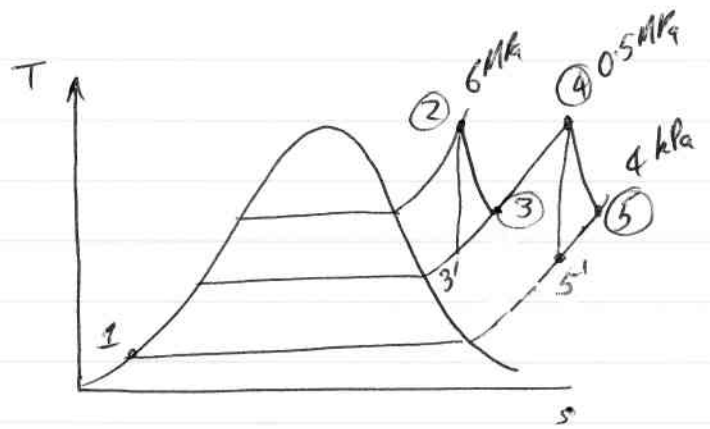
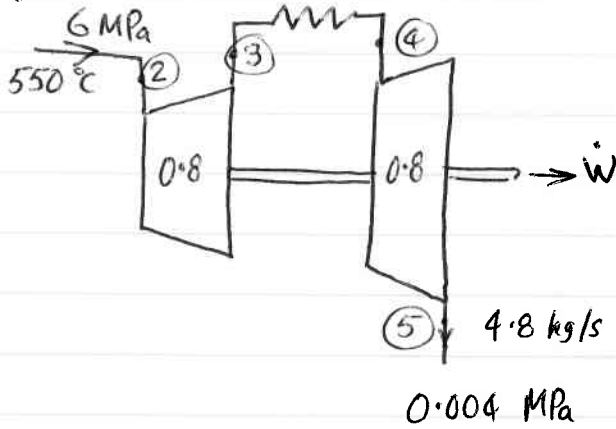


Qu. 6

0.5 MPa 500°C



From chart  $h_2 = 3539 \text{ kJ/kg}$

or tables  $h_{3'} = 2840$

$$\frac{h_2 - h_3}{h_2 - h_{3'}} = 0.8 \quad \therefore h_3 = 3539 - 0.8(3539 - 2840) = 2979.8 \text{ kJ/kg}$$

From chart  $h_4 = 3484 \text{ kJ/kg}$

or tables  $h_{5'} = 2440$

$$\frac{h_4 - h_5}{h_4 - h_{5'}} = 0.8 \quad \therefore h_5 = 3484 - 0.8(3484 - 2440) = 2648.8 \text{ kJ/kg}$$

$$\begin{aligned} \dot{W} &= \dot{m} \{ [h_2 - h_3] + [h_4 - h_5] \} \\ &= 4.8 \{ (3539 - 2979.8) + (3484 - 2648.8) \} \\ &= 6693 \text{ kW} \quad \text{or} \quad \underline{\underline{6.69 \text{ MW}}} \end{aligned}$$

$$\begin{aligned} \eta_{th} &= \frac{6693}{\dot{m} [(h_2 - h_1) + (h_4 - h_3)]} \\ &= \frac{6693}{4.8 [(3539 - 121.4) + (3484 - 2979.8)]} \\ &= \underline{\underline{0.356}} \quad (35.6\%) \end{aligned}$$