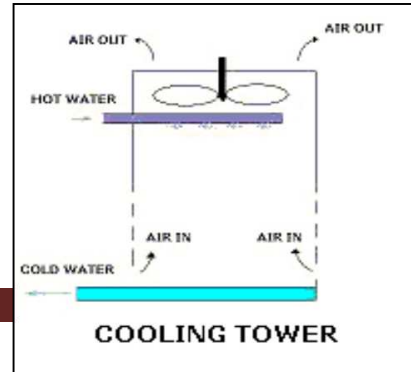# *COOLING TOWER*

Water inlet mass flow rate	5.5 kg/s
Water inlet temperature	44 C
Induced air flow rate	9 m3/s
Power absorbed by air (power used by fan)	4.75 kW
Inlet air temperature	18 C
Inlet air relative humidity	60 %
Outlet air temperature	26 C
Outlet air relative humidity	100 %
Air pressure thru tower	1.013 bar

COOLING TOWER

Calculate
mass flow rate of make-up water
Final temperature of water leaving the cooling tower

At inlet

Pg	0.021 bar
partial pressure of water	0.012 bar
Partial pressure of other gases in inlet air	1.001 bar
Mass flow rate of air (dry)	10.783 kg/s
Mass flow rate of water in the air	0.083 kg/s
moisture content	0.008

At Exit

Pg	0.034 bar
specific humidity/moisture content	0.021
Mass flow rate of water in the air	0.230 kg/s
Make-up water req.	0.147 kg/s
Water leaving the cooling tower	5.353 kg/s

Applying steady-flow condition	m[kg/s]	h[kJ/kg]	m*h[kJ/s]
Inlet air	10.866	37.51	407.55
Outlet air	11.013	80.66	888.28
Inlet water	5.500	184.25	1013.38
Outlet water	5.353	100.40	537.40

Outlet water temperature	23.9 C