \text{ kJ/kg d.a.}$$

$$h_{out} = 85.3 \text{ "}$$

$$v_{out} = 0.882 \text{ m}^3/\text{kg d.a.}$$

$$\dot{m}_a = \frac{10}{0.882} = 11.34 \text{ kg/s d.a.}$$

$$\therefore 5.2 \times 4.185 (45 - t_{w2}) = 11.34 (85.3 - 38)$$

$$\therefore t_{w2} = \underline{20.4^\circ\text{C}}$$

$$w_{out} = 0.0228 \text{ kg/kg d.a.}$$

$$w_{in} = 0.0078 \text{ "}$$

$$\begin{aligned} \therefore \dot{m}_{H_2O} &= \dot{m}_a (w_{out} - w_{in}) \\ &= 11.34 (0.0228 - 0.0078) \\ &= \underline{0.17 \text{ kg/s}} \quad (\text{make-up}) \end{aligned}$$