

Work sheet

1. The dry and wet bulb readings are 30°C and 20°C respectively. Using the chart determine the following values. What is the:

- A. Relative Humidity?
40%
- B. Dew Point?
15°C
- C. Absolute Humidity?
0.0106
- D. Enthalpy?
57.5 kJ/kg

2. The dry and wet bulb readings are 36°C and 27°C respectively. Using the chart determine the following values. What is the:

- A. Relative Humidity?
50%
- B. Dew Point?
24°C
- C. Absolute Humidity?
0.019
- D. Enthalpy?
85 kJ/kg

3. On a particular day the weather forecast states that the relative humidity is 56.8% when the atmospheric T₀ and pressure are 25°C and 0.1013 MPa, respectively. Determine
(P_s at 25°C = 0.003169 MPa)

- A. Partial pressure of water vapor (P_v)
1.8 kPa
- B. Specific humidity (ω)
0.0113 kg of water per kg of dry air

4. A mixture of air and water vapor at 100 kPa and 25°C has a dew point T_o of 15°C. Determine; (P_v at 15°C = 1.7051 kPa)
(P_s at 25°C = 3.169 kPa)

- A. relative humidity
53.8%
- B. specific humidity
0.01078 kg_v/kg_a

5. An air water vapour mixture at 25°C and 101 kPa has a relative humidity of 60% and P_{sa} at 25°C = 3.169 kPa. Compute,

- a) The partial pressure of the dry air. (99.0986 kPa)
- b) The specific humidity of air. (0.0119 kg of water per kg of dry air)

6. The dry and wet bulb temperatures of atmospheric air at 1 atm pressure measured with a psychrometer are determined to be 20°C and 15°C, respectively. Determine,
- The specific humidity.
 - The relative humidity.
 - Saturated pressure (p_{sa}).
 - Enthalpy
 - Dew point temperature
7. Consider atmospheric air at 1atm, 30°C and 50% relative humidity. Using the psychrometric chart. Determine,
- The specific humidity.
 - The enthalpy.
 - The wet bulb temperature.
 - The specific volume of air.
8. The dry and wet bulb temperature reading is same 24°C. Using the chart determine,
- Relative humidity
 - Specific humidity
 - Dew point temperature
 - Specific volume