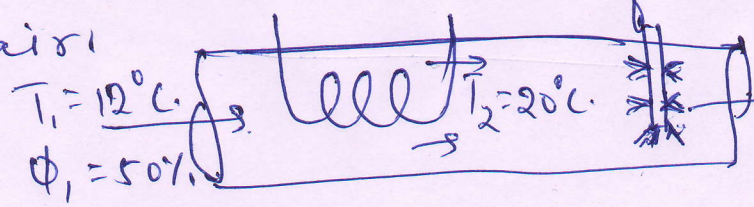
Tutorial – 14

Q.1. Atmospheric air at 1.0132 bar at dry bulb temp. (DBT) of 32°C and a wet bulb temp. (WBT) of 24°C. Compute – (a) Partial pressure of water vapour in air (b) Specific humidity. (c) dew point temperature, (d) relative humidity, (e) degree of saturation. (f) enthalpy of mixture.

Q.2. A winter air conditioner operating at steady state takes outside air at 12°C, 100 kPa and relative humidity of 50% at a rate of 50 m³/min. The air is heated first to 20°C by passing the air through the heating section and the humidified to achieve higher level of comfort. If the temp. inside the room is to be maintained at 24°C and 65% relative humidity, determine the rate of heat transfer to the air and the rate of steam added to the air.



Q.3. A Simple R-12 (Freon-12) plant is to develop 5 tonnes of refrigeration. The condenser and evaporator temp. are to be 40°C and -10°C respectively. Determine;

(a) the refrigerant flow rate (in kg/s)

(b) the volume flow rate handled by compressor (in m^3/s).

(c) compressor discharge temp.

(d) the pressure ratio &

(e) heat rejected to ~~compress~~ condensor in KW.

(f) flash gas percentage after throttling.

(g) COP.

(h) power ~~required~~ required to run the compressor

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* Use the Steam tables & R-12 data for above questions.

* R-12 data ~~is~~ ~~given~~ can be accessed through link in mail.